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FIELDIANA: BOTANY

A Continuation of the

BOTANICAL SERIES

of

FIELD MUSEUM OF NATURAL HISTORY

VOLUME 28

NUMBERS 3 AND 4



CHICAGO NATURAL HISTORY MUSEUM

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CONTENTS

BOTANICAL EXPLORATION IN VENEZUELA—III, IV

By Julian A. Steyermark and Collaborators.

	PAGES
Number 3. From Ericaceae through Compositae	449-678
Number 4. From Algae through Spermatophyta: Families Listed in Systematic Order	679-1190

no. 3-4

LIST OF ILLUSTRATIONS

TEXT FIGURES

NUMBER 3

	PAGE
95. <i>Ardisia meridensis</i>	455
96. <i>Conomorpha densipapillata</i>	458
97. <i>Conomorpha frigidicola</i>	460
98. <i>Conomorpha hieronymoides</i>	461
99. <i>Conomorpha jajiensis</i>	463
100. <i>Conomorpha larensis</i>	464
101. <i>Conomorpha liriensis</i>	467
102. <i>Conomorpha ptariensis</i>	469
103. <i>Conomorpha roraimae</i>	470
104. <i>Conomorpha sessilanthera</i>	472
105. <i>Conomorpha sulcata</i>	473
106. <i>Conomorpha tamana</i>	474
107. <i>Grammadenia ptariensis</i>	475
108. <i>Rapanea minima</i>	478
109. <i>Stylogyne turumiquirensis</i>	480
110. <i>Styrax duidae</i>	493
111. <i>Utricularia aureomaculata</i>	537
112. <i>Utricularia congesta</i>	541
113. <i>Utricularia cuspidata</i>	543
114. <i>Utricularia heterochroma</i>	545
115. <i>Utricularia Oliverana</i>	547
116. <i>Utricularia subpeltata</i>	549
117. <i>Utricularia tepuiana</i>	551
118. <i>Alseis microcarpa</i>	565
119. <i>Alseis trichocarpa</i>	567
120. <i>Borreria macrocephala</i>	569
121. <i>Chimarrhis venezuelensis</i>	573
122. <i>Chiococca lucens</i>	575
123. <i>Elaeagia laxiflora</i>	577
124. <i>Faramea Cardonae</i>	579
125. <i>Guettarda Steyermarkii</i>	580
126. <i>Guettarda Steyermarkii</i> f. <i>latior</i>	581

	PAGE
127. <i>Malanea microphylla</i>	583
128. <i>Pagamea anisophylla</i>	585
129. <i>Pagamea auyantepuiensis</i>	587
130. <i>Pagamea Standleyana</i>	590
131. <i>Pagamea Steyermarkii</i>	592
132. <i>Psychotria arenaria</i>	595
133. <i>Psychotria Blakei</i>	597
134. <i>Remijia stenosepala</i>	611
135. <i>Remijia Steyermarkii</i>	613
136. <i>Anguria simplicifolia</i>	621
137. <i>Baccharis ptariensis</i>	625
138. <i>Hymenostephium viride</i>	643
139. <i>Jungia reticulata</i>	645
140. <i>Lucilia venezuelensis</i>	646, 647
141. <i>Oyedaea Blakeana</i>	665
142. <i>Pectis venezuelensis</i>	667
143. <i>Polymnia meridensis</i>	669
144. <i>Quelchia Cardonae</i>	671

NUMBER 4

1. <i>Podocarpus Harmsianus</i>	762
2. <i>Podocarpus Pittieri</i> , <i>P. Steyermarkii</i>	764
3. <i>Podocarpus magnifolius</i>	766
4. <i>Podocarpus pendulifolius</i>	767
5. <i>Podocarpus oleifolius</i> var. <i>trujillensis</i>	768
6. <i>Podocarpus oleifolius</i> var. <i>macrostachyus</i>	770
7. <i>Podocarpus tepuiensis</i>	772

8

CONTRIBUTIONS TO THE FLORA OF VENEZUELA

JULIAN A. STEYERMARK

AND COLLABORATORS

MAR 1 1954

From Ericaceae through Compositae

NAT.
HIST.

FIELDIANA: BOTANY

VOLUME 28, NUMBER 3

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ERICACEAE²⁶**Befaria Steyermarkii** A. C. Smith, sp. nov.

Frutex ad 2 m. altus, ramis teretibus validis cinereis glabris, ramulis gracilibus apicem versus pilis cinereis vel pallide castaneis eglandulosis 1-2 mm. longis debiliter hispidis demum glabrescentibus; foliis valde congestis ubique glabris, petiolis 1-2 mm. longis, laminis in sicco coriaceis supra olivaceo-viridibus subtus pallidioribus, lanceolatis vel lanceolato-linearibus, (10 -) 15-20 mm. longis, (2 -) 3-6 (- 7) mm. latis, basi angustatis, apice calloso-apiculatis, margine valde revolutis, costa supra paullo impressa subtus elevata, nervis lateralibus immersis; inflorescentia terminali vel subterminali congesta breviter racemosa 5-20-flora, bracteis foliaceis ad 6 mm. longis; pedicellis sub anthesi 10-16 mm. longis gracilibus rectis, ut ramulis novellis copiose hispidis, inferne bibracteolatis, bracteolis linearibus circiter 3 mm. longis caducis; floribus (calycis basi interdum hispida et filamentis inferne obscure puberulis exceptis) ubique glabris; calyce circiter 4 mm. longo profunde 7-lobato, lobis ovatis circiter 3 mm. latis valde imbricatis obtusis; petalis 6 vel 7 anguste obovatis sub anthesi 15-20 mm. longis et 6-8 mm. latis, basi gradatim angustatis, apice rotundatis; staminibus maturitate corollam subaequantibus, filamentis gracilibus, antheris oblongis circiter 1.5 mm. longis; ovario depresso-globoso, stylo quam corolla ut videtur paullo longiore, stigmatate capitato; capsula 6-7 mm. lata.

Type in herb. Chi. Nat. Hist. Mus., isotype in Arn. Arb., collected in valley between base of Cerro de Diablo (western extension of southern peak of Cerro Turumiquire) and Cerro de Neverí, along headwaters of Río de Amana, state of Sucre, alt. 2000 m., May 11, 1945, *Julian A. Steyermark 62711*, "shrub 3-5 feet tall; leaves coriaceous, subrevolute, deep green above, silvery beneath; calyx dull lavender with green; petals deep rose; style rose; filaments orchid-rose."

Other collections from Sucre are: Cerro Turumiquire, rocky sandstone summit of eastern peak, alt. 2500 m., *Steyermark 62614 (A, Ch)*, "shrub 1-4 feet tall, with sometimes prostrate or spreading branches; leaves subcoriaceous, deep green above, dull silvery green beneath; calyx dull purple-red; petals deep rose-orchid to pink-rose, sometimes with white at base;" Cerro Turumiquire, sub-páramo, alt. about 2950 m., *Tate 199 (US), 200 (US), 201 (US)*.

The new species is characterized by its compact small-leaved ericoid habit and the eglandular hispid pubescence of its young branchlets and pedicels. It may be compared with *B. Imthurnii* N.E. Br., but its pedicellary hairs are weaker and less copious, while its leaf-blades are narrower and lack the marginal setae characteristic

²⁶By A. C. Smith

of that species. A possibly closer ally is *B. tachirensis*, also described as new in this report, from which *B. Steyermarkii* differs in its longer and proportionately narrower leaf-blades, more copious inflorescence-pubescence, and larger flowers. Although floral and foliar dimensions are not very reliable characters in *Befaria*, the specimens described above can hardly be considered conspecific with those from the Páramo de Tamá described as *B. tachirensis*.

***Befaria tachirensis* A. C. Smith, sp. nov.**

Frutex compactus haud 1 m. altus, ramis ramulisque teretibus gracilibus, juventute pilis castaneis 0.3-1 mm. longis eglandulosis hispidis praeditis, mox glabrescentibus, novellis interdum evanide tomentellis; foliis apicem ramulorum versus confertis ubique glabris, breviter (1.5-3 mm. longe) petiolatis, laminis in sicco coriaceis supra fusco-viridibus subtus pallidioribus, lanceolatis, (7 -) 10-15 mm. longis, 3-6 mm. latis, basi in petiolum angustatis, apice breviter calloso-apiculatis, margine anguste revolutis vel valde recurvatis, nervo medio supra impresso subtus valde elevato, nervis lateralibus omnino immersis obscurisque; inflorescentia terminali valde congesta 5-15-flora, floribus inferioribus in axillis foliorum dispositis; pedicellis sub anthesi 5-8 mm. longis curvatis ut ramulis novellis vel sparsius hispidis saepe subglabris, medium versus bracteolas 2 lineares circiter 2 mm. longas mox deciduas gerentibus; floribus praeter filamentas glabris; calyce profunde 7-fido circiter 3 mm. longo, lobis deltoideo-ovatis circiter 2 mm. latis apice obtusis; petalis plerumque 6 oblongo-obovatis sub anthesi 9-10 mm. longis et 4-5 mm. latis, basi valde contractis, apice rotundatis; staminibus quam corolla ut videtur brevioribus, filamentis validis inferne densissime albedo-sericeis superne glabris, antheris oblongis circiter 1.2 mm. longis; ovario in centro depresso, stylo tereti circiter 6 mm. longo apice incrassato; capsula depresso-globosa circiter 6 mm. lata plerumque 6-valvata.

Type in herb. Chi. Nat. Hist. Mus., isotype in Arn. Arb., collected on limestone outcrops of Páramo de Tamá, near Colombian-Venezuelan boundary, state of Táchira, alt. 3045-3475 m., July 15, 1944, *Julian A. Steyermark 57412*, "shrub 1-2.5 feet tall, leaves rich green above, white-silvery beneath with green midrib; petals deep rose-pink within, deeper rose without."

Another collection, also from the Páramo de Tamá, at 3100-3300 m. alt., is *F. Cardona 317* (U.S. Nat. Herb.), July 1939.

Befaria tachirensis is characterized by its compact habit, its very small, glabrous leaves, its congested inflorescences, the sparse setose eglandular hairs of its branchlets and pedicels, and its very small flowers, with petals at full anthesis only about 1 cm. long. Although its relationship appears to be with the widespread and variable *B. glauca* Humb. & Bonpl., that species can hardly be interpreted to include a form with such compact habit and small leaves and flowers.

***Gaultheria lepida* A. C. Smith, sp. nov.**

Frutex, ramulis gracilibus primo pilis glandulosis circiter 1

mm. longis copiose hispidulis mox glabrescentibus; petiolis rugulosis 3-4 mm. longis mox glabris; laminis subcoriaceis in sicco viridi-olivaceis ovato-oblongis, (2 -) 3-4.5 cm. longis, (1.5-) 2-3 cm. latis, basi rotundatis vel leviter cordatis, apice obtuse callosopapiculatis, margine inconspicue callososerrulatis (dentibus 7-10 per centimetrum), supra glabris, subtus copiose glanduloso-punctatis ac etiam interdum rubro-hispidulis (pilis mox caducis), costa supra leviter impressa subtus elevata, nervis secundariis utroque 2-4 ascendentibus curvatis inconspicuis cum rete venularum intricato supra subplanis subtus prominulis; inflorescentiis apices ramulorum versus axillaribus racemosis 8-12-floris, rhachi gracili 3-4.5 cm. longa pilis gracilibus glanduliferis circiter 1 mm. longis copiose hispidula ac etiam obscure albido-puberula; bracteis floriferis papyraceis anguste obovato-ellipticis, 8-12 mm. longis, 2-4 mm. latis, acutis, praeter marginem glanduloso-ciliolatum glabris; pedicellis gracilibus ut rhachi pilosis sub anthesi 6-8 mm. longis paullo infra medium bibracteolatis, bracteolis lanceolatis 4-5 mm. longis textura bracteis similibus; calyce profunde 5-lobato, lobis lanceolatis, 5.5-6.5 mm. longis, 1.5-2 mm. latis, apice longe acuminatis, praeter marginem pilis rigidis obscure glandulosis circiter 0.5 mm. longis ciliatum glabris vel dorso obscure hispidulis; corolla cylindricocurculata sub anthesi circiter 7 mm. longa et 3 mm. diametro pilis glanduliferis 0.5-0.8 mm. longis extus copiose hispidula, lobis 5 deltoideis acutis circiter 1 mm. longis; staminibus 3.5-4 mm. longis, filamentis gracilibus obscure puberulis 2.5-3 mm. longis, antheris aristis brevibus inclusis 1-1.2 mm. longis; ovario obscure puberulo, stylo circiter 3 mm. longo.

Type in herb. Chi. Nat. Hist. Mus., isotype in Arn Arb., collected on Sororopán-tepuí, on rocky hematite exposures on open slopes on summit at west end, state of Bolívar, alt. 2225-2255 m., November 13, 1944, *Julian A. Steyermark 60051*, "shrub 3 feet tall; leaves chartaceous-subcoriaceous, rich green above, pale green beneath; pedicels and calyx lavender; corolla deep rose-lavender."

The new species is of the general relationship of *G. odorata* Willd., differing from the typical form of that species in its smaller and less apparently cordate leaf-blades, glabrous inflorescence-bracts, essentially glabrous calyx with conspicuously elongate and narrow lobes, and densely glandular-hispidulous corolla. While the species of this alliance are difficult to analyze without extensive study, I believe that the combination of characters mentioned above and especially the glabrous elongate calyx-lobes exclude *G. lepida* from a reasonable concept of *G. odorata*.

Ledothamnus Steyermarkii A. C. Smith, sp. nov.

Frutex nanus ut videtur ad 50 cm. altus; ramulis teretibus juventute copiose albido-puberulis et dense foliatis, demum glabrescentibus cinereis defoliatis, internodiis circiter 1.5 mm. longis; foliis ubique copiose puberulis demum subglabrescentibus, petiolis complanatis circiter 1 mm. longis, laminis crassis elliptico-oblongis, 5-6 mm. longis, 1.5-2.5 mm. latis, basi in petiolum decurrentibus, apice obtusis, margine non setosis, subtus sulcatis; floribus termi-

nalibus solitariis vel binis; pedicellis gracilibus (4 -) 9-16 mm. longis, dense albido-puberulis ac etiam pilis rigidis conicis 0.3-0.5 mm. longis brevissime plumosis setosis; sepalis 6 lanceolatis, 7-8 mm. longis, circiter 1.5 mm. latis, apice breviter aristatis, margine pilis plumosis inconspicuis eis pedicellorum similibus ornatis, utrinque arcte puberulis; petalis 6 obovatis, sub anthesi ad 13 x 8 mm. apice rotundatis et eroso-crenulatis; staminibus 12 ubique glabris quam sepalis paullo brevioribus, filamentis ligulatis pallidis superne angustatis, antheris anguste oblongis circiter 3 mm. longis; ovario ruguloso valde sulcato, stylo crasso circiter 2 mm. longo apice incrassato; capsula ellipsoidea verrucosa 6-7 mm. longa plerumque 5-valvata.

Type in herb. Chi. Nat. Hist. Mus., isotype in Arn. Arb., collected on forested south-facing slopes overlying sandstone, on "Cave Rock" above "Cave Camp," Ptari-tepuí, state of Bolívar, alt. 1810 m., October 29, 1944, *Julian A. Steyermark 59484*, "suffruticose; leaves coriaceous, dull green above, gray-silvery beneath; flowers nodding."

From *L. guyanensis* Meissn. and *L. Tatei* A. C. Sm., its only close allies, the new species is most readily distinguished by the type of setae of its pedicels and sepals. *Ledothamnus guyanensis* has these setae obviously glandular-tipped, whereas in *L. Tatei* they are long, slender, and simple. The pedicellary and calycine setae of *L. Steyermarkii* are short, stout, stiff, and themselves bear short white lateral hairs. The leaf-margins of the new species are free of setae, while both its relatives have foliar setae of the respective types mentioned above.

Orthaea crinita A. C. Smith, sp. nov.

Frutex epiphyticus, ramulis subrectis juventute pilis purpureis ad 1.5 mm. longis obscure glandulosis densissime indutis demum glabrescentibus; petiolis validis rugulosis 3-6 mm. longis mox glabris; laminis coriaceis siccitate viridi-olivaceis ellipticis, (3 -) 4-6 cm. longis, 2-4 cm. latis, basi obtusis, apice obtusis vel obtuse et breviter cuspidatis, margine paullo incrassatis et recurvatis, ut ramulis utrinque primo glanduloso-hispidulis mox glabrescentibus, pinnatinerviis, costa supra impressa subtus elevata, nervis laterilibus utroque 4-6 erecto-patentibus utrinque leviter elevatis vel subplanis, rete venularum subimmerso; inflorescentia axillari fasciculata 2-6-flora bracteis numerosis imbricatis papyraceis ovato-oblongis 1-3 mm. longis apice rotundatis margine fimbriatis circumdata; pedicellis rectis striatis sub anthesi 14-17 mm. longis, pilis pallidis glandulosis 0.5-1.2 mm. longis copiose hispidis, medium versus vel distaliter bracteolis bracteis similibus sed dorso glanduloso-hispidulis bibracteolatis; calyce cupuliformi sub anthesi 5-6 mm. longo et apice 4-5 mm. diametro pilis 0.7-1.5 mm. longis copiose glanduloso-hispidulo, tubo basi truncato, limbo erecto circiter 3 mm. longo intus glabro obscure 5-dentato, dentibus minute apiculatis, sinibus complanatis; corolla tenuiter carnosa subcylindrica sub anthesi 15-18 mm. longa et medium versus 4-6 mm. diametro, utrinque leviter angustata, ut calyce hispidula, pilis purpureis, lobis oblongis

obtusis 1-1.5 mm. longis; staminibus 10 alternatim circiter 6 mm. et 8 mm. longis, filamentis liberis ligulatis superne margine hispidulis alternatim circiter 3 mm. et 5 mm. longis, antheris subaequalibus 4-4.5 mm. longis, tubulis thecas subaequantibus per poros conspicuos ovales introrsos 1-2 mm. longos dehiscentibus; disco annulari-pulvinato glabro; stylo filiformi sub anthesi leviter exserto, stigmatibus obscure capitato.

Type in herb. Chi. Nat. Hist. Mus., isotype in Arn. Arb., collected on southeast-facing slopes, Pтари-tepuí, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Julian A. Steyermark 59990*, "epiphytic vining shrubby plant on small tree; leaves coriaceous, dark green above, dull green beneath; pedicel and calyx pale green; corolla scarlet."

Local name: "mari-mari-yek."

Another specimen, also from Bolívar, is: Gran Sabana, between Mission of Santa Teresita de Kavanayén northwest to Río Karuai, on large mesa, alt. 1220 m., *Steyermark 59373 (A, Ch)*, "on margin of steep woods bordering savanna, shrubby epiphyte; leaves coriaceous, deep green above, pale dull green beneath; calyx dull green; corolla blood-red."

This new and extraordinarily distinct species at first glance suggests *Thibaudia* and especially *T. glandulifera* A. C. Sm., of Mt. Duida, a species with leaves of the same shape and texture and with the same type of pedicellary and calycine pubescence. However, *T. glandulifera* has glabrous corollas, and other characters indicate that the two species are only superficially similar. The staminal characters of the new species indicate that it is better referred to *Orthaea*, although in that genus it is quite isolated; its anther-tubules open by pores which are unusually long for *Orthaea*. From *O. hispida* A. C. Sm., of British Guiana, probably its closest ally, the new species differs in its leaf-shape, more densely aggregated flowers, longer pedicels, shorter but glandular calyx-pubescence, and hispidulous corollas. The hairs of the inflorescence of *O. crinita* are of a remarkable type, being multicellular with the cells in several rows proximally, thin-walled, very stout at base, tapering distally, and minutely gland-tipped at apex. Hairs of this sort are otherwise known to me, in *Orthaea*, only in a species from the Western Cordillera of Colombia, which in other characters is entirely distinct from *O. crinita*.

***Vaccinium euryanthum* A. C. Smith, sp. nov.**

Frutex ad 1 m. altus, ramis dependentibus teretibus ramulisque gracilibus glabris fusco-cinereis; foliis glabris, petiolis validis 2-4 mm. longis, laminis coriaceis suborbiculari-ellipticis, (2.5 -) 3-5.5 cm. longis, (1.5 -) 2-4.2 cm. latis, basi et apice rotundatis vel late obtusis et basi in petiolum subito decurrentibus, margine integris, costa supra subplana vel leviter impressa subtus elevata, nervis lateralibus 5-7 patentibus supra immersis subtus et rete venularum haud distinctis; inflorescentiis e gemmis efoliatis enascentibus vel interdum supra-axillaribus, subfasciculatis vel brevissime racemosis,

ubique praeter filamentos glabris, rhachi ad 4 mm. longis; floribus 2-8 per inflorescentiam, in axillis bractearum deltoidearum circiter 1 mm. longarum dispositis; pedicellis gracilibus 8-12 mm. longis, apice vel fere ad apicem bracteolas 2 bracteis similes gerentibus; calycis tubo cupuliformi sub anthesi circiter 2 mm. longo et lato, limbo brevi suberecto ad 1 mm. longo, lobis 5 late deltoideis apiculatis; corolla subcarnosa late campanulata sub anthesi 9-10 mm. longa et apice 7-8 mm. diametro, lobis 5 triangulari-ovatis acutis circiter 3 x 3.5 mm.; staminibus 10 quam corolla multo brevioribus, filamentis ligulatis 3-3.5 mm. longis superne sparse puberulis, antheris erectis 3-3.5 mm. longis, thecis granulatis basi in appendiculam ad 0.5 mm. longam obvie angustatis, tubulis latis quam thecis paullo brevioribus per poros subterminales dehiscentibus; disco pulvinato glabro; stylo tereti corollam subaequante.

Type in herb. Chi. Nat. Hist. Mus., isotype in Arn. Arb., collected on forested south-facing slopes overlying sandstone, on "Cave Rock" above "Cave Camp," Ptari-tepui, state of Bolívar, alt. 1810 m., October 29, 1944, *Julian A. Steyermark 59486*, "shrubby, with sprawling hanging branches, 2-3 feet tall; leaves coriaceous, deep green above, pale green beneath; pedicels silvery-blue-gray-green; corolla open-campanulate, pale brick-salmon, nodding."

This very distinct species of *Vaccinium* appears to have no close allies in the region of the table-mountains of southern Venezuela; its resemblance to *V. tepuiense* Camp & A. C. Sm. in foliage is only superficial. The new species suggests the section for which Sleumer (in Notizbl. Bot. Gart. Berlin 13: 114. 1936, in Bot. Jahrb. 71: 417. 1941) proposes the name *Brachyceratium*. The two species which make up this section, *V. sphyrospermoides* Sleumer and *V. dependens* (Don) Sleumer, both of Peru, have corollas and stamens fundamentally like those of *V. euryanthum*, but their foliar and floral dimensions are much smaller and differences of detail are numerous. A superficial floral resemblance between *V. euryanthum* and the Central American *V. poasanum* Donn. Sm. is apparent, but that species has elongate anther-tubules and very different leaves. The apical pedicellary bracteoles of the new species are also noteworthy.

MYRSINACEAE

Ardisia meridensis Steyermark, sp. nov.

Frutex 3.3-5-metralis; ramulis novellis dense adpresseque ferrugineo-tomentulosis; petiolis 7-8 mm. longis glabris; laminis subcoriaceis supra nitidis subtus pallido-viridibus ovato-ellipticis vel ovatis apice obtuse acutis basi acutis 5.5-15 cm. longis 2.2-7 cm. latis, marginibus integerrimis utrinque glabris prominulo-reticulatis obscure punctulatis, nervis lateralibus utroque 10-16 tenuibus anastomosantibus; inflorescentiis bipinnatim paniculatis terminalibus vel axillaribus sub anthesi 2 cm. longis sub fructu ad 5 cm. longis 14-38-floris, rhachi ferrugineo-lepidotis; pedicellis sub anthesi 2.8-3.5 mm. longis parce lepidotis fructiferis auctis ad 7 mm. longis; calycis tubo 1.2 mm. longo, lobis sub anthesi late oblongis apice late rotundatis 1.6-1.7 mm. longis 0.7-1.2 mm. latis, marginibus

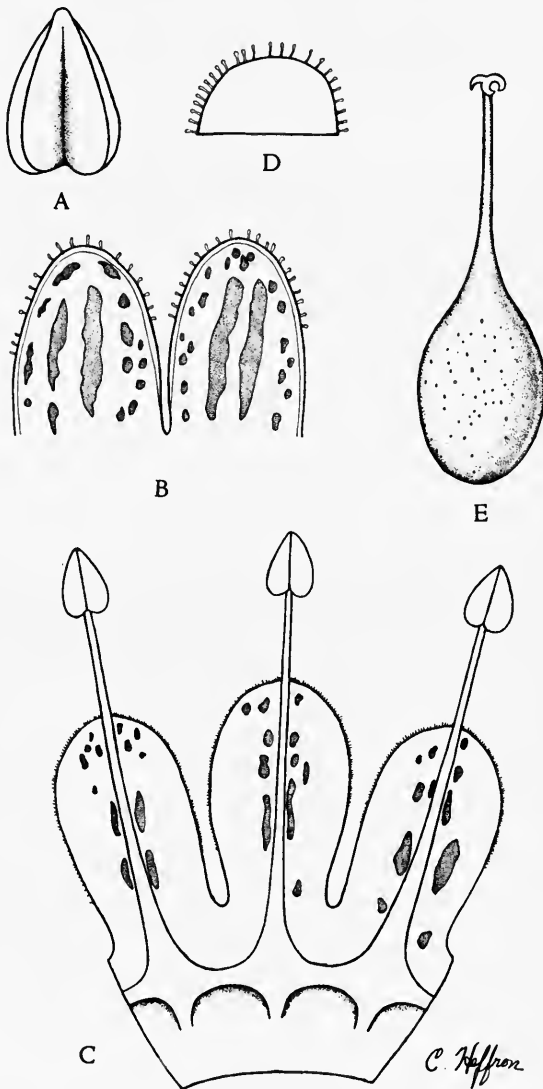


FIGURE 95

Ardisia meridensis

A, Anther (X 25); B, Calyx lobe (X 6); C, Portion of calyx (X 16); portion of corolla with stamens (X 16); D, Summit of corolla lobe (highly magnified); E, Pistil (X 13).

glandulari-ciliolatis, extus lepidoto-puberulis, punctato-maculatis; corollae tubo 1.5 mm. longo, lobis albidis patentibus late oblongis apice rotundatis 1.5 mm. longis 0.9-1 mm. latis, marginibus glandulari-ciliolatis, extus minute lepidoto-puberulentibus, punctato-maculatis; staminibus petala bene superantibus; filamentis basin versus in tubum coalitis 2.5-2.8 mm. longis; antheris late triangulari-oblongis vel deltoideis subapiculatis 0.8-0.9 mm. longis; ovario 2 mm. longo paullo nigro-punctato 4-ovulato; stylo 2 mm. longo (Fig. 95).

Type in herb. Chi. Nat. Hist. Mus., collected between Mucuchachí and Canaguá, state of Mérida, alt. 1065-1820 m., May 6, 1944, *Julian A. Steyermark 56325*, "shrub 10-15 feet tall; leaves subcoriaceous, deep green and shining above, dull paler green below; pedicel pale greenish white; calyx pale greenish with brick-salmon on lobes; petals whitish, spreading; filaments whitish; anthers golden."

With its exserted stamens this species is placed in subgenus *Walleniopsis* Mez, and is related to the Venezuelan *A. Robinsonii* Mez, from which it differs in the corolla lobes which are broadly rounded instead of acute in anthesis, and conspicuously black-punctate, and in the larger leaves. In the details of calyx and corolla lobes and black-punctate corolla lobes it resembles more closely *A. breviflora* A. DC. of Peru, but that has narrower and smaller, more acutely pointed leaves, more cuneately narrowed at the base, and at least the calyx is punctate with smaller and more numerous punctations.

***Conomorpha apiculata* Steyermark, sp. nov.**

Arbor parva vel frutex 7-metralis; ramulis novellis ferrugineo-lepidotis; petiolis 10-20 mm. longis supra canaliculatis ferrugineo-lepidotis; laminis firme membranaceis subtus pallido-viridibus oblanceolatis vel elliptico-oblanceolatis apice subito longe acuminatis, acumine acuta 1.2-2 cm. longa, basi acuminatis in petiolum anguste decurrentibus, 10-20 cm. longis 3-5.5 cm. latis, supra glabris subtus parce ferrugineo-lepidotis, marginibus integerrimis, costa media subtus prominente, nervis secundariis utroque 12-15 bene distantibus ante marginem 5-7 mm. anastomosantibus prominentibus; inflorescentiis racemosis axillaribus 2-5.5 cm. longis 5-7-floris; rhachi ferrugineo-lepidotis; bracteis subulatis 1 mm. longis extus lepidotis; pedicellis 1-1.5 mm. longis glabris; floribus plerumque 4-meris; calyce cupuliformi, lobis 4-5 late ovatis vel suborbiculari-ovatis rotundatis vel subacutis 0.8-0.9 mm. longis 0.7-1 mm. latis, marginibus glandulari-ciliatis, valde nigro-punctatis; ovario maturo pyriformi lepidoto; fructu suborbiculari-ovoideo subito apiculato 5.5-6.5 mm. longo, 5 mm. diametro, apicula conica 1.5 mm. longa.

Type in herb. Chi. Nat. Hist. Mus., collected on Cerro Duida, southeastern-facing slopes along Caño Negro (tributary of Caño Iguapo), Territorio Federal Amazonas, alt. 305-1095 m., August 25-26, 1944, *Julian A. Steyermark 57986*, "shrub 20 feet tall; leaves firmly membranaceous, deep rich green above, paler green below; fruiting calyx buff with salmon on lobes."

Cotype in herb. N.Y. Bot. Gard., small tree at Aguita, slopes of Mount Duida, alt. 1000 m., August, 1928 to April, 1929, *G.H.H. Tate 901*.

This species is unusual in having the fruit conspicuously apiculate instead of broadly rounded above. This condition prevails from an early stage of maturity of the ovary until the mature stage of the fruit. The long acuminate membranaceous leaves with rather distantly separated lateral nerves are also characteristic.

***Conomorpha densipapillata* Steyermark, sp. nov.**

Frutex 3.3-6.8-metralis; ramulis gracilibus vetustioribus cinereis junioribus brunneis vetustioribus subteretibus junioribus angulatis glabris; petiolis supra canaliculatis superne anguste alatis 4-8 mm. longis glabris; laminis subcoriaceis subtus pallido-viridibus oblanceolatis utrinque angustatis apice acuminatis in petiolum decurrentibus 2.5-6 cm. longis 0.8-2 cm. latis, marginibus integerrimis vel remote et irregulariter dentatis, utrinque glabris, utrinque punctulis obtectis, nervis lateralibus principalibus utroque 8-13 adscendentibus ante marginem 0.5-1.5 mm. anastomosantibus praesertim subtus nervis tertiariis venulisque bene reticulatis; inflorescentiis racemosis axillaribus cum foliis apices ramulorum versus congestis 15-33 mm. longis 10-16-floris, rhachi glabra vel parce glandulosa angulata; bracteis lanceolatis acutis 1.5-2 mm. longis glandulari-ciliolatis; pedicellis 2-3 mm. longis glabris vel parce glandulosis; floribus 5-meris; calycis tubo 0.5 mm. longo, lobis 5 ovatis acutiusculis 1.25-1.5 mm. longis 1 mm. latis, marginibus integris glanduloso-ciliatis, intus glabris punctatis; corollae tubo 0.6-0.8 mm. longo, lobis 5 luteo-albidis elliptico-oblongis obtusis vel rotundatis 2.75 mm. longis 1.5 mm. latis intus dense papilloso-puberulentibus extus glabris marginibus glanduloso-papillatis, multipunctatis; staminibus 5 basi corollae loborum insertis; filamentis complanatis 0.3 mm. longis; antheris oblongo-deltaoideis 0.9 mm. longis apice obtusis paullo recurvatis; pistillo 1.75 mm. longo; ovario pallido-lepidoto sub anthesi 1 mm. longo; fructu demum vinaceo-purpureo subgloboso nitido 5 mm. diam. (Fig. 96).

Type in herb. Chi. Nat. Hist. Mus., collected on Páramo de Los Colorados, between El Molino and San Isidro Alto, state of Mérida, alt. 2745-2955 m., May 14, 1944, *Julian A. Steyermark 56539*, "shrub 10-20 feet tall; flowers fragrant; calyx pale green; petals buff-whitish; filaments buff-salmon; pedicels brick; fruit round, at first wine red, turning wine-purple and shining; leaves subcoriaceous, dull green above, pale green below."

Among many other species of the genus, this is at once recognized by the narrowly oblanceolate acuminate leaf blades, comparatively large flowers in densely flowered racemes, and the conspicuously papillose-puberulent inner surface of the corolla lobes.

It is related to *C. laurifolia* Mez of Venezuela, in which the petals are lepidote or papillose within, but among other differences has much narrower leaves than that species.

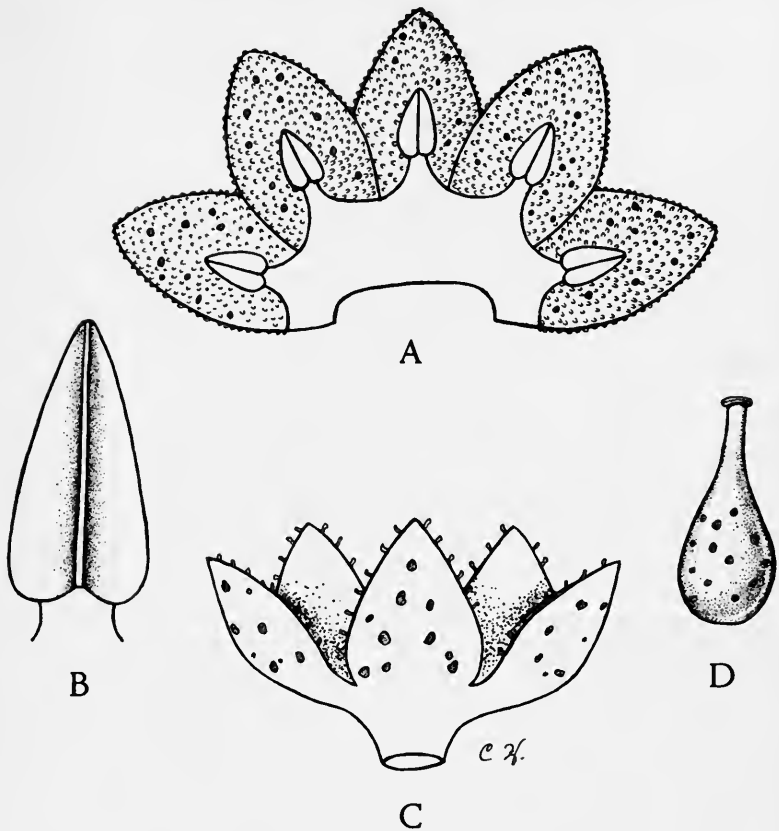


FIGURE 96

Conomorpha densipapillata

A, Corolla, opened, from within (X 11); B, Stamen (X 34); C, Calyx (X 17); D, Pistil (X 17).

***Conomorpha depressa* Steyermark, sp. nov.**

Frutex humilis 1-2-metralis; caulibus simplicibus vel parce ramosis crassiusculis 0.9-1.2 cm. diametro glabris; cicatricibus magnis conspicuis suborbicularibus 3-4 mm. longis 4-5 mm. latis; petiolis crassiusculis plerumque valde ampliatis 7-13 mm. longis 2.5-5 mm. latis glabris; laminis valde coriaceis rigidis erectis vel adscendentibus supra atroviridibus obovatis apice obtusis vel rotundatis vel subacutis basi sensim attenuatis acutis in petiolum valde decurrentibus 5-13.5 cm. longis 2-5 cm. latis, utrinque glabris subtus paullo atropunctatis, marginibus integris revolutis vel subrevolutis, costa media subtus prominente, nervis secundariis utroque 9-14 prope

marginem anastomosantibus utrinque prominulis vel supra paullo impressis; inflorescentiis racemosis 1.5-4 cm. longis, rhachi bado-fusca angulata crassiuscula 2-3 mm. diametro atropunctata; pedicellis crassiusculis 1.5-2.5 mm. longis 1.5 mm. latis; bracteis lineariblongis 2.5-3 mm. longis atropunctatis; calyce cupuliformi, lobis 4 suborbicularibus apice rotundatis circa 1 mm. longis in fructu squarrosis vel reflexis; corolla non visa; fructibus nigro-vinaceis subglobosis 7-9 mm. diametro atropunctatis.

Type in herb, Chi. Nat. Hist. Mus., collected in woods on summit of Carrao-tepuí, state of Bolívar, alt. 2470-2500 m., December 7, 1944, *Julian A. Steyermark 60898*, "shrub 4-6 feet tall; leaves erect, coriaceous, dark green above, pale green below; fruit pale green turning black-purple."

The following cotypes in herb. Chi. Nat. Hist. Mus., all from the state of Bolívar; on soil bordering *Brocchinia-Stegolepis-Heliampora* swamp on southwest-facing shoulder, Ptari-tepuí, alt. 2200 m., November 2, 1944, *Steyermark 59789*; *Bonnetia roraimae* forest on southwest-facing shoulder, Ptari-tepuí, alt. 2000-2200 m., November 2, 1944, *Steyermark 59797*, "shrub 3-4 feet tall; leaves coriaceous, dark green above, dull paler green below; peduncle spreading, thickened, pale green; fruit dark purple-black, 8 mm. in diameter;" vicinity of "Misia Kathy Camp," on mesa between Ptari-tepuí and Sororopán-tepuí, alt. 1615 m., November 15-17, 1944, *Steyermark 60240*, "shrub, simple-stemmed, 4-6 feet tall; leaves coriaceous, deep green above, dull pale green below."

This is a very distinct species related to *C. rigida* Mez, from which it differs chiefly in the glabrous young branches and glabrous fruits. It is further characterized by the dwarf habit, the greatly thickened, somewhat fleshy glabrous stems, relatively thickened, short fruiting rachis, and glabrous fruit.

Conomorpha frigidicola Steyermark, sp. nov.

Arbor 10-13-metralis; ramulis novellis dense adpresseque lepidotis obtectis; petiolis 6-19 mm. longis supra canaliculatis lepidibus adpressis dense conferteque obtectis; laminis coriaceis supra atroviridibus subtus cinereo- vel argenteo-viridibus obovatis apice rotundatis basi cuneatim acutis vel acuminatis 4-7.5 cm. longis 2-4 cm. latis, supra glabris subtus dense ferrugineo-lepidotis novellis densissime ferrugineo-lepidotis, marginibus subrevolutis, costa media subtus prominente, nervis secundariis utroque 9-11 adscendentibus supra obsoletis subtus paullo impressis prope marginem anastomosantibus; inflorescentiis racemosis 2.5 cm. longis densissime lepidibus obtectis; rhachi angulata; pedicellis 1.5 mm. longis dense ferrugineo-glandulari-lepidotis; bracteis oblongo-oblancoelatis subacutis 2-2.5 mm. latis 0.8-1 mm. latis dense ferrugineo glandulari-lepidotis; floribus 5-meris; calyce cupuliformi, tubo 1 mm. longo punctato densissime ferrugineo glandulari-lepidoto, lobis ovatis subacutis vel subobtusis 1-1.2 mm. longis 0.8-0.9 mm. latis parce lineolatis densissime ferrugineo glandulari-lepidotis; corolla lobis ad 1/5 connatis, lobis oblongis vel ovato-oblongis apice rotundatis 2 mm.

longis 1.2 mm. latis, intus lepidotis brunneo-punctatis extus brunneo glandulari-lepidotis; antheris oblongis 1.5 mm. longis; filamentis 0.3-0.4 mm. longis; pistillo conico 2 mm. longo; ovario parce lepidoto 1 mm. longo; stylo 1 mm. longo (Figure 97).

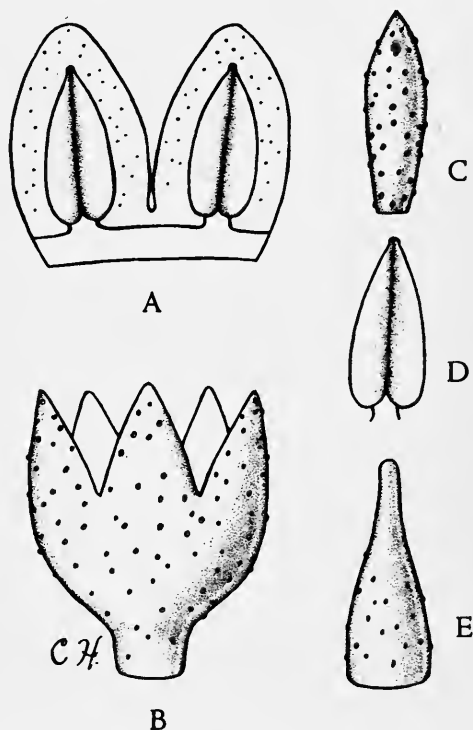


FIGURE 97

Conomorpha frigidicola

- A, Portion of corolla with
stamens (X 16).
B, Calyx (X 16);
C, Bract (X 11);
D, Stamen (X 12.5);
E, Pistil (X 14).

Type in herb. Chi. Nat. Hist. Mus., collected in dwarf cool forest between El Molino and ridge above San Isidro Alto, state of Mérida, alt. 2430-2895 m., May 14, 1944, *Julian A. Steyermark 56516*, "tree 30-40 feet tall; leaves coriaceous, dark green above, gray green or silvery dull green below; flower buds pale green; pedicels and young stems ferruginous as is lower side of young leaves."

This species is related to *C. panniculata* Mez of Brazil, but the inflorescences are racemose, not paniculate, the calyx lobes are acutely tipped, and the filaments of the almost sessile anthers are much shorter.

***Conomorpha hieronymoides* Steyermark, sp. nov.**

Frutex 6.8-metralis; ramulis dense adpresseque fusco-lepidotis; petiolis 7-15 mm. longis supra valde canaliculatis dense adpresseque

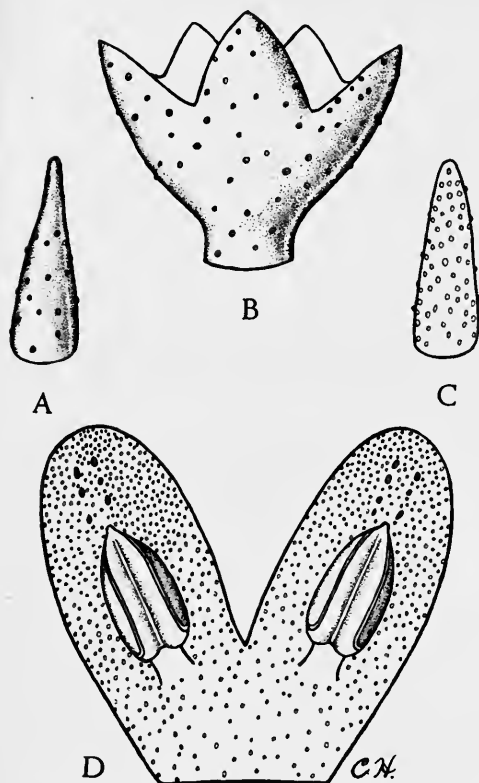


FIGURE 98

Conomorpha hieronymoides

A, Pistil (X 14);

B, Calyx (X 14);

C, Bract (X 11);

D, Portion of corolla with
stamens (X 15).

lepidibus obtectis; laminis subcoriaceis supra atroviridibus nitidis late ellipticis apice obtuse acutis vel obtusis basi cuneatim acuminatis 3.5-9.5 cm. longis 1.7-5 cm. latis, supra glabris subtus dense conferteque ferrugineo- vel badofusco-lepidotis, marginibus integerrimis valde revolutis; inflorescentiis racemosis 3.5-5.5 cm. longis, rhachi angulata fusco- vel ferrugineo-lepidota; pedicellis 2-2.5 mm. longis dense fusco-lepidotis; bracteis lanceolatis obtusis 2-2.5 mm. longis 0.5-0.8 mm. latis dense ferrugineo-lepidotis ciliolatis; floribus 5-meris; calyce cupuliformi, lobis ultra medium connatis, tubo 1 mm. longo, lobis triangulari-ovatis obtusis vel subacutis 0.8-1 mm. longis 0.7-1.1 mm. latis dense punctulis obtectis; corollae lobis ad $\frac{1}{3}$ connatis, tubo 0.8-1 mm. longo, lobis late oblongis apice rotundatis 2.3 mm. longis 1.2-1.3 mm. latis, intus marginesque dense lepidotis, extus paullo superne ad lineolato-punctatis; antheris oblongo-ovatis apiculatis 1 mm. longis 0.5 mm. latis lepidotis; filamentis 0.7-0.8 mm. longis; pistillo conico-subulato 2 mm. longo; ovario conico 1.5 mm. longo lepidoto; stylo 0.5 mm. longo (Figure 98).

Type in herb. Chi. Nat. Hist. Mus., collected in wet meadow at Las Sabanetas, above Los Aposentos, west of Humocaró Bajo, state of Lara, alt. 2530 m., February 5, 1944, Julian A. Steyermark 55295,

"shrub 20 feet tall; leaves subcoriaceous, dark green and shining above, dull green below; bracts and young inflorescence tawny or yellow brown; flowers pale yellow green."

Local name: "manteca colorado."

The thick leaves of this species are used to clean iron pots, pans, and other vessels.

This species is similar to *C. crotonoides* Mez, but has 5-merous flowers, a somewhat more deeply divided, less lepidote calyx, corolla lobes not conspicuously black-punctate, much longer inflorescence, conic-subulate pistil, less lepidote ovary, more obovate less brown-lepidote leaf blades with more ascending lateral nerves, and the lepidote scales are smaller and less crowded on all vegetative portions.

It is also related perhaps to *C. grandiflora* Mez and *C. magnoliifolia* Mez, but the former has much larger flowers and the latter much larger and practically glabrate leaves.

Conomorpha jajiensis Steyermark, sp. nov.

Frutex 3-6.5-metralis; ramulis juvenilibus parce lepidibus obtectis vetustioribus glabrescentibus; petiolis 5-25 mm. longis supra canaliculatis dense lepidotis; laminis firme membranaceis vel subcoriaceis subtus cinereo-viridibus anguste vel late oblongo-ellipticis utrinque acuminatis 7.5-20 cm. longis 2-5 cm. latis, supra glabris subtus punctulis lepidotis rufescentibus praeditis, marginibus integris, costa media subtus prominente, nervis secundariis utroque 9-10 patentibus ante marginem 3-10 mm. anastomosantibus valde prominentibus; inflorescentiis racemosis 2 cm. longis (foemineis) ad 4.5-6 cm. longis (masculis) ferrugineo-lepidotis, rhachi angulata densiuscule brunneo-lepidota; pedicellis masculis 1.5-2 mm. longis, foemineis 2-2.1 mm. longis glandulari-lepidotis; bracteis foemineis elliptico-obovatis acutiusculis 2 mm. longis 1 mm. latis utrinque glandulari-lepidotis; floribus 4-meris; calyce cupuliformi, tubo 1 mm. longo, lobis late ovato-oblongis vel suborbiculari-oblongis apice rotundatis 1 mm. longis 1 mm. latis ferrugineo-punctatis; corollae lobis haud ultra $\frac{1}{3}$ connatis, tubo 0.5-1 mm. longo, lobis foemineis late oblongis apice rotundatis 1.6 mm. longis 1.2 mm. latis, masculis 2-2.2 mm. longis 1.6-2 mm. latis, brunneo-punctatis, intus lepidotis, marginibus integerrimis; antheris late oblongis obtusis 0.5-0.8 mm. longis, filamentis 0.2-0.4 mm. longis; ovario globoso glabro 0.8 mm. longo; stylo crasso 0.5 mm. longo subtruncato (Fig. 99).

Type (pistillate plant) in herb. Chi. Nat. Hist. Mus., collected in rich moist woods, Los Quebraditos, above Jají, state of Mérida, alt. 2590 m., April 21, 1944, *Julian A. Steyermark 55980*, "shrub 20 feet tall; leaves gray green below, dull green above."

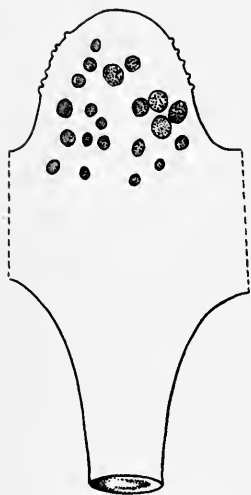
Cotype (staminate) in herb. Chi. Nat. Hist. Mus., collected in rich forest on slopes near summit of Cerro San Isidro, above La Carbonera, state of Mérida, alt. 2430-2745 m., April 22, 1944, *Steyermark 56033*, "shrub 10 feet tall; flowers greenish; anthers buff and lavender; rachis pale green; leaves gray green below."



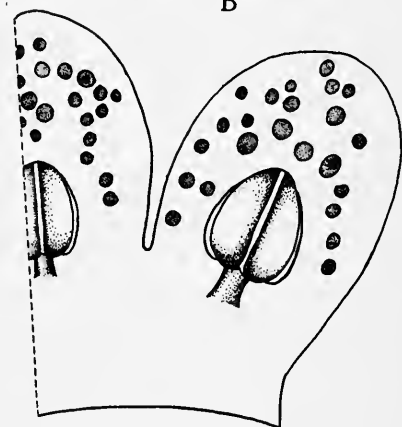
A



B



C



D

FIGURE 99

Conomorpha jajiensis

A, Bract (X 16); B, Pistil (X 31); C, Portion of calyx with attached pedicel (X 19); D, Portion of corolla with stamens (X 23).

This species is related to *C. meridensis* Mez, but the anthers are definitely provided with filaments and the lateral nerves of the leaf blades are less numerous, while the rounded calyx lobes differentiate it from *C. laxiflora* (Mart.) A. DC.

Conomorpha laeensis Steyermark, sp. nov.

Frutex 2.8-3.3-metralis; ramulis novellis parce fusco-lepidotis vetustioribus glabris; petiolis 7-20 mm. longis supra canaliculatis valde lepidibus obtectis; laminis firme membranaceis vel subcori-

aceis oblongo-ellipticis apice acutis vel acuminatis basi acutis 5-11 cm. longis 1.5-4.5 cm. latis, supra glabris subtus parce fusco-lepidotis marginibus integerrimis, costa media subtus subprominente, nervis secundariis utroque 7-9 ante marginem 2.5-5 mm. anastomisantibus cum rete venularum utrinque valde prominulis; inflorescentiis racemosis 1.5-4.5 cm. longis, rhachi angulata fusco-glandulari-lepidota; pedicellis 4-5 mm. longis glandulari-lepidotis; floribus 4-meris; calyce cupuliformi, lobis ad $1/3$ - $3/8$ coalitis, late ovatis obtusis vel rotundatis 1.3-1.5 mm. longis 1-1.1 mm. latis; corollae lobis ad $1/4$ connatis, tubo 0.7-0.8 mm. longo, lobis suborbiculari-oblongis apice late obtusis vel rotundatis 2 mm. longis 2-2.5 mm. latis atropunctatis intus lepidotis; antheris triangulari-oblongis 1 mm. longis dorso atropunctatis; filamentis 0.4-0.5 mm. longis; ovario subgloboso lepidoto 0.8 mm. longo; stylo crasso breve; fructu subgloboso 6-8 mm. diametro (Figure 100).

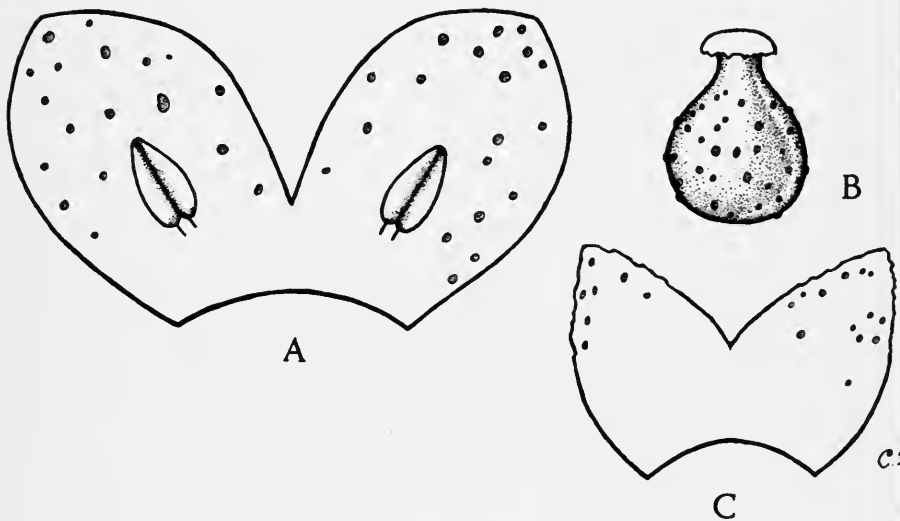


FIGURE 100

Conomorpha larensis

A, Portion of corolla with stamens (X 20); B, Pistil (X 28.5); C, Portion of calyx (X 14).

Type in herb. Chi. Nat. Hist. Mus., collected on slopes of mountain between Santo Domingo and Los Quebraditos, south of Las Sabanetas, above Humocaró Bajo, state of Lara, alt. 2430-2745 m., February 8, 1944, *Julian A. Steyermark* 55392, "shrub 10 feet tall; corolla brick color, spreading."

Cotype in herb. Chi. Nat. Hist. Mus., collected in moist cloud forest, on southwest-facing slopes at Los Aposentos, above Las

Sabanetas, above Humocaro Bajo, state of Lara, alt. 2500-2530 m., February 3, 1944, *Steyermark 55219*, "shrub 8-10 feet tall; corolla brick color; anther cream-colored."

Local name: "pajarita."

This species is similar to *C. laurifolia* Mez, but the sepals are suborbicular-ovate, rounded or broadly obtuse at the apex, the pedicels are longer, and the lateral nerves of the leaf blades are more numerous and ascending and more conspicuous on the lower surface.

Conomorpha lepidota Gleason, forma *acutata* Steyermark, f. nov.

A typo differt foliorum laminis apice acute acuminatis basi acutis vel subacutis vel acuminatis.

Type in herb. Chi. Nat. Hist. Mus., collected on summit of Cerro Duida, Savana Hills, Territorio Federal Amazonas, alt. 1025-1200 m., September 2, 1944, *Julian A. Steyermark 58265*, "shrub 8-10 feet tall; leaves subcoriaceous, deep dull green above, gray brown below on older leaves, rufous brown on younger leaves below; rachis rufous brown."

This form, encountered at the type locality, differs from the original description in having the acuminate apex of the leaf blades definitely acute and sharp-pointed instead of obtuse, and in the base of the blades acute to acuminate instead of obtuse.

Conomorpha leprosa Steyermark, sp. nov.

Frutex 3.3-5-metralis; ramulis omnino densissime ferrugineo-griseo-lepidotis leprosisque; petiolis sulcatis 10-20 mm. longis novellis saltem ferrugineo-lepidotis; laminis coriaceis vetustioribus subtus brunneis novellis ferrugineis elliptico-oblongis apice rotundatis basi obtusis vel acutis in petiolum subito angustatis 3-7.5 cm. longis 1.5-3.5 cm. latis, supra glabris vel novellis brunneo-lepidotis vel leprosis, marginibus integerrimis revolutis, costa media subtus prominente ferrugineo- vel cinereo-leproso-puberulentibus, nervis secundariis utroque 15-21 patento-adscendentibus prope marginem obsolete vel parce anastomosantibus, supra impressis subtus prominulis; inflorescentiis racemosis 3.5-5 cm. longis, rhachi angulata ferrugineo-leprosis vel lepidotis; pedicellis 1-1.5 mm. longis glabris vel parce lepidotis; bracteis non visis; calyce cupuliformi, lobis 4 late ovatis apice rotundatis vel obtusis 1.5 mm. longis 1.3-1.4 mm. latis nigro-punctatis, marginibus glandulari-ciliolatis; fructibus atrolazulino-nigris subglobosis 4.5-5 mm. diam. glabris.

Type in herb. Chi. Nat. Hist. Mus., collected on Gran Sabana, between Kun and waterfall at Rué-merú (tributary of Río Kukenán) south of Mount Roraima, state of Bolívar, alt. 1065 m., October 2, 1944, *Julian A. Steyermark 59136*, "shrub 4-15 feet tall; leaves coriaceous, deep green above, dull brown below; young leaves ferruginous below; fruit dark blue-black."

This species is related to *C. spicata* (H.B.K.) Mez, but differs in having glabrous fruit, more densely lepidote-puberulous petioles, smaller leaf blades with the entire lower surface more or less densely

brown-leprose, and in the midrib of the lower leaf surface densely brown-leprose-puberulent.

***Conomorpha liriensis* Steyermark, sp. nov.**

Frutex 3.6-metralis; ramulis vetustioribus glabrescentibus; petiolis 7-8 mm. longis dense ferrugineo-lepidotis; laminis firme membranaceis supra atroviridibus elliptico-oblongatis vel obovatis apice subito acuminatis basi acuminatis 10-13.5 cm. longis 3-5 cm. latis supra glabris subtus brunneo-lepidotis, marginibus integerrimis vel paullo repandis, costa media subtus prominente dense lepidotis ferrugineis oblecta, nervis secundariis utroque 12-13 ascendentibus prominentibus ante marginem 3-6 mm. anastomosantibus cum rete venularum laxae valde areolatis; inflorescentiis bipinnatim paniculatis 5-7 cm. longis dense ferrugineo-lepidotis, rhachi angulata dense ferrugineo-lepidota; inflorescentiae ramis primariis 4-9 mm. longis; pedicellis 1.6-1.8 mm. longis dense ferrugineo-lepidotis; bracteis spatulato-oblongatis apice rotundatis 1.5-1.7 mm. longis supra medium 0.7-0.8 mm. latis, supra medium et apicem versus crenulatis glandulari-ciliolatis; floribus 4-meris; calyce cupuliformi, tubo 0.5 mm. longo, lobis suborbicularibus rotundatis 1 mm. longis 1 mm. latis crenulatis glandulari-ciliolatis, parce vel obsolete punctatis, extus ferrugineo-lepidotis; corollae lobis ad 1/6 connatis, tubo 0.2 mm. longo, lobis suborbicularibus rotundatis 1.5 mm. longis 1.3-1.4 mm. latis, parce vel obsolete punctatis, marginibus crenulatis ciliolatisque, extus ferrugineo-lepidotis; antheris late deltoideo-subglobosis 0.5 mm. longis 0.5-0.6 mm. latis, filamentis 0.3 mm. longis; ovario subgloboso lepidoto 0.9-1 mm. longo; stylo 0.2-0.3 mm. longo parce lepidoto (Figure 101).

Type in herb. Chi. Nat. Hist. Mus., collected on rich steep wooded slopes, Alto de Lirio, between Bramón and Las Delicias, state of Táchira, alt. 1890-2285 m., July 18, 1944, *Julian A. Steyermark 57456*, "shrub 8 feet tall; leaves firmly membranaceous, dark green above, dull green below with areolation upraised; rachis and pedicel dull lavender; calyx dull lavender below, dull green above,"

With apparently pseudovercillate leaves, this species is a member of subgenus *Microconomorpha* Mez. It is related to *C. perseoides* Mez and *C. pastensis* Mez, both of Colombia. From the former it differs in the shorter filaments, longer pedicels, thinner leaves, and sparsely or obsoletely punctate calyx lobes, while from *C. pastensis* it differs in the shorter pedicels, sparsely and obsoletely punctate calyx lobes, more densely furfuraceous leaves, young stems, pedicels, calyx, and corolla.

***Conomorpha ptariensis* Steyermark, sp. nov.**

Frutex 3.3-5-metralis; ramulis cinereis novellis ferrugineo-lepidotis oblectis vetustioribus glabris; petiolis crassiusculis 10-15 mm. longis glabris punctatis in sicco saltem paullo rugulosis; laminis coriaceis rigidis erectis vel suberectis supra atroviridibus subtus pallido-viridibus vel brunneis spatulatis vel oblongato-spatulatis apice rotundatis vel obtusis interdum emarginatis vel obcordatis basi

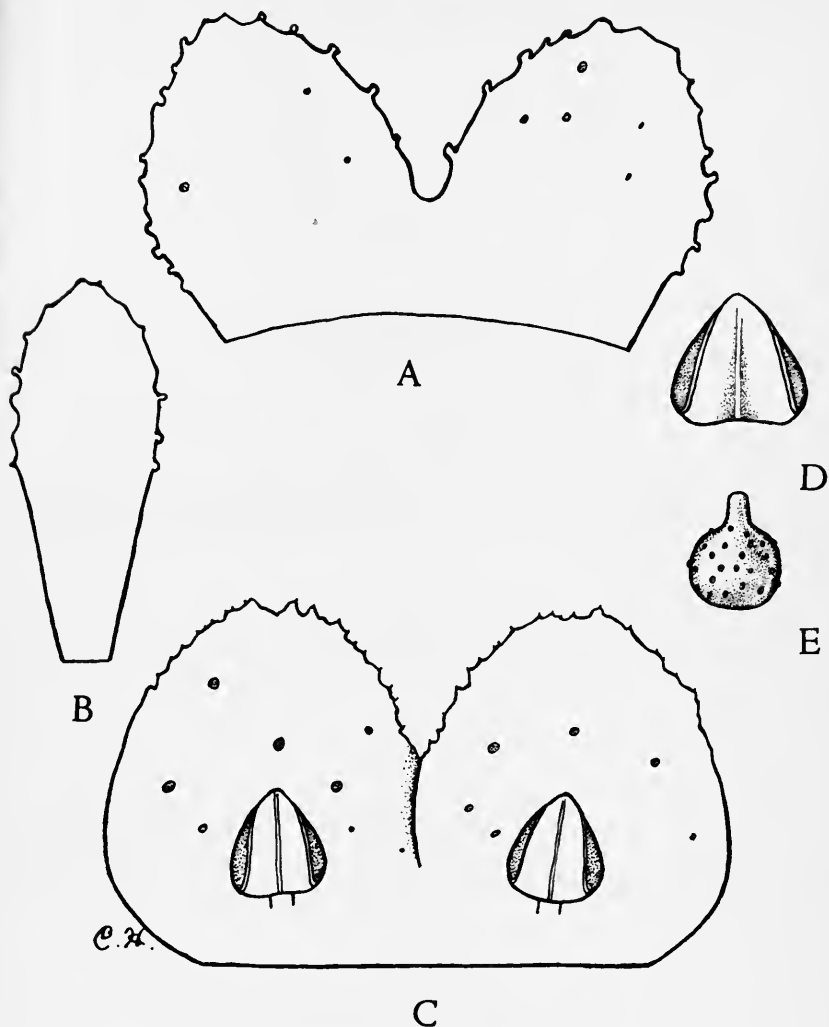


FIGURE 101

Conomorpha liriensis

A, Portion of calyx (X 28); B, Bract (X 29); C, Portion of corolla with stamens (X 27); D, Stamen (X 33); E, Pistil (X 12).

cuneatim angustatis acuminatis 3-7 cm. longis 1.1-3 cm. latis, utrinque glabris subtus minutissime pallido-punctatis, marginibus integerrimis revolutis, costa media subtus prominente, nervis secundariis utroque 10-11 prope marginem anastomosantibus utrinque

subimpressis vel subobsoletis; inflorescentiis racemosis 1-3.3 cm. longis, rhachi ferrugineo-lepidota vel glabrata; pedicellis 0.8-2 mm. longis ferrugineo-glandulari-lepidotis; bracteis lineari-ligulatis apice rotundatis 2.3 mm. longis 0.5 mm. latis extus dense ferrugineo-glandulari-leprosis; floribus 4-meris; calyce cupuliformi, tubo 0.5 mm. longo, lobis basi breviter coalitis ovatis obtusis 2-2.2 mm. longis 1.5 mm. latis marginibus dense glandularibus extus glandulari-lepidotis; corollae tubo 0.3-0.4 mm. longo, lobis prope basin ad 1/7 connatis ovato-oblongis obtusis 1.5 mm. longis 0.9-1 mm. latis intus et ad margines dense papillato-lepidotis; antheris subsessilibus ovato-oblongis obtusis 1.2 mm. longis; filamentis 0.3 mm. longis; ovario late conico 0.9 mm. longo dense lepidoto; stylo lepidoto 0.5 mm. longo (Figure 102).

Type in herb. Chi. Nat. Hist. Mus., collected in scrubby forest on rocky open portion of plateau on southeast-facing slopes, Ptari-tepuí, state of Bolívar, alt. 1600 m., November 1, 1944, *Julian A. Steyermark 59632*, "shrub 15 feet tall; leaves coriaceous, dark green above, pale green below; sepals dull green; pedicels gray-lavender; bracts and young stems ferruginous."

Cotype in herb. Chi. Nat. Hist. Mus., collected in savanna and shrubby growth bordering forest of Río Karuai, between Santa Teresita de Kavanayén and base of Ptari-tepuí, state of Bolívar, alt. 1220 m., November 18, 1944, *Steyermark 60309*, "shrub 10 feet tall; leaves erect, coriaceous, deep green above, dull green below; rachis dull brown-green; fruit and calyx deep green; apex of shoot ferruginous."

Also collected in scrubby forest bordering woods by waterfall, swampy savanna between Río Karuai and Salto de Iraba-naima along Río Karuai, at southwestern base of Ptari-tepuí, state of Bolívar, alt. 1220 m., November 28, 1944, *Steyermark 60697*, "shrub 8 feet tall; leaves coriaceous, deep green above, dull paler green below; rachis dull lavender."

Local name: "wonday-yek."

This species is related to *C. Candolleana* Mez of British Guiana, but differs in the smaller thicker leaf blades rounded at the apex, with immersed and not prominent secondary lateral nerves, shorter inflorescences, and different floral details.

Conomorpha roraimae Steyermark, sp. nov.

Frutex 1.8-3.3-metralis; ramulis juvenilibus densissime ferrugineo-lepidotis vetustioribus dense lepidotis; foliis petiolatis, petiolis 11-15 mm. longis juvenilibus densissime ferrugineo-lepidotis supra canaliculatis; laminis coriaceis novellis subtus densissime fulvo-vel ferrugineo-lepidotis vetustioribus subtus aereo-vel bubalino-viridibus ellipticis utrinque manifeste angustatis apice plerumque obtuse acuminatis vel subobtusis basi acutis vel acuminatis vel interdum subobtusis 4-8.7 cm. longis 1.6-4 cm. latis, marginibus integerrimis valde revolutis, supra glabris vel parce et remote lepidotis punctulis innumeris nigris obtectis, subtus densissime ferrugineo-vel fulvo-lepidotis, costa media supra canaliculata subtus prominente, nervis

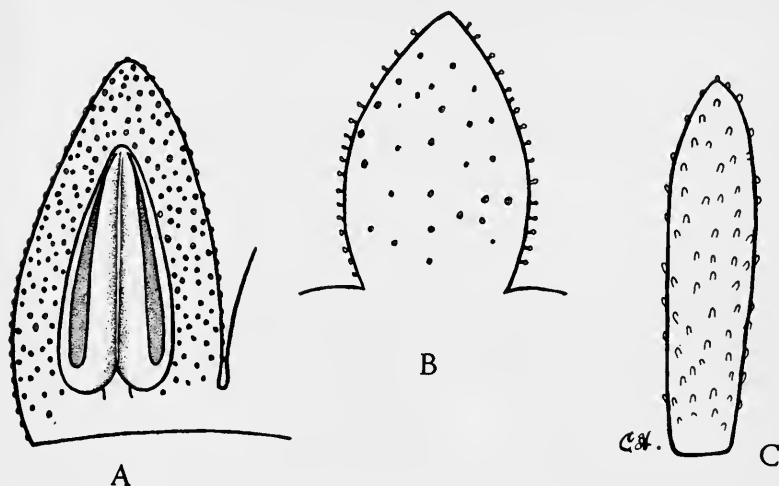


FIGURE 102

Conomorpha ptariensis

A, Portion of corolla with stamen (X 27); B, Portion of calyx (X 18); C, Bract (X 23).

secundariis numerosis utroque 19-32 patento-subadscendentibus supra obscuris subtus prominulis; inflorescentiis racemosis vel subpaniculatis axillaribus cum foliis apices ramulorum versus congestis 2-7 cm. longis 12-23-floris, rhachi densissime ferrugineo-lepidota; bracteis lineari-oblongis vel anguste lanceolatis 1.5-1.8 mm. longis densissime ferrugineo-lepidotis; pedicellis sub anthesi 1.5-2 mm. longis sub fructu 2.25-2.5 mm. longis densissime ferrugineo-lepidotis; floribus 4-meris; calycis tubo 0.5 mm. longo, lobis 4 inaequalibus deltoideo-ovatis apice subacutis 1-1.2 mm. longis 0.6-1.2 mm. latis extus densissime ferrugineo-lepidotis intus glabris; corolla 2-2.3 mm. longa, tubo 0.5-0.6 mm. longo, lobis 4 late ovatis apice obtusis vel rotundatis 1.5-1.8 mm. longis 1-1.2 mm. latis utrinque glabris brunneo-maculatis; staminibus 4 basi corollae loborum insertis, filamentis glabris 0.4-0.5 mm. longis; antheris late deltoideo- vel ovato-oblongis 0.8-1 mm. longis; pistillo sub anthesi 1.3 mm. longo, ovario 0.4-0.6 mm. longo dense lepidoto; stylo crasso subtruncato 0.5-0.8 mm. longo; fructibus depresso-globosis nitidis vinaceo-atropurpureis 4 mm. altis 5 mm. latis lepidotis (Figure 103).

Type (flowering plant) in herb. Chi. Nat. Hist. Mus., collected on Mount Roraima, ascent of ledge along southwest-facing side, from beginning of sandstone bluffs to summit, state of Bolívar, alt. 2255-2620 m., September 27, 1944, Julian A. Steyermark 58759, "shrub 10 feet tall; leaves coriaceous, dull green above, buff-green below on older leaves, buff-ferruginous below on young leaves, rachis, calyx, pedicels, and young petioles."

Cotype (fruiting plant) in herb. Chi. Nat. Hist. Mus., collected at same locality, *Steyrmark 58765*, "shrub 5-8 feet tall; leaves coriaceous, dull green above, bronze green below on older leaves, tawny below on young leaves and petioles; fruit depressed globose, shiny, 5 mm. broad by 4 mm. high, deep wine-purple."

This species is related to *C. lepidota* Gleason from the summit of Mount Duida in having a densely lepidote covering on the stems, petioles, rachis, pedicels, and calyx, and in the 4-merous flowers. It differs principally in the pedicellate flowers, prominulous lateral nerves on the lower leaf surface and less flexuous rachis.

From *C. punctata* Mez (*C. sessilis* A. C. Smith) of the Roraima

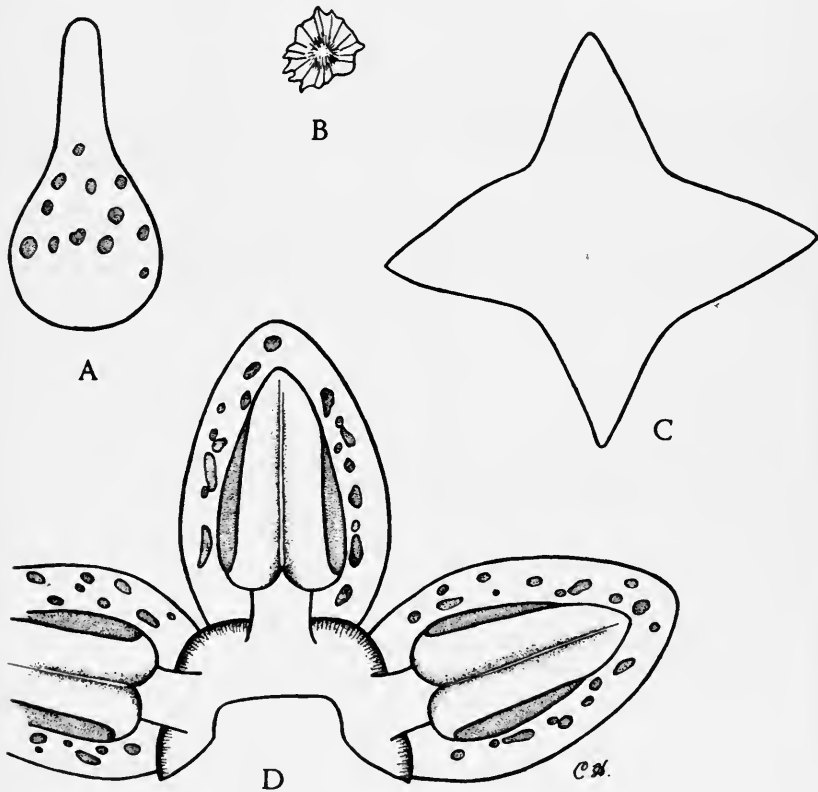


FIGURE 103

Conomorpha roraimae

A, Pistil (X 30); B, Scale from young branch (highly magnified); C, Calyx, opened out (X 18); D, Portion of corolla with stamens (X 28).

region it differs especially in the 4-merous flowers, glabrous inner surface of the corolla lobes, closely lepidote instead of tomentellous type of vestiture, and shorter racemose or weakly paniculate instead of longer subpyramidal paniculate inflorescence.

***Conomorpha sessilantha* Steyermark, sp. nov.**

Frutex 3.3-6.8-metralis; ramulis glabris; petiolis 4-12 mm. longis supra canaliculatis glabris; laminis coriaceis vel subcoriaceis supra atroviridibus subtus pallido- vel argenteo-viridibus obovato- vel oblanceolato-ellipticis apice subito breviter obtuse acuminatis vel subacutis basi acuminatis in petiolum decurrentibus 6-12 cm. longis 2.2-4.5 cm. latis, utrinque glabris marginibus integerrimis, costa media subtus prominente, nervis secundariis utroque 15-22 patentoadscendentibus ante marginem 1-2 mm. anastomosantibus cum rete venularum utrinque prominulo-reticulatis; inflorescentiis racemosis 2.5-4.5 cm. longis, rhachi angulata glabra; pedicellis gracilibus 1-2.5 mm. longis subglabratis vel parce glandularibus; floribus 4-5-meris; calyce cupuliformi, tubo 0.6-1 mm. longo, lobis ad $1/4$ connatis ovatis vel ovato-lanceolatis acutis vel subacutis vel obtusis 1.3-1.6 mm. longis 0.7-1 mm. latis, marginibus glandulari-ciliatis, paullo crenulatis, extus paullo brunneo-lineolato-punctatis vel lepidotis; corolla 3 mm. longa, tubo 1.5-1.6 mm. longo, lobis medium usque connatis late oblongis vel suborbiculari-oblongis vel late ovatis apice rotundatis vel obtusis 1.5-2 mm. longis 1.2-1.5 mm. latis, 8-9 punctulis brunneis præditis, extus glabris, intus lepidotis vel glandulari-papillatis; antheris sessilibus triangulari-oblongis vel ovato-oblongis vel panduriformi-ovatis minute apiculatis vel subito acuminatis 0.8-1 mm. longis; tubo staminali apice truncato; ovario late oblongo-subglobozo vel ovoideo lepidoto 1 mm. longo; stylo 1 mm. longo glabro (Figure 104).

Type in herb. Chi. Nat. Hist. Mus., collected in rich woods near and bordering Quebrada de Palmar, at foot of Páramo de Tamá, 2 kms. above Betania and 7 kms. above Villapaez, state of Táchira, alt. 2500 m., July 14, 1944, *Julian A. Steyermark 57253*, "shrub 20 feet tall; leaves coriaceous, dark green above, pale green below; rachis stramineous tinged pale brick; pedicels same; calyx pale brick to salmon or rose; corolla buff-greenish."

Cotype in herb. Chi. Nat. Hist. Mus., with same locality and data, *Steyermark 57270*, "shrub 10 feet tall; leaves subcoriaceous, deep green above, silvery green below; rachis pale green; calyx greenish-white; corolla stramineous-pale greenish."

The second collection cited (57270) differs in slight particulars of corolla and calyx and in length of pedicels, but is apparently otherwise conspecific.

This species is related to *C. citrifolia* Mez and *C. ampla* Mez in having sessile anthers. It differs from *C. citrifolia* in the glandular-ciliate calyx lobes, rounded or obtuse corolla lobes, and shorter decurrent petioles, while from *C. ampla* it differs in the smaller leaves and racemose inflorescences. From *C. glabra* Mez it may be distinguished by the lepidote ovary.

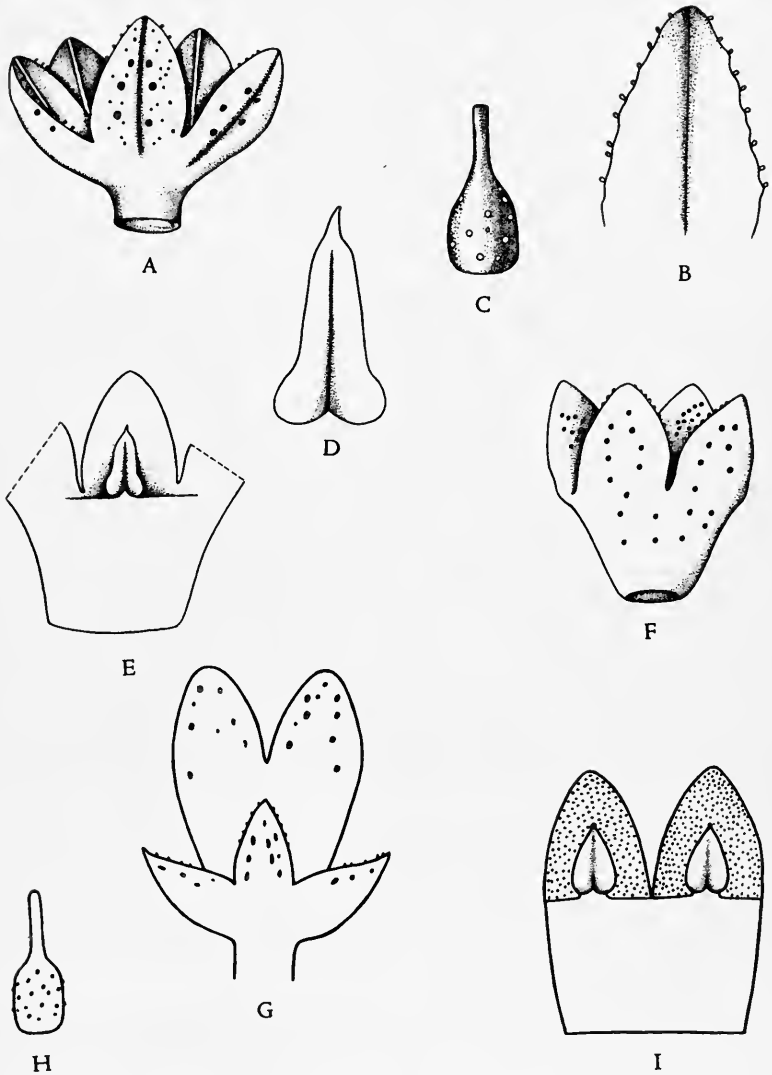


FIGURE 104

Conomorpha sessilanthera

A-F (Steiermark 57270) - G-I (Steiermark 57253)

A, Calyx (X 8.5); B, Calyx lobe (X 18.5); C, Pistil (X 10); D, Anther (X 36); E, Portion of corolla, opened, with stamen (X 8); F, Corolla (X 8); G, Portion of corolla and calyx (X 9.5); H, Pistil (X 10); I, Portion of corolla, opened, with stamen (X 11).

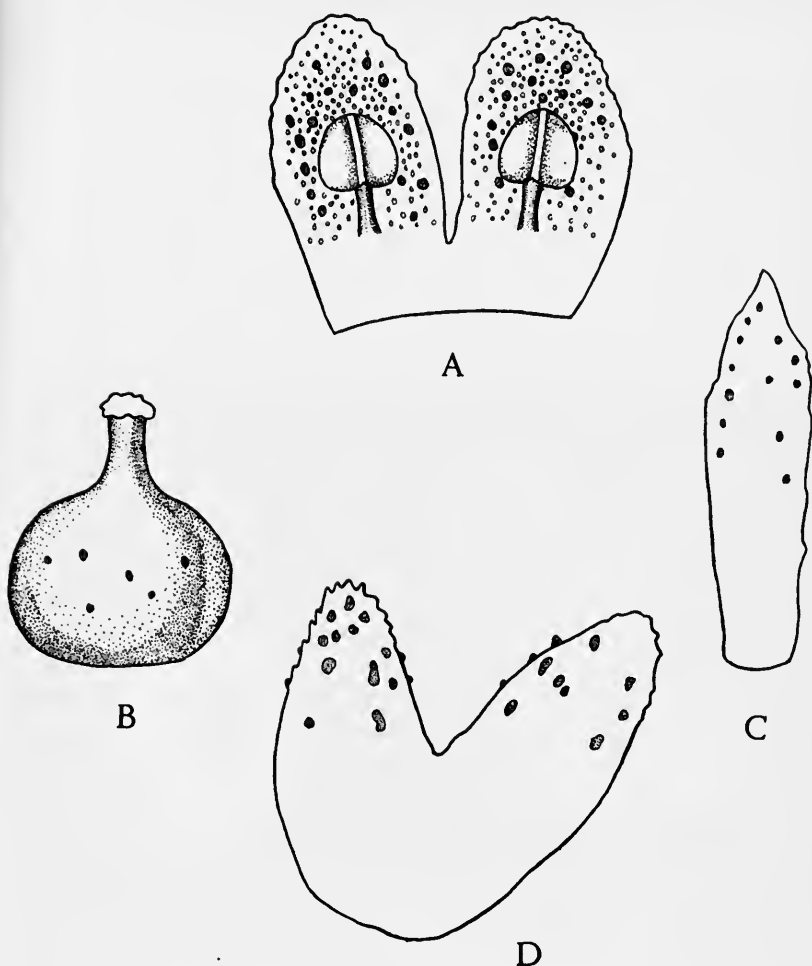


FIGURE 105

Conomorpha sulcata

A, Portion of corolla with stamens (X 11); B, Pistil (X 11); C, Bract (X 8.5); D, Portion of calyx (X 12.5).

Conomorpha sulcata Steyermark, sp. nov.

Frutex 6.8-8.2-metralis; ramulis juvenilibus parce brunneo-lepidotis vetustioribus glabrescentibus; petiolis 14-17 mm. longis basi dilatatis supra canaliculatis lepidotis; laminis firme membranaceis late ellipticis vel obovato-ellipticis 10-18 cm. longis 3.3-7.2 cm. latis utrinque acuminatis, supra glabris subtus parce lepidotis, marginibus integerrimis, costa media supra sulcata subtus prominente, nervis secundariis utroque 9-10 adscendentibus supra valde sulcatis subtus

prominentibus ante marginem 3-8 mm. anastomosantibus, utrinque cum rete venularum areolatis; inflorescentiis bipinnatim paniculatis 4-5.5 cm. longis, rhachi angulata ferrugineo-lepidota; inflorescentiae ramis primariis inferioribus 5-7 mm. longis; pedicellis 2.5-3.5 mm. longis; bracteis spatulato-oblongatis acutis 4 mm. longis 1 mm. latis punctatis glandulari-lepidotis; floribus 4-meris; calyce cupuliformi, tubo 0.7-0.8 mm. longo, lobis 4 vel 5 ovatis obtusis 1.7-1.8 mm. longis 0.9-1 mm. latis, irregulariter glandulari-crenulatis ciliolatis, punctatis; corollae lobis ad $1/5$ connatis, lobis late oblongis rotundatis 2 mm. longis 1.5 mm. latis, punctatis, superne crenulatis, intus lepidotis; antheris 4 subglobosis 0.5-0.6 mm. longis 0.5-0.6 mm. latis; filamentis 0.5-0.6 mm. longis; ovario subgloboso 1-1.5 mm. longo parce punctato parcius lepidoto; stylo 0.6-0.7 mm. longo parcius lepidoto; ovulis 4; fructu atro-purpureo globoso 6 mm. diametro (Figure 105).

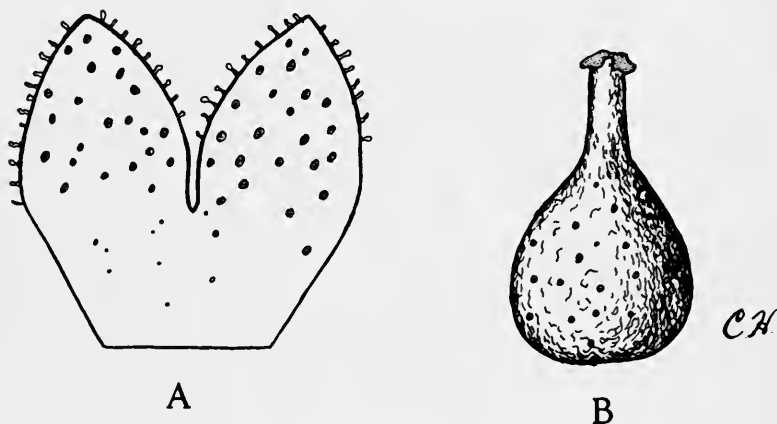


FIGURE 106

Conomorpha tamana

A, Portion of calyx (X 15); B, Pistil (X 15).

Type in herb. Chi. Nat. Hist. Mus., collected in woods above Betania below Páramo de Tamá, state of Táchira, alt. 2530 m., July 17, 1944, *Julian A. Steyermark* 57435, "shrub; fruit black purple; flowers green; leaves deeply sulcate above."

Cotype in herb. Chi. Nat. Hist. Mus., collected in rich woods near and bordering Quebrada de Palmar, at foot of Páramo de Tamá, 2 kms. above Betania and 7 kms. above Villapaez, state of Táchira, alt. 2500 m., July 14, 1944, *Steyermark* 57256, "shrub 20-25 feet tall; leaves firmly membranaceous, dull green above with deeply sulcate nerves and areolation, dull paler green below with raised nerves and areolation; rachis dull green as are pedicels; perianth pale dull greenish-white."

This species, related to *C. pastensis* Mez, is exceptional in having mostly 4-merous flowers throughout, but differs from that species in having larger flowers, entire broader leaf-blades, and more densely and more abundantly flowered inflorescence.

Conomorpha tamana Steyermark, sp. nov.

Frutex 3.3-5-metralis; ramulis novellis peradpresse lepidotis vel glabris vetustioribus glabris; petiolis 4-12 mm. longis supra canaliculatis glabris vel lepidotis; laminis subcoriaceis vel coriaceis rigidis elliptico-oblongatis vel obovatis apice obtuse acutis vel subacutis basi cuneatim acuminatis 5.5-9.5 cm. longis 1.7-4.2 cm. latis, supra glabris atropunctatis subtus densiuscule punctulis lepidotis fusco-badiis obtectis, marginibus revolutis integerrimis vel subintegerrimis, costa media supra sulcata subtus prominente, nervis secundariis utroque 15-17 supra paullo sulcato-impressis vel subobsoletis subtus

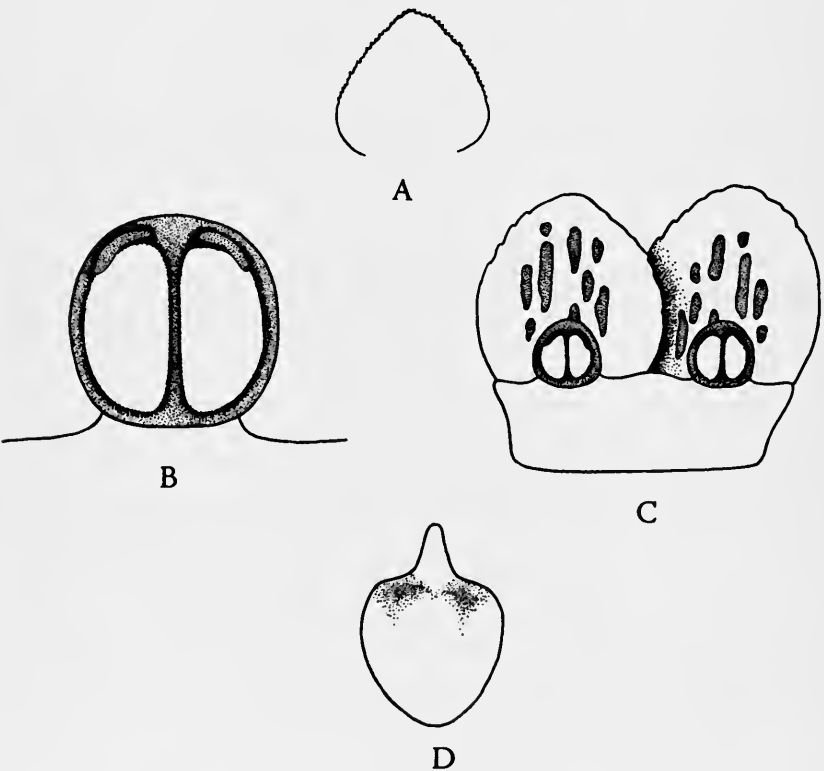


FIGURE 107

Grammadenia ptariensis

A, Calyx lobe (X 13); B, Attached stamen (X 55); C, Portion of corolla with stamens (X 17); D, Pistil (X 14).

prominulis prope marginem anastomosantibus; inflorescentiis racemosis 1.7-4 cm. longis, rhachi angulata parce atro-vel fusco-lepidota; pedicellis 2-2.5 mm. longis parce vel prominente atro-vel fusco-lepidotis; calyce cupuliformi, tubo 1 mm. longo, lobis 5 ultra $1/3$ coalita late ovatis obtusis vel subobtusis 1.5 mm. longis 1 mm. latis atro-punctatis, marginibus valde ciliatis; corolla non visa; ovario subgloboso verruculoso-lepidoto 1.3-1.4 mm. longo; stylo 0.9-1 mm. longo; fructu subgloboso 5-10 mm. diametro (Figure 106).

Type in herb. Chi. Nat. Hist. Mus., collected in rich moist woods at base of Páramo de Tama, 4-10 kilometers above Betania, state of Táchira, alt. 2500-2895 m., July 15, 1944, *Julian A. Steyermark 57359*, "shrub 15 feet tall; leaves subcoriaceous, dark green above, dull green below; fruit dull red, 5 mm. in diameter, subglobose."

Another collection of what is apparently the same species in a later fruiting stage was collected in the same locality as the type. It is: with same locality and date, *Steyermark 57354*, "shrub 10 feet tall; fruit globose, shining, purple black, 1 cm. in diameter; leaves stiffly coriaceous, deep green above, pale green below." This second collection is more densely lepidote on the young stems, petioles, inflorescence, and leaves.

The new species is related to *C. caracasana* Mez, but the pedicels are longer, the lateral nerves on the lower leaf surface much more prominent, the leaf blades are smaller, the calyx lobes are more densely black-punctate, and more prominently glandular-ciliate on the margins.

***Grammadenia ptariensis* Steyermark, sp. nov.**

Frutex 0.8-1.2-metralis; ramulis crassis glaberrimis saltem in sicco angulatis; foliis dense confertis coriaceis sessilibus subtus pallido-viridibus oblanceolatis vel anguste oblongo-oblanceolatis apice obtusis vel rotundatis mucronulatisque basi paullo angustatis, 3-5.2 cm. longis 8-16 mm. latis, marginibus integerrimis subrevolutis, costa media subtus prominente, supra nitidis subtus manifeste atro-punctato lineatoque; inflorescentiis 8-10-floris erectis densiuscule racemosis 3.2-3.8 cm. longis, foliis paullo brevioribus, rhachi glabra; pedicellis 1-2.5 mm. longis minute glanduloso-puberulentibus; bracteis late ovatis rotundatis 1.5 mm. longis extus parce minute glandulosis glandulari-ciliolatis pallido-vel brunneo-punctatis; floribus 2-2.5 mm. longis 3-4.5 mm. diam.; sepalis $1/4$ - $1/3$ connatis, calycis tubo 0.6 mm. alto glabro, lobis late ovatis obtusis vel rotundatis 1.5 mm. longis 1.5 mm. latis, extus parce minute glandulosis glandulari-ciliolatis haud vel pallido-punctatis; petalis basi breviter coalitis, corollae tubo 1 mm. alto, lobis suborbiculari-ovalibus apice late rotundatis 2-2.2 mm. longis 1.9-2 mm. latis supra medium minute crenulato-fimbriatis pallido-vel brunneo-maculatis; antheris sessilibus dorso haud maculatis; filamentis in tubum 1 mm. altum plus minusve subtruncatum cum petalis connatis; ovario glabro globoso-obovoideo 1.25-1.4 mm. longo; stylo 0.5 mm. longo; stigmatibus obtusis; fructu non viso (Figure 107).

Type in herb. Chi. Nat. Hist. Mus., collected on forested south-facing slopes overlying sandstone, on "Cave Rock" above "Cave Camp," Ptari-tepuí, state of Bolívar, alt. 1810 m., October 29, 1944, *Julian A. Steyermark 59497*, "shrub 2-4 feet tall; leaves coriaceous, subrevolute, the sides above convex, deep green above, pale green below; corolla pale greenish white; stamens golden; stems lavender-brown."

The dwarf habit, oblong-oblongate obtuse leaves, scarcely or slightly narrowed below the middle, with the lower surface dark punctate, the pale or only light brown, instead of black, punctate calyx and corolla lobes, the anther not punctate dorsally, the subtruncate or only faintly lobulate margin of the staminal tube, glabrous rachis of the inflorescence, and relatively short pedicels distinguish this species from previously described ones. It appears most closely related to some Andean species, such as *G. Lehmanii* Mez.

Rapanea minima Steyermark, sp. nov.

Frutex 1.8-2.8-metralis; ramulis glabris; petiolis vinaceo-purpureis 3-6 mm. longis glabris supra canaliculatis; laminis coriaceis supra atroviridibus subtus pallido-viridibus obovato-oblongis vel oblongo-spatulatis rotundatis plerumque emarginatis basi cuneatim angustatis in petiolum valde decurrentibus 10-23 mm. longis 5-12 mm. latis utrinque glabris marginibus valde revolutis, subtus punctulis prominulis obscuris obtectis, costa media supra canaliculata subtus prominente, nervis secundariis utroque obsoletis; inflorescentiis umbellulatis paucifloris; pedicellis 1-2 mm. longis glabris; floribus 5-meris; sepalis ad $\frac{1}{3}$ connatis, lobis ovato-triangularibus acutiusculis 1-1.2 mm. longis 0.7-0.8 mm. latis, marginibus glabris subintegerrimis vel obsolete subcrenatis, extus utrinque glabris, lineis 2-4 perlongis atque punctulis praeditis; petalis rosaceis ad 0.5 mm. connatis, lobis linearibus vel lineari-oblongis rotundatis 2.5-3 mm. longis 1-1.2 mm. latis, marginibus dense papillois, lineis atque punctulis badiis perconspicuis praeditis; antheris petalis brevioribus late oblongis 1.3-1.5 mm. longis 0.8 mm. latis; ovario floris masculi valde reducto conico crasso (Figure 108).

Type in herb. Chi. Nat. Hist. Mus., collected in shrubby growth among morros on summit of Mount Roraima, on northwest portion north and northwest of Summit Camp, state of Bolívar, alt. 2620-2740 m., September 27, 1944, *Julian A. Steyermark 58848*, "shrub 5-8 feet tall; leaves revolute, coriaceous, dark green above, pale green below; petioles wine-purple; calyx dull rose-brown; petals rose."

This species resembles *R. dependens* (R. & P.) Mez in having small leaves, but is easily distinguished from that species by the 5-merous flowers and glabrous branches and leaves. It is distinguished from the other new species of Roraima described below in its smaller non-reticulate leaves, glabrous young stems, and entire or subentire calyx lobes.

Rapanea reticulata Steyermark, sp. nov.

Frutex 2.8-3.3-metralis; ramulis teretibus, vetustioribus glabris,

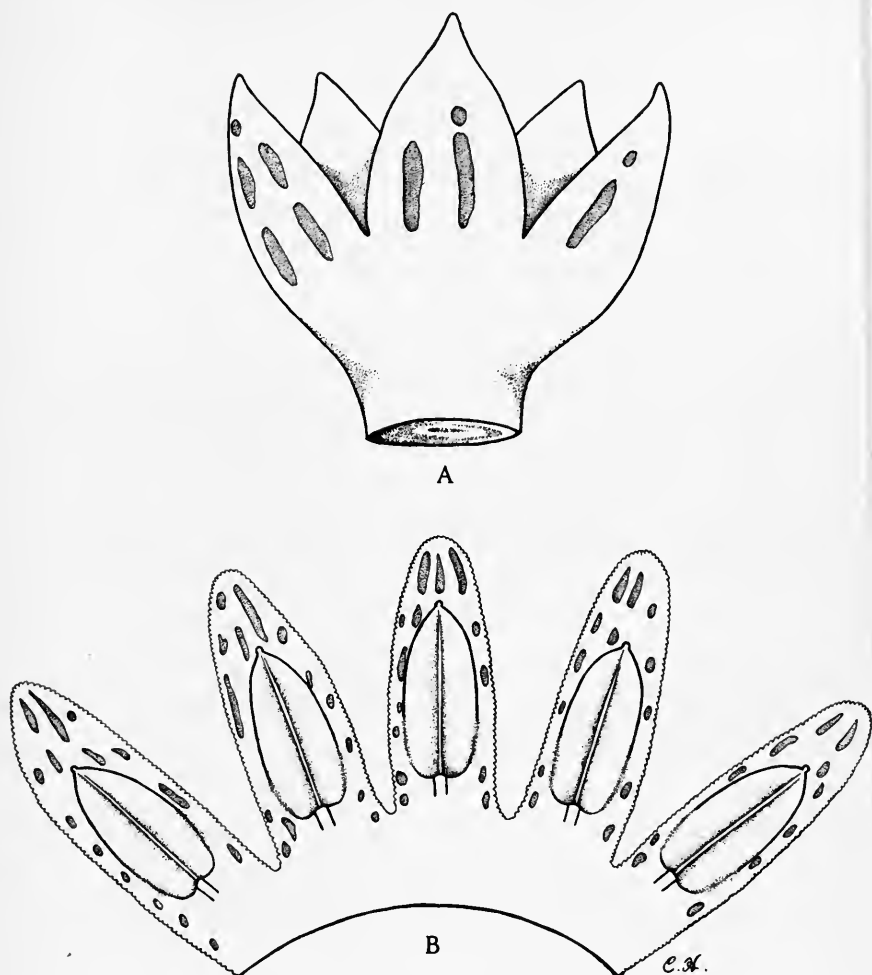


FIGURE 108

Rapanea minima

A, Calyx (X 27); B, Corolla, opened, from within (X 18).

novellis saltem apice ferrugineo-tomentellis; petiolis 4-5 mm. longis supra subcanaliculatis superne anguste alatis glabris vel novellis tomentellis; laminis coriaceis supra atroviridibus elliptico-vel oblongo-obovatis vel obovatis apice rotundatis vel obtusis basi acutis vel subacutis 1.5-4.2 cm. longis 0.8-1.6 cm. latis, marginibus conspicue revolutis, subtus conspicue punctatis, costa media supra sulcata glabra vel interdum parce adpresso-pilosis subtus prominente

glabra, nervis lateralibus utroque 10-14 adscendentibus utrinque prominulis venulis utrinque conspicue nitidulo-reticulatis, faciebus utrinque glabris; inflorescentiis fasciculatis 2-3-floris; bracteis late ovatis subobtusis 1.25-1.5 mm. longis minute ciliolatis; florum foemineorum pedicellis sub fructu 1.25-1.5 mm. longis glabris; calycis lobis 5 ad 1/5-1/4 longitudinem connatis late ovatis obtusis 1 mm. longis 1 mm. latis ciliolatis paucipunctatis vel lineolatis; corolla non visa; fructibus subglobosis atrocyaneo-nigris 3-3.5 mm. diametro.

Type in herb. Chi. Nat. Hist. Mus., collected in open thickets on southwest-facing forested slopes, Mount Roraima, between Rondón Camp and base of sandstone bluffs, state of Bolívar, alt. 2040-2255 m., September 30, 1944, *Julian A. Steyermark 58983*, "shrub 8-10 feet tall; leaves revolute, coriaceous, dark green above, dull paler green below; fruit becoming blue-black."

The relatively small leaf-blades of this species are reminiscent of the group of species which include *R. dependens* (R. & P.) Mez and *R. myrtoides* (Hook.) Mez, from which it may be distinguished by the 5 instead of 4 calyx lobes. It resembles in some respects *R. parvifolia* (A. DC.) Mez of southern Brazil, from which it differs in the prominently reticulate-veined leaf-blades and ferruginous-tomentelose young twigs, while from *R. emarginella* (Miq.) Mez of Brazil it may be distinguished by the tomentum of the young twigs and lower midrib. From *R. nitida* Mez of Mount Roraima it may be separated by the smaller leaf-blades, which are rounded or obtuse at apex, obtuse calyx lobes, and tomentum of the young branchlets.

Stylogyne turumiquirensis Steyermark, sp. nov.

Arbor 7-12-metralis; ramulis glabris; petiolis 5-10 mm. longis glabris; laminis coriaceis late ellipticis utrinque acutis interdum apice obtuse acutis in petiolum prominente decurrentibus 12-19 cm. longis 5.5-7.5 cm. latis, marginibus integerrimis utrinque glabris utrinque obscure punctulis obtectis, nervis lateralibus utroque 17-23 anastomosantibus praesertim subtus nervis tertiariis venulisque prominulo-reticulatis; inflorescentiis multifloris compacte paniculatis terminalibus sub anthesi 5.5 cm. longis sub fructu ad 13 cm. longis, rhachi glabra; pedicellis robustis sub anthesi 3 mm. longis sub fructu 5-8 mm. longis, glabris; floribus 5-meris; calycis tubo brevissimo 0.5-0.7 mm. longo, lobis 5 fere omnino liberis late ovatis rotundatis 1.8 mm. longis 1.3-1.5 mm. latis, marginibus irregulariter minute crenulatis, glabris, secundum margines punctatis; corollae tubo 1.1-1.3 mm. longo, lobis 5 squarrosis ovalibus vel late ovato-oblongis rotundatis 3 mm. longis 2-2.3 mm. latis, apicem versus paulo crenulatis, glabris, prope apicem marginesque parce punctatis; staminibus 5 lobis corollae brevioribus; filamentis basi corollae loborum insertis 1.5 mm. longis antheris subaequantibus glabris; antheris late ovatis acutis apiculatis 1.5 mm. longis; ovario pyriformi-ovoideo 3-ovulato; fructu nitido vinaceo-rubro vel nigro subgloboso 8 mm. diametro (Figure 109).

Type in herb. Chi. Nat. Hist. Mus., collected on Cerro Turumiquire, north-facing slopes above La Trinidad in cloud forest zone, south-

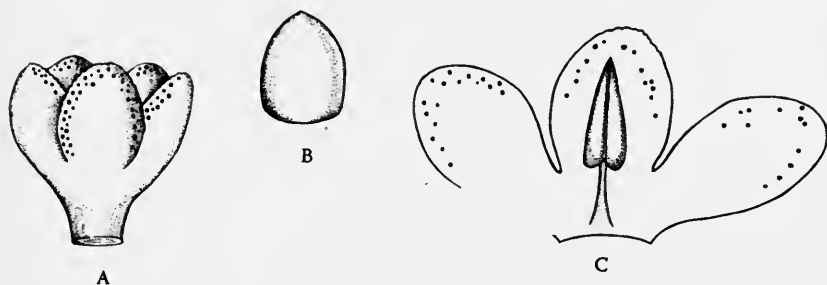


FIGURE 109

Stylogyne turumiquirensis

A, Calyx (X 8); B, Ovary (highly magnified); C, Portion of corolla with stamen (X 6).

west of Cocollar, state of Sucre, alt. 2100-2200 m., May 5, 1945, Julian A. Steyermark 62539, "common understory, small tree 20-35 feet tall; leaves coriaceous, deep green above, dull paler green below; fruit edible, turning wine-red to black and shining; flowers buff white with recurved lobes."

This species is similar to *S. reticulata* Mez of Colombia in having acute anthers and in the filaments inserted near the base of the corolla tube. It differs from that species in the shorter pedicels, broader and differently shaped corolla lobes, and in the broader leaves.

SAPOTACEAE²⁷*Chrysophyllum Steyermarkii* Monachino, sp. nov.

Arbor 7-8-metralis; petiolis 5-9 mm. longis; laminis chartaceis vel membranaceis supra lucidis subtus pallido brunneis nerviis fulvis, subellipticis basi obtusis vel subcuneatis apice acuminato-caudatis 5-15 cm. longis 2-4.4 cm. latis, novellis rufo-sericeis saltem glabrescentibus, nervis lateralibus ca. 16 jugis; inflorescentiis axillaribus fasciculatis, plerumque 6-12-floris; floribus foemineis; pedicellis gracilibus 4-5 mm. longis rufo-sericeis; calyce ca. 2 mm. lato extus sericeo intus parce strigoso, lobis late ovatis 1.3-1.7 mm. longis apice plerumque obtusis interioribus ciliatis; corolla glabra cylindrica ca. 3 mm. longa, lobis tubo fere aequantibus; pistillo conico ca. 2-3 mm. longo, ovario hirsuto, cellulis 5 (vel 4), ovulis basali-axillaribus; fructibus ellipsoideis 2.5-3.3 cm. longis 1.3-1.7 cm. crassis parce pubescentibus, semine solitario ca. 14 mm. longo 11

²⁷By Joseph Monachino

mm. crasso, cicatrice late elliptica 13 mm. longa 8 mm. lata, albimine tenue, cotyledonibus crassis ca. 8 mm. longis 7 mm. latis, radícula ca. 2 mm. longa.

Tree; branchlets slender, rufous-brown-strigose when young, petioles 5-9 mm. long; blades chartaceous or membranaceous, shining above, drying light brown beneath with principal nerves usually tending to orange, subelliptic, obtuse or subcuneate at base, acuminate-caudate at apex, 5-12 cm. long, 2-4.4 cm. broad, rufous-sericeous when young, hairs appressed, the longer ones up to 0.6-0.8 mm. long, glabrescent at maturity, the principal lateral nerves ca. 16 pairs, 5-10 mm. apart near middle of blade, distinct from the veinlets, arcuate near margins; inflorescences axile, fasciculate, usually 6-12-flowered; only pistillate flowers seen; pedicels slender, 4-5 mm. long, rufous-sericeous; calyx ca. 2 mm. broad, sericeous outside, the lobes broadly ovate, 1.3-1.7 mm. long, mostly obtuse at apex, sparsely strigose within, the inner lobes ciliate; corolla glabrous, cylindric, ca. 3 mm. long, the lobes about equalling the tube; pistil conic, ca. 2.3 mm. long, ovary hirsute, cells 5 (or 4), ovules basal-axile; fruits ellipsoid, 2.5-3.3 cm. long, 1.3-1.7 cm. thick, sparsely hairy, seed solitary, ca. 14 mm. long, 11 mm. thick, scar broadly elliptic, 13 mm. long, 8 mm. broad, endosperm rather thin, cotyledons thick, ca. 8 mm. long, 7 mm. broad, radicle ca. 2 mm. long.

Type in herb. N.Y. Bot. Gard., isotypes in herb. Chi. Nat. Hist. Mus. and Herb. Nac. de Venezuela, collected in woods 1-10 kms. northwest of Umeta, on road to San Felix, between Umeta and Altigracia, state of Bolívar, alt. 700 m., July 31-August 1, 1944, Julian A. Steyermark 57717, "tree 20-25 feet tall; leaves deep dark green above, pale green below; calyx pale green; petals pale greenish."

Paratypes (fruiting specimens) in herb. Chi. Nat. Hist. Mus., collected on wooded ridge, Quebrada Bonita, tributary of Río Querecual, northeast of Bergantín, state of Anzoátegui, alt. 1200 m., February 17, 1945, Julian A. Steyermark 60975, "vining shrub 20 feet tall; leaves dull green above and below; fruit greenish, turning yellow, eaten by birds, also used as remedy for *mal de hojo*, especially for small children;" in herb. Nac. de Venezuela, collected at place called Alaska, vicinity of Umeta, state of Bolívar, January 25, 1939, E. Delgado 212, "pascualito."

This species differs from *Chrysophyllum parvulum* Pittier in its much smaller flowers, in which the corolla lobes and tube are almost equal in length. The leaves have lateral nerves which stand out distinctly and are arcuate near the margins. The blades usually dry paler beneath than in the type of *C. parvulum*, and the indumentum is of longer hairs.

The Delgado collection is cited by Cronquist (Bull. Torr. Bot. Club 73: 299. 1946) under *C. parvulum*. The local name cited by Cronquist for *C. parvulum* was probably obtained from the Delgado plant, and fruit characters described were also derived from the same.

Micropholis Steyermarkii Monachino, sp. nov.

Arbor 25-metralis; ramulis novellis badio-strigoso-tomentosis;

foliis saepe oppositis; petiolis 6-15 mm. longis; laminis subcoriaceis subtus pallido-glaucis mox glabris oblongo-ellipticis basi late cuneatis vel subrotundatis apice breviter caudatis vel rotundatis 6-12 cm. longis 2.5-5 cm. latis, nervis lateralibus principalibus numerosis saltem 30 jugis rectis patentibus subtus paullo prominentibus, obscure reticulatis; inflorescentiis axillaribus fasciculatis multifloris; pedicellis 3.5-4 mm. longis strigosis; sepalis 5 fere ad basin distinctis basi paullo imbricatis deltoideis ca. 1 mm. longis et latis apice acutis extus dense badio-strigoso-tomentosis; corolla extus dense strigoso-tomentosis, tubo fere 1 mm. longo, lobis 5 ca. 2 mm. longis lanceolatis apice acutis valde incurvatis; staminodiis crassis lanceolatis carinatis ca. 1 mm. longis apice acutis incurvatis; filamentis brevibus fauce tubi corollae insertis, antheris ca. 0.8 mm. longis extrorsis; pistillo 2 mm. longo, ovario hirsuto, tuberculis apice styli obscuris; cellulis 4, ovulis axillari-basalibus.

Tree; young branches chocolate-brown strigose-tomentose; leaves frequently opposite; petioles 6-15 mm. long; blades subcoriaceous, glaucous-pale beneath (microscopically papillose), soon almost glabrous, oblong-elliptic, broadly cuneate or sub-rounded at base, short-caudate or rounded at apex, 6-12 cm. long, 2.5-5 cm. broad, principal lateral nerves numerous, over 30 pairs in matured leaves, with fainter parallel nerves in between, almost straight and at right angle to the midrib, slightly raised beneath, reticulation obscure; inflorescence axile in the new growth, fasciculate, many-flowered; pedicels 3.5-4 mm. long, strigose; sepals 5, free almost to base, slightly imbricate at base, deltoid, ca. 1 mm. long and about as broad, acute at apex, densely chocolate-brown strigose-tomentose outside, strigose within; corolla densely strigose-tomentose outside like the sepals and pedicels, the tube almost 1 mm. long, the lobes 5, about 2 mm. long, lanceolate, the apex acute, strongly incurved; staminodes thick, lanceolate, keeled, ca. 1 mm. long, the apex acute, incurved; filaments short, inserted at mouth of corolla-tube, anthers ca. 0.8 mm. long, extrorse; pistil 2 mm. long, ovary hirsute, stigmatic points on tip of style obscure, cells 4, ovules axile-basal.

Type in herb. N.Y. Bot. Gard., isotype in herb. Chi. Nat. Hist. Mus., collected in dense forest at base of cerro along Rio Karuai, Ptari-tepuí, state of Bolívar, alt. 1220 m., November 27, 1944, *Julian A. Steyermark 60650*; "tree 80 feet tall; leaves deep green above, silvery gray below with dull brown midrib, 'cuipa-yek.' "

In the glaucous appearance of the underside of its leaves, this species suggests *Oxythece*. *Micropholis* is treated as a section under *Pouteria* by Baehni (in Candollea, 1942). In a very broad sense, the present species is *Pouteria Steyermarkii* Monachino.

Only the descriptions of *Micropholis eugeniaefolia* Pierre were available. The leaves are described as acuminate at apex, the pedicels 5-7 mm. long, the staminodes puberulent, the anthers exserted. No mention is made of incurvature of the corolla lobes, a character so striking in our species. The specimen "Melinon (1863)" which has been distributed as *Micropholis eugeniaefolia* by Herb. Mus.

Paris is probably *Chrysophyllum nitidum* G.F.W. Mey.

Oxythece rigidopsis Monachino, sp. nov.

Arbor 8-16-metralis; inflorescentiis axillaribus fasciculatis a ligno vetustiori oriundis; floribus multis minute adpresso-pubescentibus; pedicellis 7-9 mm. longis minute strigosis; sepalis 5 (vel 6) ovatis apice obtusis extus strigosis, tubo 1-1.3 mm. longo, lobis 5 (vel 6) ovatis apice rotundatis vel obtusis ca. 2.3 mm. longis; staminodiis 2 deltoideis squamosis parvis vel obsoletis vel nullis; filamentis basi loborum corollae insertis ca. 0.5-0.7 mm. longis; antheris introrsis ca. 1 mm. longis; pistillo ovoideo-conico 2.5 mm. longo, ovario hirsuto, cellulis 2, ovulis axillari-basalibus.

Leaves almost identical with those of *O. rigida*; inflorescence axile on old wood, fasciculate, flowers numerous, minutely appressed pubescent; pedicels 7-9 mm. long, minutely strigose; sepals 5 (or 6) ovate, obtuse at apex, strigose outside, the tube 1-1.3 mm. long, the lobes 5 (or 6), ovate, rounded or obtuse at apex, ca. 2.3 mm. long; staminodes 2, deltoid, scale-like, small, or vestigial, or lacking; filaments attached at base of corolla-lobes, ca. 0.5-0.7 mm. long, anthers introrse, ca. 1 mm. long; pistil ovoid-conic, 2.5 mm. long, the ovary hirsute, cells 2, ovules axile-basal.

Type in herb. N.Y. Bot. Gard., isotype in herb. Chi. Nat. Hist. Mus., cloud forest of Fila Grande, headwaters of Quebrada La Tigra, Cerro San José, between Bergantín and Cerro Peonía (Cerro Los Pajaritos), state of Anzoátegui, alt. 1800-1850 m., March 19, 1945, Julian A. Steyermark 61539, "tree 50 feet tall, leaves deep green above, paler green below, pedicels and calyx pale green, corolla creamy white."

Additional specimens examined (flowers very immature), in herb. N.Y. Bot. Gard. and in herb. Chi. Nat. Hist. Mus., south-facing steep slopes, on rocky exposed shrubby portion of knife-edge ridge above tree zone, Cerro Peonía, above Santa Cruz, headwaters of Río Manantiales, east of Bergantín, state of Anzoátegui, alt. 1800-2000 m., March 20, 1945, Julian A. Steyermark 61618, "tree 25-30 feet tall, leaves deep green and shining above, gray-green below, young leaves and stems fulvous green, flowers in bud fulvous green;" El Páramo, northeast of Las Delicias, northeast of Caripe, state of Monagas, alt. 1200-1450 m., April 13, 1945, Julian A. Steyermark 62043, "tree 50 feet tall, leaves erect, deep green and shining above, bronze or paler green below with pale brownish color, flower buds and pedicels brownish green, sap milky."

This novelty is vegetatively hardly distinguishable from *Oxythece rigida* (Mart. & Eichl.) Monachino, comb. nov. (= *Lucuma rigida* Mart. & Eichl. in Mart. Fl. Bras. 7: 73. 1863). However, the flowers are quite different; the pedicels are over twice as long (they are less than 3 mm. long in *O. rigida*) and the indumentum of the pedicels and sepals is of closely appressed hairs, while that of *O. rigida* consists of a much looser tomentum.

Species of *Oxythece* have vacillated between *Chrysophyllum* and

Pouteria, both nomenclaturally and in natural flower characters. In the broad sense entertained by Baehni and Eyma, our plant is *Pouteria rigidopsis* Monachino.

Oxythece scrobiculata Monachino, sp. nov.

Arbor 10-16-metralis; ramulis novellis minute fulvo-strigosis; petiolis 6-11 mm. longis supra complanatis; laminis tenuiter coriaceis scrobiculatis subtus pallido-glaucis parce strigosis plerumque elliptico-oblongatis basi cuneatis apice rotundatis vel obtusis vel emarginatis 3-7 cm. longis 1.5-2.5 cm. latis, costa media supra prominente, nervis lateralibus ca. 12-15 jugis obscuris subtus paullo prominulis, venis transversis plerumque obscuris; inflorescentiis axillaribus fasciculatis a ligno vetustiori; floribus immaturis; pedicellis ca. 5 mm. longis fulvo-sericeis pilis minute adpressis; sepalis 5 ovatis apice subacutis ca. 1.5 mm. longis extus sericeis intus strigosis; corolla glabra, tubo brevissimo, lobis ovatis 1.3 mm. longis; staminodiis non visis; antheris ca. 8 mm. longis; ovario hirsuto, cellulis 2.

Tree; young branches minutely fulvous strigose; petiole 6-11 mm. long, flattened above; blades thinly coriaceous, scrobiculate, glaucous-pale beneath, sparsely strigose, in the type elliptic-oblongate, cuneate at base, rounded or obtuse or emarginate at apex, 3-7 cm. long, 1.5-2.5 cm. broad, midrib slightly raised above, lateral nerves about 12-15 pairs, faint, slightly raised beneath, connecting veins mostly obscure; inflorescence axile on last year's growth, fasciculate; flowers immature; pedicels ca. 5 mm. long, fulvous sericeous with minute appressed hairs; sepals 5, ovate, subacute at apex, ca. 1.5 mm. long, sericeous outside and also strigose within; corolla glabrous, the tube very short (undeveloped), the lobes ovate, 1.3 mm. long; staminodes not seen; anther ca. 8 mm. long; ovary hirsute, cells 2.

Type in herb. N.Y. Bot. Gard., isotype in herb. Chi. Nat. Hist. Mus., collected on upper drier portion of forest below mesa, wooded slopes of Quebrada O-paru-má, between Santa Teresita de Kavanayén and Río Pacairao (tributary of Río Mauak), state of Bolívar, alt. 1065-1220 m., November 20-21, 1944, *Julian A. Steyermark 60355*, "small tree 30 feet tall, deep green above and shining, silvery green below, pedicels and calyx yellow green, 'pora-to-rai-yek.'"

Additional specimens examined in herb. N.Y. Bot. Gard. and herb. Chi. Nat. Hist. Mus., with very immature flower buds collected on steep wooded slopes just below dry ridge and shrubby growth, Ptaritepui, southeast-facing slopes, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Julian A. Steyermark 60007*, "tree 50 feet tall, leaves deep green and shining above, silvery green below, midnerve below, petioles, and young stems ferruginous, sepals and pedicels yellow-brown tomentose, 'tec-u-len-yek'"; sterile collected same locality and date as preceding, *Julian A. Steyermark 60009*, "tree 25-30 feet tall."

In 60007 and 60009 the blades are obovate to elliptic and short caudate at apex, 4-12 cm. long, 2-4.5 cm. broad.

The scrobiculate or blistered leaves and closely sericeous pedicels and calices of this species suggest the West Indian *Oxythece pallida* (Gaertn. f.) Cronquist, but the latter is easily distinguished by the manifest impressed reticulation on the upperside of its leaves. In a greatly extended concept of *Pouteria*, our plant should be called *Pouteria scrobiculata* Monachino.

Oxythece Steyermarkiana Monachino, sp. nov.

Frutex 3-5-metralis; ramulis novellis glabrescentibus; petiolis brevissimis ad 5 mm. longis; laminis coriaceis supra lucidis subtus pallidis glabrescentibus obovatis basi cuneatis apice rotundatis vel paullo emarginatis, marginibus involutis 3-6 cm. longis 1.5-3.5 cm. latis, costa media supra plerumque prominente, nervis lateralibus supra paullo prominentibus, subtus obscuris, ca. 12 jugis; inflorescentiis axillaribus fasciculatis a ligno vetustiori, floribus numerosis plerumque glabris; pedicellis 3-5 mm. longis; sepalis 5 orbiculari-ovatis ca. 2.3 mm. longis et latis, apice rotundatis parce ciliatis, corolla rotata glabra, tubo brevissimo ca. 0.7 mm. longo, lobis 5 late oblongo-ovatis 2-2.5 mm. longis apice rotundatis; staminodiis plerumque 2 squamosis deltoideis; filamentis fauce tubi corollae insertis ca. 1 mm. longis, in alabastro sub insertione antherae geniculatis, filamentis dorso insertis sed antheris a latere extrorse dehiscentibus ca. 1.3 mm. longis; pistillo ovoideo-conico ca. 1.7 mm. longo; ovario parcissime hirsuto, cellulis 3, ovulis axillari-basalibus.

Shrub; young branches glabrescent; petioles very short, less than 5 mm. long; blades coriaceous, shining above, pale beneath glabrescent, obovate, cuneate at base, rounded or slightly emarginate at apex, margins involute, 3-6 cm. long, 1.5-3.5 cm. broad, midrib mostly raised above, lateral nerves slightly raised above, faint beneath, ca. 12 pairs; inflorescence axile in mostly the old growth, fasciculate, flowers numerous, essentially glabrous; pedicel 3-5 mm. long; sepals 5, orbicular-ovate, ca. 2.3 mm. long and broad, rounded at apex, sparsely ciliate; corolla rotate, glabrous, the tube very short, ca. 0.7 mm. long, the lobes 5, broadly oblong-ovate, 2-2.5 mm. long, rounded at apex; staminodes not at each sinus, mostly 2 only, small, scale-like, deltoid; filaments inserted at mouth of corolla-tube, ca. 1 mm. long, bent at attachment to anther in young flower, filament attached introrsely but anther dehiscence lateral-extrorse, ca. 1.3 mm. long; pistil ovoid-conic, ca. 1.7 mm. long, ovary very sparsely hirsute, cells 3, ovules axile-basal.

Type in herb. N.Y. Bot. Gard., isotype in Chi. Nat. Hist. Mus., collected on savanna and shrubby growth bordering forest of Río Karuai, between Santa Teresita de Kavanayén and base of Ptari-tepuí, state of Bolívar, alt. 1220 m., November 18, 1944, *Julian A. Steyermark* 60321, "shrub 10-15 feet tall, leaves suberect, deep dark green and shining above, pale green below, calyx pale green, corolla greenish-white, pedicels nodding, pale green, anthers buff."

This species belongs in the section of *Oxythece* typified by *Gymnoluma* Baillon and *Elaeoluma* Baillon. It holds a systematic

position close to *Oxythece glabrescens* (Mart. & Eichl.) Monachino, comb. nov. (= *Lucuma glabrescens* Mart. & Eichl. in Mart. Fl. Bras. 7: 72. 1863; *Gymnoluma glabrescens* Baillon; prob. *Oxythece ferreirii* Cronquist) and *Oxythece schomburgkianum* (Miq.) Cronquist.

Gymnoluma is placed in the synonymy of *Pouteria*, sect. *Oligotheca*, by Baehni, whilst *Elaeoluma* is omitted altogether from his monograph. In a very broad sense, our plant is *Pouteria Steyermarkiana* Monachino.

Oxythece robusta (Mart. & Eichl.) Pierre, var. *brevipetiolata* Monachino, var. nov.

A typo differt petiolis brevioribus 10-15 mm. longis; laminis foliorum 7.5-11 cm. longis 3-5.5 cm. latis; lobis calycis ca. 1-4 mm. longis.

Differs from the typical variety in its shorter petioles, 10-15 mm. long (14-25 in typical variety); blades 7.5-11 cm. long, 3-5.5 cm. broad; calyx-lobes ca. 1-4 mm. long.

Type in herb. N.Y. Bot. Gard., isotype in herb. Chi. Nat. Hist. Mus., collected on Cerro Duida, forest at base of south-eastern slopes along Caño Negro (tributary of Caño Iguapo), Territorio Federal Amazonas, alt. 260 m., August 28-29, 1944, *Julian A. Steyermark 58078*, "tree with milky latex, 80 feet tall, trunk 1 foot in diameter, bark brown, wood hard, leaves coriaceous, dark green above, silvery green below with dull green punctae below, petals whitish, sepals and pedicels buff."

F. Cardona 1070 and *1072* (in Herb. Nac. Venez.) from the Guaiquinima, Alto Paragua, 300 m., represent the typical variety. The first collection is cited as *Pouteria rugosa* in the Cat. Flora Venezolana (1947).

The calyx-lobes are much smaller than in *B.W. 6613* (in herb. N.Y. Bot. Gard.) from Surinam, determined by Eyma as var. *longifolia* Eyma.

Pouteria Baehniiana Monachino, sp. nov.

Arbor 10-metralis; ramulis glabris; petiolis canaliculatis 1.5-3 cm. longis; laminis coriaceis praecipue glabris oblanceolatis basi late cuneatis apice obtuse breviter caudatis 11.5-16 cm. longis 5.5-7.5 cm. latis; nervis lateralibus 14-17 jugis, eis et costa media supra paullo prominentibus, reti supra prominulo et subtus prominenti; floribus axillaribus solitariis magnis sessilibus; sepalis 5 valde amplexicauli-imbricatis late oblongis vel orbiculari-quadratis ad 7 mm. longis et 9 mm. latis apice rotundatis extus strigosis intus glabris, sepalis interioribus ciliatis; corolla exserta carnosa glabra, tubo cylindrico ca. 7.5 mm. longo, lobis 5, late oblongis-ca. 3.3 mm. longis apice rotundatis; staminodiis foliaceis canaliculatis oblongis 2.3 mm. longis 0.7 mm. latis; staminibus fauce tubi insertis, anthera extrorsa 1.8 mm. longa; pistillo ca. 1 cm. longo, ovario hirsuto, cellulis 5, ovulis axillari-basalibus; fructu ovoideo-pyramido ca. 3.5 cm. longo 3 cm. diam. apice acuto.

Tree; branches glabrous, the leaf-bud brown-strigose; petioles channeled, 1.5-3 cm. long, darkened at base; blades coriaceous, glabrous or nearly so, oblanceolate, broadly cuneate at base, obtusely short-caudate at apex, 11.5-16 cm. long, 5.5-7.5 cm. broad; midrib and lateral ribs (ca. 14-17 pairs) slightly raised above, the reticulation prominulous above and prominent beneath; flower axile, solitary, large, sessile; sepals 5, strongly clasping-imbricate, broadly oblong or orbicular-quadrate, up to 7 mm. long and 9 mm. broad, rounded at apex, strigose outside, glabrous within, inner sepals ciliate; corolla exerted, carnose, glabrous, the tube cylindric, ca. 7.5 mm. long, the lobes 5, broadly oblong, ca. 3.3 mm. long, rounded at apex; staminodes foliaceous, canaliculate, oblong, 2.3 mm. long, 0.7 mm. broad; stamens inserted at mouth of tube, the anther extrorse, 1.8 mm. long; pistil ca. 1 cm. long, the ovary hirsute, the cells 5, ovules axile-basal; fruit ovoid-pyramidal, ca. 3.5 cm. long, 3 cm. diam., acute at apex.

Type in herb. N.Y. Bot. Gard., isotype in herb. Chi. Nat. Hist. Mus., collected along stream, between Betania and woods at base of Páramo de Tamá, state of Tachira, alt. 2300-2430 m., July 12, 1944, *Julian A. Steyermark 57167*, "tree 30 feet tall, leaves dark green above, dull paler green below, fruit brown, 'cacho.' "

This species belongs in the section *Rivicoa* as defined by Baehni.

Pouteria caimito (Ruiz & Pavon) Radlk., var. *strigosa* Monachino, var. nov.

A typo differt sepalis extus dense strigosis et petiolis longioribus 15-20 mm. longis.

Differs from the typical variety in the sepals densely strigose without and in the longer petioles (15-20 mm. long).

Type in herb. N.Y. Bot. Gard., isotype in herb. Chi. Nat. Hist. Mus., collected on south-facing steep slopes of Cerro Peonía (Cerro Los Pajaritos), above Santa Cruz, along headwaters of Río Manantiales, east of Bergantín, state of Anzoátegui, alt. 1600-1800 m., March 20, 1945, *Julian A. Steyermark 61583*, "tree 40-80 feet tall, leaves subcoriaceous-chartaceous, deep green above, paler dull green below, one of the dominants at this elevation, 'purvio amarillo.' "

Additional specimens examined (sterile) in herb. Chi. Nat. Hist. Mus., collected on ridge top along Río Zumbador and tributary, near base of Piedra Blanca, northeast of Bergantín, state of Anzoátegui, alt. 1100-1450 m., March 1-2, 1945, *Julian A. Steyermark 61340*, "tree 80 feet tall with hard wood, milky sap, tawny brown bark, lightly furrowed, leaves rich green above, grass green below, fruit smaller than 'pingo amarillo,' edible, round, 'mamura' or 'bayastillo,' "; El Páramo, northeast of Las Delicias, northeast of Caripe, state of Monagas, alt. 1200-1450 m., April 13, 1945, *Julian A. Steyermark 62025*, "tree 40-50 feet tall, leaves subcoriaceous, rich green above and shining, dull paler green below with prominent midrib and lateral nerves, erect, sap milky, bark pale gray."

***Pouteria simulans* Monachino, sp. nov**

Arbor 16-20-metralis; ramulis novellis fulvo-tomentosis; foliis saepe oppositis; petiolis 1-1.5 cm. longis; laminis chartaceo-subcoriaceis supra lucidis subtus glaucis juvenilibus pubescentibus (pilis axi brevi ramisque longis patentibus) oblanceolatis basi late cuneatis vel angustatis apice plerumque acuminatis acutisque 10-28 cm. longis 4-11 cm. latis; costa media supra plerumque paullo prominente, nervis lateralibus 11-18 jugis, reti supra paullo prominuli subtus prominente; inflorescentia axillare 1-6-flora; pedicellis gracilibus 9-12 mm. longis strigoso-tomentosis; sepalis 5 (vel 6) orbiculari-oblongis vel orbiculari-ovatis ca. 3.3 mm. longis et 3 mm. latis apice rotundatis extus fulvo-strigoso-tomentosis intus glabris; corolla parce exserta glabra, tubo ca. 2-3 mm. longo, lobis 5 ca. 2-3 mm. longis, apice rotundatis; staminodiis lanceolatis ad basim foliaceis valde carinatis apice acuminatis acutisque ca. 2-3 mm. longis 0.8 mm. latis; filamentis ca. 1 mm. longis parce infra faucem tubi corollae insertis; antheris 1.8 mm. longis; ovario hirsuto, cellulis ellipsoideis apice apiculatis 2 cm. longis 1.5 cm. diam. tenuiter tomentosis.

Tree; young branches fulvous-tomentose; leaves frequently opposite; petioles 1-1.5 cm. long; blades chartaceous-subcoriaceous, shining above, glaucous beneath, pubescent when young (hairs with long spreading branches and short stalk), oblanceolate, broadly cuneate to tapering at base, mostly acuminate and acute at apex, 10-28 cm. long, 4-11 cm. broad; midrib mostly slightly raised above, lateral ribs 11-18 pairs, reticulation faintly prominulous or not raised above, prominent beneath; inflorescence axile in the new growth, 1-6 flowered; pedicels slender, 9-12 mm. long, strigose-tomentose, sepals 5 (or 6), orbicular-oblong or orbicular-ovate, ca. 3.3 mm. long and 3 mm. broad, rounded at apex, fulvous strigose-tomentose without, glabrous within; corolla hardly exserted, glabrous, the tube ca. 2-3 mm. long, the lobes 5, about as long, rounded at apex; staminodes lanceolate, foliaceous toward base, strongly keeled, acuminate and acute at apex, about as long as corolla-lobes, 0.8 mm. broad; filaments ca. 1 mm. long, inserted slightly below mouth of corolla-tube, anthers 1.8 mm. long; ovary hirsute, cells 2, ovules axile-basal; fruits ellipsoid, apiculate at apex, 2 cm. long, 1.5 cm. diam., thinly tomentose.

Type in herb. N.Y. Bot. Gard., isotype in herb. Chi. Nat. Hist. Mus., collected in headwaters of Río Maravilla, slopes of Fila Grande, between Los Chorros and Cerro Negro, east of Bergantín, state of Anzoátegui, alt. 900-1400 m., March 23, 1945, *Julian A. Steyermark 61723*, "tree 60 feet tall, leaves deep green and shining above, blue-green or gray-blue green below with raised yellow-green nerves, 'purgo macho.'"

Paratypes (fruiting specimen) in herb. N.Y. Bot. Gard. and Chi. Nat. Hist. Mus., collected on dryish forested slopes, Cerro La Danta, bordering tributary of Río León, northeast of Bergantín, state of Anzoátegui, alt. 800-1100 m., in bamboo woods, February 22, 1949,

Julian A. Steyermark 61100, "wood useful for beams and rafters, fruit edible, yellowish within, 'purga macho.' "

Additional specimens examined (leaves very young, flowers in bud only), in herb. N.Y. Bot. Gard. and Chi. Nat. Hist. Mus., collected on Montaña de Aguacate, along Quebrada de Pajarral, tributary to Río Caripe, northeast of Alto de Aguacate, between Caripe and Caripito, state of Monagas, alt. 600-900 m., April 19, 1945, *Julian A. Steyermark 62203*, "sap milky, young leaves bronze-brown, as are the flowers;" collected in state of Monagas, vicinity of La Cuchilla, between Guanaguana and Guácharo, alt. 1200-1480 m., April 21, 1945, *Julian A. Steyermark 62284*, "tree 50 feet tall, leaves membranaceous when young, dull rich green above, gray-green below, 'trompillo.' "

The leaves of this species bear a remarkable resemblance to those of *Krukoff 6632*, from the basin of Río Madeira, Brazil, which has been identified as *Pouteria glomerata* var. *glabrescens* Hub. by Baehni, and even more so to *Froés 11750*, from Maranhao, Brazil. The nervature of the Krukoff and Froes collections and the leaf shape and indumentum of the latter are almost identical with those of our plant. However, the leaves are not glaucous beneath. The flowers of *P. glomerata* are described as sessile, tetramerous, the stamens subhypogynous, and the ovary 4-locular.

EBENACEAE

Diospyros anzoateguiensis Steyermark, sp. nov.

Frutex 5-metralis; ramulis teretibus cinereis glabris vel novellis minute hispidulis; petiolis crassis 3-5 mm. longis supra minute hirtellis vel hispidulis; laminis subcoriaceis subtus pallido-viridibus anguste obovatis vel oblanceolatis apice obtusis vel obtuse acuminatis basi cuneatis vel subcuneatis 5.2-9 cm. longis 2-3.7 cm. latis, marginibus integerrimis subplanis, supra glabris subtus glabris praeter costam et nervos secundarios parce strigillosis atque subtus interdum superfacie parce strigillosa, nervis secundariis utroque 6-7 valde adscendentibus prope marginem anastomosantibus supra leviter impressis subtus prominentibus; floribus masculis non visis; floribus foemineis solitariis axillaribus; pedicellis sub fructu 6-8 mm. longis densissime cinereo-strigosis vel hirtellis; calyce sub fructu viso, lobis 3 valde reflexis ovato-lanceolatis vel oblongo-lanceolatis subobtusis vel subacutis 10-11 mm. longis infra medium 6-6.5 mm. latis intus parce strigillosis, tubo strigilloso 4-5 mm. longo; fructibus subglobosis ad 2.5-2.75 cm. diametro 4-locularibus tetraspermis, pericarpio chartaceo-subcoriaceo leviter pilosulo; seminibus fuscis paullo striatulis 10 mm. longis 5.5-6 mm. latis.

Type in herb. Chi. Nat. Hist. Mus., collected between Bergantin and San José, state of Anzoátegui, alt. 300-400 m., March 16, 1945, *Julian A. Steyermark 61513*, "shrub 15 feet tall; leaves subcoriaceous, olive green above, pale green below; calyx lobes reflexed; fruit subglobose, 1.5 cm. in diameter, 1.3 cm. high, russet-greenish."

This species shows an affinity to *D. tetrasperma* Sw. of the West Indies. It differs, however, from that species especially in the much larger fruit with strongly reflexed fruiting calyx lobes.

STYRACACEAE

Styrax costanus Steyermark, sp. nov.

Arbor 23-metralis, ramulis novellis cinereis squamulis lepidotis; foliis alternis petiolatis, petiolis 8-11 mm. longis dense griseo-stellato-lepidotis; laminis firme membranaceo-subcoriaceis ellipticis apice abrupte acuminatis basi cuneatim angustatis acutis 5.5-10 cm. longis 1.5-3.5 cm. latis, supra nitidis glabris subtus densissime argenteo-stellato-lepidotis, integris, nervis lateralibus utroque 3-5 arcuato-ascendentibus supra impressis subtus prominulis, cum venis praesertim subtus bene reticulatis; inflorescentia subracemosa 3-4-flora 4.5 cm. longa axillari, rhachi densissime argenteo-stellato-lepidota; pedicellis 11-12 mm. longis densissime argenteo-stellato-lepidotis; calyce cinereo cupuliformi 4 mm. alto 4 mm. lato, apice paullo 5-repando subtruncato extus argenteo-stellato-lepidoto; corolla 15 mm. longa, lobis ligulatis 12 mm. longis 1.5-1.75 mm. latis extus densissime adpresse argenteo-stellato-lepidotis; antheris 6-7 mm. longis basi dense villosis; fructu oblongo 1.3 cm. longo, 0.9 cm. lato.

Type in herb. Chi. Nat. Hist. Mus., collected on south-facing steep slopes of Cerro Peonía (Cerro Los Pajaritos), above Santa Cruz, along headwaters of Río Manantiales, east of Bergantín, state of Anzoátegui, alt. 1600-1800 m., March 20, 1945, *Julian A. Steyermark* 61575, "tree 70 feet tall; leaves firmly membranaceous-subcoriaceous, deep green and shining above, silvery-buff below; fruit oblong, gray green, 1.3 cm. high, 9 mm. broad; sapwood rose-red."

Local name: "olivo montañero."

This is one of the tall trees of the forests of this section of the coastal range of the Oriente.

This species is characterized by the few-flowered subracemose inflorescences, the small number of lateral nerves of the relatively small leaves which are pointed at each end, and by the dense covering of very small appressed gray stellate lepidote hairs on the lower leaf surface, instead of the velvety fine tomentum of longer finer stellate hairs possessed by some other species. The leaf blades on their upper surface do not possess the fine reticulation of such species as *S. microphyllus* Perk. and *S. hypargyreus* Perk. It is apparently most closely related to *S. glaber* Sw. of the West Indies and to *S. micrasterus* Pittier of Venezuela. From the former species it differs in the shorter flowers, narrower corolla lobes, smaller narrower leaves which are more acuminate at the apex and more cuneately tapering at the base, smaller fruits, somewhat shorter inflorescences, and longer and more slender pedicels, while from the

latter species it differs in the smaller, firmly membranaceous instead of coriaceous leaves, with fewer lateral nerves, fewer-flowered racemes, narrower corolla lobes, and in the large tree instead of shrub habit.

***Styrax duidae* Steyermark, sp. nov.**

Frutex 3-metralis, ramulis novellis dense fusco-stellatis; foliis alternis petiolatis, petiolis 8-10 mm. longis crassis dense fusco-stellatis supra valde canaliculatis; laminis coriaceis supra atroviridibus subtus brunneis oblongo-ellipticis apice obtusis basi obtusis vel subobtusis 7-12 cm. longis 2.5-4.5 cm. latis supra glabris subtus densissime atque molliter, brunneo-stellatis, marginibus valdissime revolutis, nervis lateralibus utroque 7-9 arcuato-ascendentibus supra subobsoletis subtus prominentibus; inflorescentia racemosa 5-7-flora 2.2-2.5 cm. longa, axillari terminalique, rhachi densissime brunneo-stellata; pedicellis 3-3.5 mm. longis brunneo-stellatis; pedicellis 3-3.5 mm. longis brunneo-stellatis; calyce campanulato apice 5-sinuato-denticulato 5 mm. longo 5 mm. lato extus pallido brunneo- et fulvo-stellato-tomentello, lobis late triangularibus 0.8 mm. longis 1.5 mm. latis; corolla cernua albida 12 mm. longa profunde partita, lobis valvatis lineari-oblongis obtusis 8.5 mm. longis 1.5 mm. latis extus tenuiter tomentellis; staminibus 10; antheris linearibus 5.5-6 mm. longis intus stellato-pubescentibus; filamentis basi barbatis; ovario depresso-hemispherico superne conico 1.5 mm. longo 2 mm. lato dense tomentoso; stylo filiformi 9.5 mm. longo glabro; stigmatate capitato; ovulis 18 (Fig. 110).

Type in herb. Chi. Nat. Hist. Mus., collected on summit of Cerro Duida, Savanna Hills, Territorio Federal Amazonas, alt. 1025-1200 m., September 2, 1944, Julian A. Steyermark 58242, "shrub 10 feet tall; leaves coriaceous, deep green above, brown-green below; calyx brown; corolla pendent, white; pubescence dark brown on petiole, young stems, and pedicels."

Idrobo and Schultes (Bot. Mus. Leaflets Harvard Univ. 13, no. 10: 325-331. 1949) recently described *Styrax rigidifolius* from one of the isolated sandstone mountains of eastern Colombia. It and its forma *yapobodensis* are closely related to *S. duidae*, yet differ from one another in several respects. From *S. rigidifolius* the new species may be separated as follows: 1. the corolla lobes are much shorter and narrower (8.5 mm. X 1.5 mm. as compared with 13 mm. X 2.5 mm.), 2. shorter anther, 3. leaf apex obtuse or subobtusate instead of long acuminate, 4. leaf margin much more strongly revolute, 5. thicker and more coriaceous leaves, 6. lateral nerves on upper surface mostly obscure with secondary venation absent, whereas in *S. rigidifolius* it is evident, 7. calyx summit distinctly denticulate, whereas in *S. rigidifolius* it is truncate, 8. outer surface of calyx densely stellate-tomentose instead of only roughened as in *S. rigidifolius*, 9. lower leaf surface densely and softly tomentose and brownish beneath, whereas in *S. rigidifolius* the lower leaf surface is only fuscous-puberulent and cinnamon-brown beneath, and 10. the leaves are larger and are broadest around the middle instead of in the lower half as in *S. rigidifolius*.

In view of the differences existing in the color and density of the tomentum on the lower leaf surface, petiole, rachis, pedicels, and calyx, as well as the more sinuate-denticulate calyx margin, and the differences in leaf shape and apex, it would appear that *S. rigidifolius* f. *yapobodensis* Idrobo & R.E. Schultes should be treated as a distinct species.

Styrax yapobodensis (Idrobo & R.E. Schultes) Steyermark, comb. nov.

S. rigidifolius f. *yapobodensis* Idrobo & R.E. Schultes, Bot. Mus. Harvard Univ. Leaflets 13, no. 10: 330-332. 1949.

The new species described above (*S. duidae*) becomes another of the numerous endemics of Mount Duida. From another table mountain, Mount Roraima, has been described *Styrax Roraimae* Perk., but the latter is not even closely related to the Duida species. The Duida species is most closely related to the Colombian *S. rigidifolius* and *S. yapobodensis* above referred to.

SYMPLOCACEAE

Symplocos Lasserii Steyermark, sp. nov.

Arbor 10-metralis; ramulis novellis glabris vel parce leviter pilosis; foliis petiolatis, petiolis 9-10 mm. longis glabris supra canaliculatis, laminis supra atroviridibus nitidis firme membranaceis ovato-vel oblongo-ellipticis utrinque acutis 6-9.5 cm. longis 2.7-3.7 cm. latis, supra glabris subtus paullo adpresso-pilosis, marginibus denticulatis basin versus integerrimis subrevolutis in petiolum decurrentibus, nervis lateralibus ascendentibus utroque 7-10 ante marginem 3-8 mm. anastomosantibus; bracteis floralibus suborbicularibus rotundatis 2 mm. longis 2 mm. latis extus sericeis; floribus non visis; calycis lobis suborbicularibus rotundatis glabrescentibus vel parce pilosulis marginibus ciliolatis; fructibus elliptico-oblongis 1.7-2.1 cm. longis 0.9-1.1 cm. diametro glabris.

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. Mus. Servicio Botanico, Caracas, Venezuela, collected on south- and southwest-facing densely wooded slopes of Cordillera del Avila, above Caracas, between Los Venados and Papelón, Distrito Federal, alt. 1585-1820 m., December 30, 1943, *Lasser & Steyermark 55103*, "tree 30 feet tall; leaves dark green above, dull green below, shining above; fruit oblong, deep green."

This species is characterized by its thin minutely denticulate leaves and comparatively large fruits. It is named in honor of Dr. Tobias Lasser of the Servicio Botanico of the Ministerio de Agricultura y Cria of Caracas, Venezuela. I had the pleasure of accompanying him on a field excursion to the Cordillera del Avila, during which time this species was collected.

Symplocos Pittieriana Steyermark, sp. nov.

Frutex 5-metralis; ramulis ferrugineo-hirsutis; foliis confertis erectis rigidis petiolatis, petiolis 2 mm. longis ferrugineo-hirsutis; laminis coriaceis ovalibus vel late oblongis utrinque rotundatis 2-3.5 cm. longis 1.5-2.5 cm. latis, supra glabris vel glabrescentibus subtus

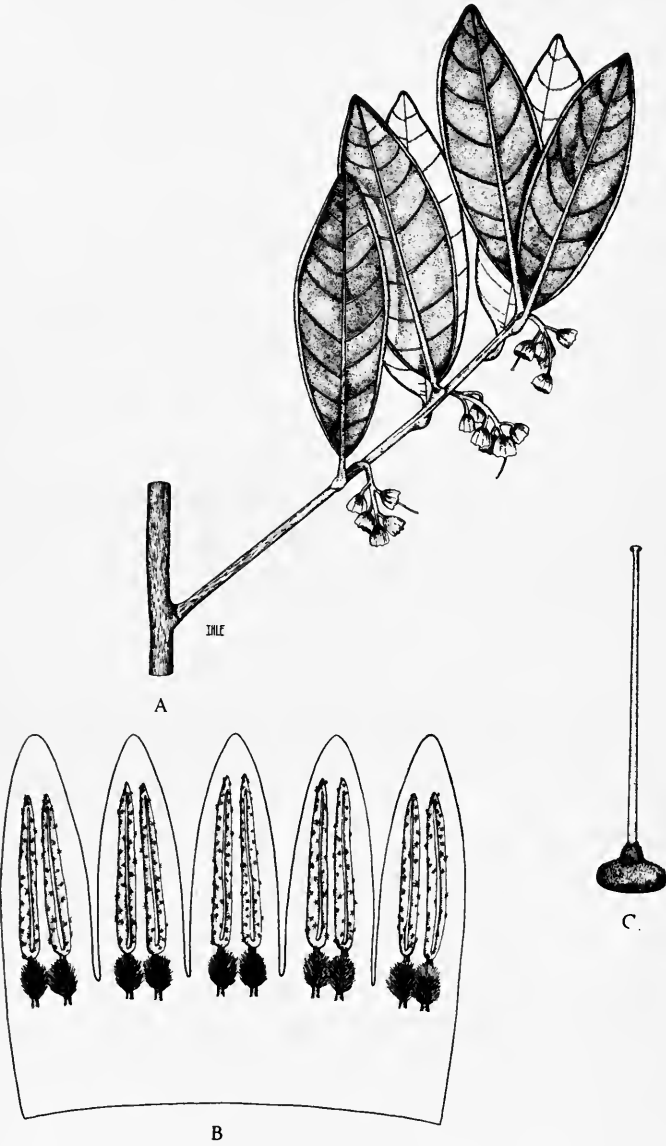


FIGURE 110

Styrax duidae

A, Portion of flowering branch (X 0.45); B, Corolla, opened from within (X 4); C, Pistil (X 4.5).

praesertim ad nervos et venulas brunneo-hispidulis, marginibus subintegerrimis paullo obsolete repando-crenulatis subrevolutis, nervis lateralibus adscendentibus utroque 4-6 ante marginem 2-4.5 mm. anastomosantibus supra tenuibus subtus cum venulis bene reticulatis; racemis subumbellatim paniculatis axillaribus vel subterminalibus ramulorum apicem versus confertis 1-1.5 cm. longis, rhachi crassa 2 mm. diam. ferrugineo-hirsuta; bracteis late ovatis rotundatis 2.5-3 mm. longis extus hirsutulis marginibus ciliatis; calycis tubo 2-2.5 mm. longo, lobis suborbicularibus rotundatis 2-2.5 mm. longis 3 mm. latis marginibus ciliatis ceterum glabris; corolla albida calyce paullo longiori 6-partita glabra, tubo 1.25 mm. longo, lobis late oblongis rotundatis 4.25 mm. longis; staminibus triserialibus supra liberis; ovario 3-4-loculari; stylo 1 mm. longo; stigmatibus capitato; fructibus non visis.

Type in herb. Chi. Nat. Hist. Mus., collected in rich moist woods at base of Páramo de Tamá, 4-10 kms. above Betanía, state of Táchira, alt. 2500-2895 m., July 15, 1944, *Julian A. Steyermark* 57335, "shrub 15 feet tall; flowers fragrant; corolla white; calyx dull green with brick red lobes; leaves coriaceous-stiff, deep green above, dull green below, erect."

This species is related to *S. umbellata* Brand, from which it differs in the 6- instead of 5-parted corolla, corolla only slightly exceeding calyx instead of twice longer than it, much shorter style, hispidulous lower midrib and lower leaf surface with longer hairs, upper leaf surface not finely reticulate as in *S. umbellata*, shorter and more hirsute petiole, more rounded leaf-base, smaller leaves, more prominent reticulation of lower leaf surface, and subtuberculate-based hairs.

***Symplocos roraimensis* Steyermark, sp. nov.**

Frutex 2.8-5-metralis; ramulis purpureo-fuscis striatis glabris; foliis erectis vel erecto-adscendentibus petiolatis, petiolis 3-4 mm. longis glabris supra canaliculatis; laminis coriaceis supra atroviridibus ovato-vel obovato-ellipticis apice cuspidato-acuminatis vel obtusis basi cuneatim angustatis acuminatis vel subobtusis in petiolum decurrentibus 2.5-6 cm. longis 1.3-2.5 cm. latis, utrinque glabris, marginibus integerrimis vel apicem versus 2-4 minutis remotis dentibus praeditis, paullo revolutis, nervis lateralibus utroque 3-4 supra fere obsolete subtus inconspicuis; floribus racemosis, racemis 1.5-2.5 cm. longis, rhachi glabra; pedicellis 1-1.5 mm. longis glabris; bracteis ovatis obtusis 1.5 mm. longis ciliolatis; calycis tubo 1.5 mm. longo, lobis 5 suborbicularibus rotundatis 1.5 mm. longis 1.5 mm. latis ciliolatis, quinto paullo minori; corolla pallido-viridi 5-partita, lobis obovatis obtusis vel rotundatis inferne angustatis 3.2 mm. longis 1.75 mm. latis ciliolatis; staminibus 26 uniserialibus subliferis basi solum coalitis, filamentis 1.5-2 mm. longis glabris; antheris reniformibus 0.3 mm. longis 0.4 mm. latis glabris; stylo glabro 1.5-2 mm. longo; fructibus non visis.

Type in herb. Chi. Nat. Hist. Mus., collected on Mount Roraima, ascent of ledge along southwest-facing side, from beginning of

sandstone bluffs to summit, state of Bolívar, alt. 2255-2620 m., September 27, 1944, *Julian A. Steyermark 58761*, "shrub 10-15 feet tall; leaves erect-ascending, coriaceous, dark green above, dull green below; calyx olive green; petals pale green."

Also collected among woody growth among boulders bordering Central Swamp, on southern half of summit of Mount Roraima, alt. 2700-2740 m., September 28, 1944, *Steyermark 58899*. This last collection has less pointed leaves but is probably conspecific with *S. roraimensis*.

This species is closely related to *S. bogotensis* Brand, from which it differs in the greater number of stamens, more elongated inflorescences and apiculate prolongation at the apex of the leaf. It is also related to *S. tetrandra* Mart., differing from that species in the more numerous stamens and subentire instead of repand-dentate leaves. From *S. rhamnifolia* A. DC. it may be separated by the glabrous filaments, shorter petioles, and smaller more apiculate leaves. It also approaches *S. pycnophylla* Sleumer of the vicinity of Roraima, but that has much larger leaves which are broadly rounded at the apex.

***Symplocos tamana* Steyermark, sp. nov.**

Frutex 0.8-1-metralis; ramulis novellis hirsutis; foliis petiolatis, petiolis 3-4 mm. longis glabris; laminis coriaceo-chartaceis subtus pallido-viridibus elliptico-oblongis vel obovato-oblongis apice rotundatis interdum submarginatis basi cuneatim angustatis in petiolum decurrentibus 10-17 mm. longis 5-10 mm. latis, utrinque plerumque glabris praeter costam mediam subtus parce hirsutulam, marginibus subrevolutis crenulato-denticulatis dentibus minutis nigris, nervis lateralibus utroque 3-4 cum venis laxe reticulatis, costa media subtus prominente; floribus solitariis subsessilibus; calyce 3.5 mm. longo pallido-viridi, tubo 1.3 mm. longo glabro, lobis suborbicularibus rotundatis 2.2 mm. longis 2.5 mm. latis marginibus ciliolatis ceterum glabris; corolla rosacea 6-8-partita, 6-8 mm. longa, tubo 1.5 mm. longo, lobis late oblongis rotundatis 5-6.5 mm. longis 3 mm. latis ciliolatis; staminibus quadriseriatis, superne liberis, filamentis rosaceis; ovario 3-loculari glabro; stylo glabro 5 mm. longo; stigmatibus capitato; fructibus non visis.

Type in herb. Chi. Nat. Hist. Mus., collected in rich moist woods at base of Páramo de Tamá, 4-10 kms. above Betania, state of Táchira, alt. 2500-2895 m., July 15, 1944, *Julian A. Steyermark 57340*, "shrub 2-3 feet tall; petals deep rose-red; filaments pink to rose; calyx pale green; leaves coriaceous-chartaceous, deep green above, pale green below."

This dwarf species is related to *S. lutescens* Brand of Colombia and to *S. parvifolia* Benth. of Ecuador, but differs in the 6-8-parted corolla, glabrous (except for ciliate) calyx lobes, and shape and size of the leaves.

GENTIANACEAE

Lisianthus scabridulus Steyermark, sp. nov.

Herba annua 8.5 dm. alta; caulibus simplicibus vel supra medium parce ramosis subtiliter 4-angulatis minute scabridulis; internodiis 3-9 cm. longis; foliis petiolatis triplinerviis, petiolis paullo anguste decurrentibus plerumque 10-30 mm. longis supremis 3 mm. longis, laminis membranaceis subtus pallido-viridibus elliptico-ovatis vel ovato-lanceolatis, supremis late ovatis apice cuspidato-acuminatis basi in petiolum subito cuneatis vel acuminatis vel supremis basi subcordatis vel rotundatis 4-8 cm. longis 1.5-3.5 cm. latis, nervis principalibus utroque prominentibus, eis subtus minute scabridulis, marginibus minute scabridulis, ceterum glabris; pedunculis elongatis 3-6 cm. longis angulatis scabridulis; cymis bifidis racemiformibus 4-10-floris 2-4.5 cm. longis, pedicellis tenuibus 4-8 mm. longis scabridulis; bracteis anguste oblongis obtusis 1.5-2.2 mm. longis; calyce pallido-viridi campanulato 3.5-4.5 mm. longo 5-partito, lobis late ovatis vel suborbiculari-ovatis abrupte acutis 2.5-3 mm. longis scariosis marginibus minute ciliolato-scabridulis; corolla infundibuliformi 11-13 mm. longa, tubo lilacino-albido 6.5-7 mm. longo, lobis lavendulis ovatis abrupte cuspidatis 4.5-6 mm. longis 3-3.5 mm. latis, marginibus minute ciliolatis; staminibus 5 corollae tubo superne insertis; filamentis exsertis; antheris e tubo corolla exsertis immutatis oblongis apice rotundatis 2 mm. longis; stylo distincto persistente, stigmatе bilamellato, lamellis obovoideis rotundatis; capsulis nutantibus 8.5-11 mm. longis (cum stylo).

Type in herb. Chi. Nat. Hist. Mus., collected on edge of bluff, Cerro Duida, southeastern-facing slopes along Caño Negro (tributary of Caño Iguapo), Territorio Federal Amazonas, alt. 1200 m., August 25-26, 1944, *Julian A. Steyermark* 57979 (2 sheets), "corolla lobes rich lavender; corolla tube dull lilac-whitish; calyx pale green with dull green along margins; leaves membranaceous, dull green above, pale green below."

There appear to be no fundamental constant morphological characters to keep *Pagaea* as a genus separate from *Lisianthus* and its related segregates (*Calolisianthus*, *Chelonanthus*, *Irlbachia*, etc.). Too many intergradations and exceptions occur in this complex to continue to maintain them as genera. As Bentham originally noted (Hook. Journ. Bot. 6: 200. 1854) in a discussion of *Irlbachia*, "*Lisianthus* therefore, to which Grisebach has himself correctly reunited *Leiothamnus* and *Symbolanthus*, becomes a numerous South American genus, with species very different indeed from each other in the size and color of the flowers, but connected together by a series of intermediates, and united by good common characters."

I am therefore referring the new species, on conservative grounds, to *Lisianthus*. It is related to *Pagaea recurva* (Benth.) Benth. & Hook. = ***Lisianthus recurvus*** Benth., *Pagaea subcordata* (Benth.) Benth. & Hook. = ***Lisianthus subcordatus*** Benth., and *Pagaea Poeppigii* Griseb. = ***Lisianthus ramosissimus*** Benth., from all of which it differs in the lavender corolla, minutely scabridulous pedicels,

peduncles, and stems, and ciliolate-scabridulous margins of the calyx lobes. The pedicels are longer and more slender and the inflorescence surpasses the upper leaves more conspicuously than in *Lisianthus recurvus* and *L. subcordatus*. The uppermost leaves are distinctive subcordate and quite different in shape from the other cauline leaves, whereas in *L. recurvus* and *L. ramosissimus* they are all conspicuously narrowed and cuneate at the base, and in *L. subcordatus** none of the leaves are as definitely subcordate as the uppermost ones of *L. scabridulus*.

Gilg's attempt to split up the genus *Lisianthus* into such separate genera as *Chelonanthus*, *Calolisianthus*, and *Irlbachia*, based upon differences in the character of the pollen grain, has produced, in this author's opinion, an artificial and unnecessary segregation of otherwise congeneric elements. There do not appear to be any constant combinations of gross morphological characters in support of Gilg's generic divisions. In the field the various entities appear as numerous species, belonging to a diversified genus, there being encountered color and size differences in corolla, acute to rounded corolla lobes, size of plants, shape of leaves, shape and exertion of anthers, and other characters, but none of them seem to hold in combination constantly with other characters. It appears much more in keeping with sound taxonomy to retain *Lisianthus*, as did Bentham and Grisebach, as a comprehensive genus, including *Calolisianthus*, *Chelonanthus*, and *Irlbachia* as sections, rather than distinct genera. I cannot agree to delimit *Lisianthus* to certain species of Mexico, Central America, the West Indies, and Colombia, as did Dr. Perkins in her treatment of the genus in 1902 (Monographische Uebersicht der Arten der Gattung *Lisianthus*. Bot. Jahrb. 31: 489-494. 1902). Ewan (Contr. U. S. Nat. Herb. 29, part 5: 212-213. 1948) also points out that by treating the genera of Gentianeaceae solely on the basis of pollen grain characters, Gilg placed unrelated genera together like *Symbolanthus* and *Chelonanthus*. Gilg thus places *Symbolanthus* in the Gentianoideae-Helieae instead of in the Gentianoideae-Gentianeae-Tachiinae, where it should go, according to Ewan, along with *Macrocarpaea*. Ewan states "Here pollen characters were relied upon exclusively in the recognition of natural groups within the Gentianeaceae, with the consequent obscuring of other alliances within the family."

Until more evidence is at hand for demonstrating that *Chelonanthus*, *Calolisianthus*, *Irlbachia*, and *Pagaea*, have other constant taxonomic characters, I prefer to retain them as sections within *Lisianthus*.

It becomes necessary, therefore, in view of the above considerations, to publish the following new combinations:

*Photographs of Spruce 2524 (type of *Lisianthus recurvus*) and Spruce 3055 (type of *Lisianthus subcordatus*) taken in the Berlin herbarium and now at the Chicago Natural History Museum do not show significant differences in the leaf bases. It is possible that the two species are conspecific.

Lisianthus Cardonae (Gleason) Steyermark, comb. nov.

Chelonanthus Cardonae Gleason, Brittonia 3: 189. 1939.

Gleason describes the calyx as "10-11 mm. long", but measurements on the type specimen (*Tate 1359*) show the calyx to be much shorter (5-6 mm. long) and the calyx lobes to vary from 3.5-4 instead of 5.5-6 mm. long.

In *Steyermark 60498* and *59393*, from the region of Santa Teresita de Kavanayén, collected somewhat to the east of the type collection, the measurements of the calyx and calyx lobes are 5-6 and 3.5-4 mm. long respectively. The leaves in the Steyermark collections vary from 8-14 mm. wide rather than 18-25 mm., as in the type collection, and the inflorescence occupies from 1/4-1/9 the length of the plant, instead of from half or more as in the type collection. The corolla tube varies in the Steyermark collections from 7 mm. long to 8-10 mm. in the type collection. The description of *Chelonanthus Cardonae* = *Lisianthus Cardonae* should be emended to "foliis 8-25 mm. latis; inflorescentiis 1/9-1/2 longitudine caulis; calyce 5-6 mm. longo, lobis 3.5-4 mm. longis; corollae tubo 7-10 mm. longo."

Lisianthus pyriformis (Gleason) Steyermark, comb. nov.

Chelonanthus pyriformis Gleason, Bull. Torr. Bot. Club 58: 450. 1931.

Gleason describes the leaves as linear-lanceolate and "8-12 mm. wide." Actually, some of them on the type specimen (*Tate 747*) are elliptic-lanceolate and up to 14 mm. wide, while *Steyermark 58268* from the type locality has leaves up to 20 mm. wide and some which vary from ovate-elliptic to broadly elliptic. The corolla in the *Steyermark 58268* specimen is green, rather than yellow.

Lisianthus Tatei (Gleason) Steyermark, comb. nov.

Calolisianthus Tatei Gleason, Bull. Torr. Bot. Club 58: 449-450. 1931.

A second collection of this species, *Steyermark 58297*, is from the type locality in the Savanna Hills, Mount Duida. In this collection the corolla measures 24-25 mm. long instead of "nearly 2 cm. long" as described for the type collection (*Tate 743*) and the persistent style measures as much as 18 mm. long. Gleason described the style measurement in the Tate specimen as "the body [of the capsule] nearly 10 mm. long, tipped by the persistent style of the same length", but an examination of the type specimen reveals that some of the styles may measure 15 mm. long.

Therefore, the description should be emended to "corolla 20-25 mm. longa; stylo 10-18 mm. longo."

Macrocarpaea tepuiensis (Gleason) Steyermark, comb. nov.

Calolisiánthus tepuiensis Gleason, Brittonia 3: 188-189. 1939; *Macrocarpaea cerronis* Ewan, Contr. U. S. Nat. Herb. 29, part 5: 223-224. 1948; *Macrocarpaea salicifolia* Ewan, loc. cit. p. 224.

In preparing his revision of *Macrocarpaea* (Contr. U. S. Nat. Herb.

29, part 5: 209-249. 1948), Ewan apparently had not examined the type of *Calolisianthus tepuiensis* Gleason. An examination of that specimen (Tate 1361 from Mount Auyan-tepui, Venezuela) by the present writer shows, without doubt, that it is congeneric with the genus *Macrocarpaea* and conspecific with *M. salicifolia* Ewan and *M. cerronis* Ewan, both recently described. While the type specimen of *Calolisianthus tepuiensis* agrees more precisely with the shape of the leaves, elongated petioles, and length of internodes found in *Macrocarpaea salicifolia*, nevertheless, it is more or less intermediate between *M. salicifolia* and *M. cerronis* and grades into them.

The congested panicle, flowering branches leafy to the tip, and the more ovate crowded leaves of *M. cerronis* is to be correlated with its occurrence at a higher altitude associated with the ecological conditions of cold and more pronounced exposure to sun and (or) wind, effecting shortened internodes, more congested inflorescences, shortening of the petioles, and crowding and reduction of leaves (with consequent modification of leaf shape). The shape and size and color of the corolla is identical in *M. salicifolia*, *M. cerronis*, and *Calolisianthus tepuiensis*. All of them possess in common the same type of coriaceous leaves with the veins obscure except for the prominent midrib, all have the leaves acute or prominently apiculate at apex, and in all of them the stems are conspicuously 4-angled. Having collected and seen *M. salicifolia* and *M. cerronis* in the field, I consider *M. cerronis* nothing more than an ecological form of *M. salicifolia* growing at a higher elevation than the latter entity and exhibiting, by its crowded somewhat reduced leaves with shorter petioles and more congested inflorescence, the effects of colder, more windswept, and sunnier conditions incident to its occurrence at higher altitudes.

APOCYNACEAE²⁸

Macropharynx strigillosa Woodson, sp. nov.

Frutex volubilis alte scandens ramulis validis fistulosis bifariam pubescentibus dense minuteque canescentibus praeterea sparsius aspere hirsutis internodis elongatis. Folia opposita breviter petiolata late ovata basi rotundato-cordata sinu angusto apice latissime obtusa deinde abruptissime breviterque caudata 12-20 cm. longa 9-14 cm. lata subcoriacea margine revoluta supra glabra subtus minute aspere canescentia nervo medio venisque sparse hirsuta petiolo 0.8-1.2 cm. longo more nervo medio pubescente. Inflorescentiae axillares oppositae 1-5-florae fasciculate congestae corolla excepto bifariam pubescentes pedunculis petiolos subaequantibus. Flores pallide galbini petiolo ca. 1 cm. longo; calycis laciniis 5 ovato-lanceolatis acuminatis ca. 1 cm. longis intus basi plurisquamelligeris extus apicem versus hirsutis bracteis similibus nonnullis proxime subtendentibus; corollae infundibuliformis tubo proprio ca. 1 cm. longo dextrorse contorto basi ca. 0.3 cm. diam. apice angustato ibique staminigero faucibus 5-gone subconicis sinistrorse contortis

²⁸By R. E. Woodson, Jr.

prope basim ca. 0.7 cm. diam. apice ca. 0.4 cm. diam. lobis 3-gonodolabriformibus ca. 1.3 cm. longis 1.2 cm. latis patulis; antheris subsessilibus lanceolatis anguste acuminatis. basi anguste sagittatis 0.8-0.9 cm. longis dorso minute hirsutulis; carpellis 2 ovoideis ca. 0.15 cm. longis nectariis 5 ca. 0.1 cm. longis compresse ovoideis stylo filiforme ca. 1 cm. longo stigmatate mitriforme ca. 0.2 cm. longo. Folliculi 2 crassi cylindrici ca. 25 cm. longi 0.7 cm. diam. extus dense puberuli sparsissimeque strigosi seminibus ca. 0.7 cm. longis coma pallide lutea ca. 1.7 cm. longa.

Type in Mo. Bot. Gard. herb., isotype in herb. U. S. Nat. Arb., collected in northeast woods of the Instituto Agronomico do Norte, Belem, Para, Brazil, October 30, 1942, *W. A. Archer 7770*. An additional collection from Brazil, in U. S. Nat. Herb. is prope lacum Catu, Belem, January 1, 1926, *Ducke 21586*.

Additional collections are: VENEZUELA: in herb. Chi. Nat. Hist. Mus. and Mo. Bot. Gard., between Montaña de Aguacate and Colorado, along Río Caripe, east of Caripe, state of Monagas, alt. 700-800 m., April 19, 1945, *Steyermark 62239*, "vining in thickets over herbs; leaves coriaceous, subrevolute, deep green above, pale silvery green below; calyx rich green; corolla tube creamy yellow, constricted about half-way up, lobes creamy-white;" along Río Karuai, at base of Sororopán-tepuí, west of La Laja, state of Bolívar, alt. 1220 m., November 29, 1944, *Steyermark 60771*, "liana with milky latex; leaves coriaceous, deep green and shining above, dull paler green below; peduncle ferruginous; calyx olive green." BRITISH GUIANA: in Mo. Bot. Gard. herb., sandhills, Demerara River, February 21, 1943, *Forest Department 3932*.

The general habits of *M. spectabilis* and *M. strigillosa* are practically the same, apparently, but the stems and leaves of the former are without the long, coarse hairs of the latter. The corollas of the two species, however, are quite different, that of the former with a throat nearly twice the length of the latter, as well as inflating, rather than constricting toward the orifice, and quite without the pentagonal basal inflation of *M. strigillosa*. It is very interesting to discover this very distinct, lower Amazon species as a counterpart of the upper Amazon *M. spectabilis*.

Mandevilla duidae Woodson, comb. nov.

Salpinctes (?) *duidae* Woodson, apud Gleason, in Bull. Torrey Bot. Club 54: 454. 1931.

The proper systematic position of this species, originally described in fruit from the Savana Hills by Tyler fortunately is decided by Dr. Steyermark's flowering specimens. The species proves to be another member of the shrubby Exothostemons with infundibuliform corollas, which are so characteristic of the Roraima region.

Mandevilla lancibracteata Woodson, sp. nov.

Frutex volubilis ramulis tenuibus purpureo-brunneis glabris. Folia opposita petiolo 1.5 cm. longo inconspicue pilosulo lamina elliptico-lanceolata apice anguste acuminata basi obscure cordata

6.5-9.0 cm. longa 2.5-3.5 cm. lata firmiter membranacea supra glabra nervo medio sparse glanduloso subtus pallida inconspicue pilosula. Inflorescentiae racemosae axillares pluriflorae pedunculo 6-8 cm. longo glabro pedicellis 0.5-0.8 cm. longis bracteis anguste elliptico-lanceolatis foliaceis 2.0-2.5 cm. longis. Calycis laciniae ovatae longe acuminatae 0.3 cm. longae glabrae. Corolla infundibuliformis versicolor extus glabra tubo proprio 1 cm. longo basi ca. 0.25 cm. diam. rubro faucibus anguste conicis 2.5 cm. longis pallide viridibus ostio ca. 1 cm. diam. lobis oblique obovatis 1.5 cm. longis albidis patulis. Antherae elliptico-sagittatae anguste obscureque cordatae 4.5 mm. longae glabrae. Ovaria oblongoidea 1.5 mm. alta glabra necariis 5 plus minusve concrescentibus ca. 1 mm. altis stigmatibus umbraculiforme breviter apiculato ca. 1.5 mm. alto.

Type in herb. Mo. Bot. Gard., isotype in herb. Chi. Nat. Hist. Mus., collected between Las Delicias and Paraguita, bordering Río Táchira, along Colombian-Venezuelan boundary, state of Táchira, alt. 1675-1980 m., July 12, 1944, *Julian A. Steyermark 57144*.

Cotype in herb. Mo. Bot. Gard. and Chi. Nat. Hist. Mus., collected between Mucuchachí and Canaguá, state of Mérida, alt. 1065 m., May 6, 1944, *Steyermark 56354*.

Also collected in Ecuador: wooded slopes along Río Valladolid, between Quebrada Honda and Tambo Valladolid, prov. Santiago-Zamora, alt. 2000-3000 m., October 12, 1943, *Steyermark 54622*.

Closely related to *M. Moritziana* (Muell.-Arg.) Donn. Sm., also of Venezuela, which differs abundantly in its clawed, spatulate bracts and smaller, greenish corollas with proportionally longer proper tubes. The Ecuadorian specimen is only provisionally assigned to *M. lanci-bracteata* since it is rather inadequately preserved.

***Mandevilla pachyphylla* Woodson, sp. nov.**

Frutex volubilis ramulis teretibus tenuiusculis minute puberulis. Folia opposita petiolo 0.1 cm. longo appresse puberulo lamina late elliptico-sagittata apice longe acuminata basi obscure cordata 5-8 cm. longa 2.5-4.5 cm. lata coriacea supra saturate viridi glabra nervo medio sparse glandulosa subtus pallidiori minute puberula. Inflorescentiae axillares racemosae pluriflorae pedunculo longissimo usque 25 cm. longo pedicellis ca. 0.5 cm. longis bracteis minimis. Calycis laciniae ovato-lanceolatae acuminatae 0.4 cm. longae extus sparse pilosulae. Corolla infundibuliformis aurantiaca extus pilosula tubo proprio 0.8 cm. longo basi ca. 0.2 cm. diam. faucibus anguste campanulatis 2 cm. longis ostio ca. 1 cm. diam. lobis oblique obovatis 2 cm. longis patulis. Antherae oblongo-sagittatae obscure cordatae 0.4 cm. longae glabrae. Ovaria oblongoidea 1.5 mm. alta glabra necariis 5 compresse subquadratis subaequantia stigmatibus umbraculiformi breviter apiculato ca. 1.5 mm. alto. Folliculi distincte articulati ca. 15 cm. longi.

Type in herb. Mo. Bot. Gard., isotype in herb. Chi. Nat. Hist. Mus., collected on densely forested steep south-facing slopes overlying sandstone, between "Cave Rock" and base of high sandstone bluffs,

Ptari-tepuí, state of Bolívar, alt. 2285-2405, October 30, 1944, *Julian A. Steyermark 59579*.

Cotypes in herb. Mo. Bot. Gard. and Chi. Nat. Hist. Mus., collected on upper slopes of Carrao-tepuí, state of Bolívar, alt. 2130-2430 m., December 7, 1944, *Steyermark 60874*; Sororopán-tepuí, state of Bolívar, alt. 2225-2255 m., November 13, 1944, *Steyermark 60093*.

Clearly a relative of the rather confusing *M. Fendleri* complex, but unusually well defined by reason of the coriaceous leaves and extremely elongate inflorescences.

Mandevilla Steyermarkii Woodson, sp. nov.

Frutex volubilis ramulis crassiusculis teretibus glabris. Folia opposita petiolo 2.5 cm. longo lamina ovato-elliptica apice abrupte acuminata basi late cordata 6-8 cm. longa 4-5 cm. lata membranacea glabra nervo medio supra sparse glanduloso. Inflorescentiae racemosa subspiciformes pluriflorae pedunculo crasso 10-12 cm. longo pedicellis ca. 0.2 cm. longis crassis bracteis speciosis albis anguste elliptico-lanceolata subcaudato-acuminatis sessilibus 3.5-4.0 cm. longis. Calycis lacinae ovatae breviter acuminatae 2 mm. longae minute puberulae. Corolla infundibuliformis extus glabra tubo proprio ca. 3.5 cm. longo basi ca. 2 mm. diam. galbino faucibus conicis 2.5 cm. longis galbinis ostio ca. 1.7 cm. diam. lobis oblique obovatis acuminatis 1.5 cm. longis aurantiacis patulis. Antherae anguste oblongo-sagittatae basi profunde angustequae cordatae 0.8 cm. longae glabrae. Ovaria 1 mm. longa glabra nectariis concretescentibus aequantia stigmatum umbraculiformi breviter apiculato ca. 3.5 mm. longo. Folliculi tenues laeves 15 cm. longi.

Type in herb. Mo. Bot. Gard., isotype in Chi. Nat. Hist. Mus., collected in vicinity of Sanariapo, near Rio Sanariapo, tributary of Orinoco River, Territorio Federal Amazonas, alt. 100 m., September 8, 1944, *Julian A. Steyermark 58504*.

Closely related to both *M. Moritziana* and *M. lancibracteata*, but with much broader, shorter leaves, subspiculate inflorescence, and very much larger and showier bracts and corollas.

Also collected more recently in Colombia along the Río Vaupes, *P. H. Allen 3313* and *3398* in herb. Mo. Bot. Gard., where it is said to be frequent.

Rauwolfia Steyermarkii Woodson, sp. nov.

Frutex ca. 6 m. altus omnino glaber ramulis crassiusculis brunneis bene lenticellatis. Folia 3-5-ternata petiolo 1 cm. longo eglanduloso lamina obovato-elliptica apice breviter acuminata basi obtusa 6.5-9.0 cm. longa 3-4 cm. lata subcoriacea glabra. Inflorescentiae pleiochasiales 8-9 cm. longae multiflorae pedicellis ca. 0.5 cm. longae. Calycis lacinae oblongo-ovatae obtusae ca. 1.5 mm. longae glabrae. Corolla extus glabra hypocrateriformis tubo 6 mm. longo basi ca. 1 mm. diam. viride albo lobis oblique ovalibus 2 mm. longis viridis. Antherae 1 mm. longae. Ovaria apocarpa 1 mm. longa glabra nectario annulari ca. bis aequantia.

Type in herb. Chi. Nat. Hist. Mus., holotype in herb. Mo. Bot. Gard., collected between Tabor and Villapaez, along Río Tachira, by Colombian-Venezuelan boundary, state of Tachira, alt. 1820-2130 m., July 17, 1944, *Julian A. Steyermark 57428*.

Very closely related to *R. Mattfeldiana* Mgf., from the state of Bahia, Brazil, which is described as bearing ovate-elliptic leaves, pedicels about twice as long, longer corolla lobes, etc.

ASCLEPIADACEAE²⁹

***Blepharodon Steyermarkii* R. Holm, sp. nov.**

Suffrutex volubilis, ramis glabris. Folia lanceolata-elliptica acuminata vel mucronata cuneata vel obtusa 4-8 cm. longa 1.5-2.0 cm. lata firme membranacea revoluta utrinque glabra, petiolis 0.5-0.8 cm. longis glabris. Inflorescentiae cincinnatae 4-7-florae, pedunculo 1-2 cm. longo glabro, pedicellis 1.5-2.0 cm. longis glabris. Calycis lobi ovati 2 mm. longi utrinque glabri margine scarioso. Corolla rotato-campanulata 8 mm. longa lobis viridulis ovatis acutis 5 mm. longis extus glabris intus minute puberulo-papillatis. Gynostegium 3 mm. altum columna obsoleta, antheris 3 mm. longis apicibus membranaceis semiorbicularibus, polliniis cylindricis 0.5 mm. longis caudiculis brevissimis, corpusculo sacco pillinii aequalis, corona saccata hiulca lobis interioribus anguste lanceolatis 3.5 mm. longis acutis vel obtusis dorsis staminum in parte inferiore adnatis exterioribus anguste lanceolatis 3 mm. longis acutis vel obtusis basin patelliformis gynostegii in parte inferiore adnatis. Ovaria glabra; capite stigmatis umbonato margine cristato. Folliculi et semina non visi.

Possibly only a variant of one of the several species clustered about *Blepharodon reflexus*, but differing in the structure of the corona.

Type in herb. Chi. Nat. Hist. Mus., isotypes in Dudley herb. and herb. Mo. Bot. Gard., collected in woods bordering savanna on ridge above La Laja, at base of Sororopán-tepuí, state of Bolívar, alt. 1375-1460 m., November 30, 1944, *Julian A. Steyermark 60813*.

***Blepharodon viscidum* R. Holm, sp. nov.**

Suffrutex erectus, caulibus basin ramosus minute viscidoglandulosus. Folia erecta linearia 2-4 cm. longa 0.2 cm. lata firme membranacea revoluta supra glabra subtus minute viscidoglandulosa praeter costa glabra, petiolis ca. 1 mm. longis glabris. Inflorescentiae umbelliformes 1-3-florae, pedunculo 2-3 mm. longo valde deflexo minute pubescenti, pedicellis 4-5 mm. longis, minute puberulis. Calycis lobi ovati 1 mm. longi utrinque glabri. Corolla subrotato-campanulata 5 mm. longa, lobis ovatis acutis 4.5 mm. longis extus fulvo-viridis nitidis glabris intus purpureis parte dimidia superiore glaucis papillatis margine subscarioso. Gynostegium 2 mm. altum columna obsoleta; antheris 2 mm. longis apicibus membranaceis semiorbicularibus, polliniis ovoidiis 0.25 mm.

²⁹By Richard W. Holm, except *Matelea* by R. E. Woodson, Jr.

longis, caudiculis brevissimis, corpusculo sacco pollinii aequalis, corona ut videtur semivesiculosa 1 mm. longa margine exteriori bicarinato basis patelliformis gynostegio in parte inferiore adnati. Ovaria glabra capite stigmati umbonato margine scarioso. Folliculi et semina non visi.

A distinctive species, characteristic of a small group of usually erect species with semivesicular corona segments.

Type in herb. Chi. Nat. Hist. Mus., isotypes in Dudley herb. and herb. Mo. Bot. Gard., collected on dry sandy and rocky sandstone exposures on level ground adjacent to swamp on plateau portion of southeast-facing slopes, Ptari-tepuí, state of Bolívar, alt. 1600 m., November 1, 1944, *Julian A. Steyermark* 59657.

Cotype collected Territorio Federal Amazonas, *Steyermark* 57843.

Cynanchum albonervum R. Holm, sp. nov.

Suffrutex volubilis, ramis minute hirtellis. Folia obovata retusomucronata cuneata 1.6-2.5 cm. longa 0.5-1.0 cm. lata subcoriacea utrinque glabra supra vernicosa costa inferiore alba, petiolis 1-2 mm. longis glabris. Inflorescentiae umbelliformes pluriflorae, pedunculo obsoleto, pedicellis 1.5 mm. longis. Calycis lobi ovati 1 mm. longi utrinque glabri. Corolla campanulata (?) lobis albis ovatis acutis 2 mm. longis extus glabris intus papillatis. Gynostegium 1.5 mm. altum columna obsoleta, antheris 1.5 mm. longis apicibus membranaceis deltoideis, polliniis oblongo-cylindratis, caudiculis brevissimis, corpusculo sacco pollinii aequalis, corona squamis exterioribus lanceolatis breve connatis interioribus minutis acicularibus. Ovaria glabra, capite stigmati plano. Folliculi fusiformes 1.8 cm. longi 0.3 cm. crassi minute puberuli; semina non visi.

Type in herb. Chi. Nat. Hist. Mus., collected in dry scrubby woods, between Humocaro Bajo and Los Aposentos, state of Lara, alt. 1090-1980 m., February 1, 1944, *Julian A. Steyermark* 55203.

Cynanchum bolivarense R. Holm, sp. nov.

Suffrutex volubilis, ramis minute hirtellis. Folia anguste obovato-elliptica abrupte mucronata cuneata 1.5-2.0 cm. longa 4-7 mm. lata firme membranacea revoluta utrinque glabra, petiolis 3-4 mm. longis supra minute hirtellis. Inflorescentiae umbelliformes 1-4-florae, pedunculo 3 mm. longo glabro, pedicellis 4 mm. longis glabris. Calycis lobi ovati 1.0 mm. longi utrinque glabri. Corolla rotato-subcampanulata lobis albis anguste ovatis acutis 2 mm. longi extus glabris intus minute papillatis. Gynostegium 2 mm. altum columna obsoleta, antheris 2 mm. longis apicibus membranaceis deltoideis, polliniis cylindratis 0.5 mm. longis, caudiculis brevissimis, corpusculo sacco pollinii subaequalis, corona squamis exterioribus lanceolatis obscure trilobis lobis lateralis incurvatis, interioribus anguste lanceolatis fere 1/2 brevioribus. Ovaria glabra capite stigmati convexo. Folliculi et semina non visi.

Type in herb. Chi. Nat. Hist. Mus., isotypes in Dudley herb. and herb. Mo. Bot. Gard., collected in Gran Sabana, in woods bordering streams tributary to Río Kukenán, at base of Mount Roraima, state

of Bolívar, alt. 1185-1280 m., September 24, 1944, *Julian A. Steyermark* 58555.

Cotype collected in Gran Sabana, between Kun and Uaduara-paru in valley of Río Kukenán, south of Mount Roraima, state of Bolívar, alt. 1065-1220 m., *Steyermark* 59106.

Cynanchum caespitosum R. Holm, sp. nov.

Suffrutex erectus caespitosus, caulibus basin ramosus dense hirtellis pilis decurvis. Folia anguste linearia acuta vel mucronulata 8-9 mm. longa 0.5 mm. lata firme membranacea revoluta utrinque glabra praeter margine ciliata, petiolis obsoletis. Inflorescentiae umbelliformes 1-3-florae, pedunculo 0.1 mm. longo, pedicellis 0.5-1.0 mm. longis. Calycis lobi 1.0 mm. longi utrinque glabri. Corolla rotato-subcampanulata 2.0 mm. longa, lobis albis anguste ovatis 1.5 mm. longis extus glabris intus puberulo-papillatis margine glabro. Gynostegium 1.0 mm. altum columna obsoleta, antheris 1.0 mm. longis apicibus membranaceis reniformibus, pollinibus ovoideo-cylindratis, caudiculis brevis, corpusculo sacco pollinii fere 1/2 brevioris, corona gynostegium aequanti squamis breve connatis acutis squamis interioribus ovatis exterioribus aequilongis trilobulatis, lobis lateralibus linearibus mediis ovatis. Ovaria glabra capite stigmatis umbonata. Folliculi fusiformes 3.1-3.2 cm. longi 0.3 cm. lati, striati; semina 3 mm. longa, 1.5 mm. lata, utrinque papillata; coma ca. 2.5 mm. longa.

Type in herb. Chi. Nat. Hist. Mus., isotypes in Dudley herb. and herb. Mo. Bot. Gard., collected in Gran Sabana, between waterfall at Ruémerú (tributary of Río Kukenán) and Divina Pastora on Río Kukenán north of Santa Elena, south of Mount Roraima, state of Bolívar, alt 1065 m., October 3, 1944, *Julian A. Steyermark* 59210.

Cynanchum caudigerum R. Holm, sp. nov.

Suffrutex volubilis vel prostratis ramis dense hirtellis. Folia lanceolata longe acuminata vel caudata 2.8-8.3 cm. longa 1.0-2.9 cm. lata firme membranacea utrinque dense velutino-pilosa margine revoluta petiolis 1-3 cm. longis dense hirtellis. Inflorescentiae umbelliformes 1-6-florae pedunculo obsoleto pedicellis 4-5 mm. longis hirtellis. Calycis lobi ovati 1 mm. longi extus dense hirtelli intus glabri. Corolla rotato-campanulata lobis viridulo-vel flavido-albis lanceolatis acutis revolutis 3 mm. longis extus sparse pilosus intus hirtellis. Gynostegium 1 mm. altum columna obscura antheris 0.5 mm. longis apicibus membranaceis ovatis, pollinibus cylindratis, caudiculis brevissimis, corpusculo sacco pollinii subaequalis corona gynostegium subaequanti cyathiformis lobata squamis ovatis revolutis. Ovaria hirtella capite stigmatis plano. Folliculi et semina non visi.

Type in herb. Chi. Nat. Hist. Mus., isotypes in Dudley herb. and herb. Mo. Bot. Gard., collected on north-facing slopes of Cerro Turumiquire, between La Trinidad and Quebrada El Boquerón, southwest of Cocollar, state of Sucre, alt. 1700-1840 m., May 3, 1945, *Julian A. Steyermark* 62443.

Cotype collected on Cerro Negro, above La Sabana de las Piedras,

northwest of Caripe, state of Monagas, alt. 1500-2180 m., April 15, 1945, *Steyermark* 62127.

Cynanchum confusum R. Holm, sp. nov.

Suffrutex volubilis, ramis bifariam hirsutis. Folia lanceolata acuminata vel caudata cordata vel truncata 2.5-3.6 cm. longa 1.3-1.7 cm. lata firme membranacea revoluta utrinque glabrata, petiolis 0.9-1.0 cm. longis hirtellis. Inflorescentiae umbelliformes 1-5-florae, pedunculo obsoleto, pedicellis 4-5 mm. longis puberulis. Calycis lobi ovati 1.5 mm. longi extus puberuli intus glabri. Corolla subcampanulata lobis albis anguste ovatis acutis 3 mm. longis extus glabris intus minute puberulis. Gynostegium 2 mm. altum columna subobsoleta, antheris 1.5 mm. longis apicibus membranaceis deltoideis, polliniis oblongo-cylindratis, caudiculis brevissimis, corpusculo sacco pollinii aequalis, corona gynostegium subaequant squamis breve connatis late lanceolatis revolutis bifidis. Ovaria glabra capite stigmatis obscure umbonato. Folliculi et semina non visi.

A small-flowered species of *Cynanchum* belonging to the *Metastelma*-alliance. It should be understood that the specific name, while particularly applicable to this species (reminiscent of several others) expresses the general frustration forthcoming from even a detailed study of this complex of small-flowered forms.

Type in herb. Chi. Nat. Hist. Mus., isotypes in Dudley herb. and herb. Mo. Bot. Gard., collected on rich steep northwest- and northeast-facing forested slopes above "La Isla," above Tabay, state of Mérida, alt. 2285-2745 m., May 18, 1944, *Julian A. Steyermark* 56586.

Cynanchum Decaisneanum R. Holm, nom. nov. *Ditassa lanceolata* Decne. in DC. Prodr. 8: 576. 1844, nec *Cynanchum lanceolatum* H.B.K., nec Poir.

Cynanchum duidae R. Holm, sp. nov.

Suffrutex volubilis, ramis minute hirtellis. Folia anguste elliptica acuminata vel mucronulata cuneata 2-4 cm. longa 0.5-1.0 cm. lata subcoriacea revoluta utrinque glabra costa superiore impresso, petiolis 3-5 mm. longis glabris. Inflorescentiae umbelliformes 2-3-florae, pedunculo 10 mm. longo, pedicellis 10 mm. longis glabris. Calycis lobi ovati 1.5 mm. longi utrinque glabri. Corolla rotato-campanulata lobis albis ovatis acutis vel acuminatis 6 mm. longis extus glabris intus minute papillatis. Gynostegium 4 mm. altum columna obsoleta, antheris 4 mm. longis apicibus membranaceis orbicularis, polliniis oblongo-cylindratis, caudiculis brevissimis, corpusculo caudiculis aequalis, corona squamis exterioribus anguste lanceolatis acutis, interioribus subacicularibus fere 1/4 brevioribus. Ovaria glabra capite stigmatis umbonato. Folliculi et semina non visi.

Type in herb. Chi. Nat. Hist. Mus., isotypes in Dudley herb. and herb. Mo. Bot. Gard., collected on summit of Cerro Duida, Savanna Hills, alt. 1025-1200 m., September 2, 1944, *Julian A. Steyermark* 58255.

Cynanchum exasperatum R. Holm, sp. nov.

Suffrutex volubilis, ramis glabris. Folia ovato-deltaidea acuminata truncata vel obtusa 1.0-1.3 cm. longa 0.5-1.2 cm. lata subcoriacea revoluta utrinque glabra vernicosa, petiolis 2-3 mm. longis glabris. Inflorescentiae umbelliformes 1-3-florae, pedunculo obsoleto, pedicellis 1-2 mm. longis glabris. Calycis lobi ovati 1 mm. longi utrinque glabri. Corolla subcampanulata lobis purpurinis lanceolatis acutis 2 mm. longis extus glabris intus papillatis. Gynostegium 0.5 mm. altum columna subobsoleta, antheris 0.5 mm. longis apicibus membranaceis deltoideis, polliniis oblongo-cylindratis, caudiculis brevissimis, corpusculo sacco pollinii aequalis, corona squamis anguste lanceolatis involutis breve connatis obtusis. Ovaria glabra, capite stigmatis plano. Folliculi et semina non visi.

This species of the *Metastelma*-complex, like many of its congeners, shows a remarkable similarity in vegetative characters to several other species from which it differs markedly in floral structure. Only a thorough re-evaluation of the taxonomic characters of this group can hope to bring order out of the present chaos.

Type in herb. Chi. Nat. Hist. Mus., isotypes in Dudley herb. and herb. Mo. Bot. Gard., collected in rich wooded slopes along quebrada of Cuesta del Barro and Mesa del Trapiche, tributary to Río Capuri, between Canaguá and El Molino, state of Mérida, alt. 2530-2715 m., May 11, 1944, *Julian A. Steyermark* 56474.

Cynanchum guianense (Decne.) R. Holm, comb. nov. *Tassadia guianensis* Decne. in DC. Prodr. 8: 579. 1844. Distrito Federal: rich woods, east of El Junquito, alt. 1980-2130 m., *Steyermark* 56996.

Cynanchum mirifolium (Gleason & Moldenke) R. Holm, comb. nov. *Metastelma mirifolium* Gleason & Moldenke, in Bull. Torr. Bot. Club 58: 460. 1931. Territorio Federal Amazonas: summit of Cerro Duida, Savana Hills, alt. 1025-1200 m., September 2, 1944, *Steyermark* 58305.

Cynanchum obovatum R. Holm, sp. nov.

Suffrutex volubilis, ramis bifariam puberulis. Folia obovata mucronata cuneata 0.8-1.6 cm. longa 0.4-0.8 cm. lata subcoriacea revoluta utrinque glabra, petiolis 2-4 mm. longis glabris. Inflorescentiae cincinnatae 2-7-florae, pedunculo 2-5 mm. longo, pedicellis 4-7 mm. longis glabris. Calycis lobi ovati 1.5 mm. longi extus glabri intus plus minusve puberuli. Corolla rotato-campanulata 4 mm. longa, lobis albis ovatis acutis 2 mm. longis extus glabris intus puberulo-papillatis margine glabro. Gynostegium 1.5 mm. altum columna obsoleta, antheris 1.5 mm. longis apicibus membranaceis reniformibus, polliniis ovato-cylindratis, caudiculis brevissimis, corpusculo sacco pollinii subaequalis, corona gynostegium subaequanti squamis breve connatis lanceolatis acutis incurvatis, squamis interioribus aciculari-lamellatis exterioribus fere 1/2 brevioribus. Ovaria glabra, capite stigmatis umbonato. Folliculi et semina non visi.

A *Cynanchum* of the group of species formerly assigned to the genus *Ditassa*. Inasmuch as the systematics of the Latin American

Asclepiadaceae is in a thoroughly confused state, and since I am making a general study of them at the present time, I am unable to make any statements as to the presumed relationships, morphological or otherwise, of the species described here. Until an overall picture of the genera has been developed, any discussion of affinities will be excessively speculative.

Type in herb. Chi. Nat. Hist. Mus., isotypes in Dudley herb. and herb. Mo. Bot. Gard., collected on upper slopes of Carrao-tepuí, state of Bolívar, alt. 2130-2430' m., December 7, 1944, *Julian A. Steyermark 60884*.

Cotypes collected on Ptari-tepuí, on forested south-facing slopes overlying sandstone, on "Cave Rock" above "Cave Camp", state of Bolívar, alt. 1810 m., October 29, 1944, *Steyermark 59478*; Ptari-tepuí, *Bonnetia roraimae* forest on southwest-facing shoulder, alt. 2000-2200 m., November 2, 1944, *Steyermark 59746*.

Cynanchum revolutum R. Holm, sp. nov.

Suffrutex volubilis, ramis dense hirtellis. Folia elliptica vel obovato-elliptica mucronata cuneata 1-3 cm. longa 0.5-1.0 cm. lata subcoriacea valde revoluta utrinque puberula, petiolis 1-3 mm. longis hirtellis. Inflorescentiae umbelliformes 2-7-florae, pedunculo obsoleto, pedicellis 2 mm. longis minute puberulis. Calycis lobi ovati 1.5 mm. longi extus puberuli intus glabri. Corolla rotato-campanulata lobis squarrosos viridulo-albis anguste ovatis acutis 3 mm. longis extus glabris intus puberulis. Gynostegium 2 mm. altum columna obsoleta, antheris 2 mm. longis apicibus membranaceis suborbicularibus, polliniis brevibus cylindratis, caudiculis brevissimis, corpusculo sacco pollinii subaequalis, corona gynostegio aliquantum breviori, squamis anguste ovatis incurvatis. Ovaria glabra; capite stigmati subgloboso. Folliculi et semina non visi.

A species of the group formerly assigned to *Metastelma*, now included within *Cynanchum*.

Type in herb. Chi. Nat. Hist. Mus., isotypes in Dudley herb. and herb. Mo. Bot. Gard., collected in vicinity of "Misia Kathy Camp", on mesa between Ptari-tepuí and Sororopán-tepuí, state of Bolívar, alt. 1615 m., November 15-17, 1944, *Julian A. Steyermark 60236*.

Cotype collected on Mount Roraima, state of Bolívar, *Steyermark 58593*.

Cynanchum strictum (Gleason & Moldenke) R. Holm, comb. nov.

Metastelma strictum Gleason & Moldenke, in Bull. Torr. Bot. Club 58: 457. 1931. Territorio Federal Amazonas: between Esmeralda Savana and southeastern base of Cerro Duida, alt. 200 m., August 22, 1944, *Steyermark 57811*.

Cynanchum sucrense R. Holm, sp. nov.

Suffrutex volubilis vel subprostratus ramis hirtellis. Folia elliptica vel obovato-elliptica abrupte mucronata cuneata vel obtusa 1.7-2.0 cm. longa 0.5-1.0 cm. lata subcoriacea vernicosa utrinque glabra margine obscure ciliata petiolis 0.2-0.3 cm. longis glabris. Inflor-

escentiae umbelliformes 2-5-florae pedunculo 2-3 mm. longo puberulo pedicellis 4 mm. longis glabris. Calycis lobi ovati 1.0 mm. longi utrinque glabri. Corolla rotato-subcampanulata lobis albis ovatis acutis 2.5 mm. longis extus glabris intus papillatis. Gynostegium 1.5 mm. altum columna obsoleta antheris 1.0 mm. longis apicibus membranaceis deltoideis polliniis cylindratis caudiculis brevissimis corpusculo sacco pollinii subaequalis corona squamis exterioribus late lanceolatis trilobulatis interioribus subaequalis anguste lanceolatis. Ovaria glabra capite stigmatis convexo. Folliculi fusiformes 3.8-4.3 cm. longi 0.5 cm. lati glabri striati; semina 5.5 mm. longa 2.0 mm. lata utrinque papillata coma ca. 1.5 cm. longa.

Type in herb. Chi. Nat. Hist. Mus., isotypes in Dudley herb. and herb. Mo. Bot. Gard., collected on moist savana-like portion of broad ridge connecting base of eastern peak of Cerro Turumiquire with base of southern peak, state of Sucre, alt. 2200 m., May 6, 1945, *Julian A. Steyermark 62625*.

Cynanchum Tatei (Gleason & Moldenke) R. Holm, comb. nov. *Ditassa Tatei* Gleason & Moldenke, in Bull. Torr. Bot. Club 58: 456. 1931. Territorio Federal Amazonas: Esmeralda Ridge, between Esmeralda and base of Cerro Duida, alt. 150 m., August 21, 1944, *Steyermark 57743*.

Cynanchum taxifolium (Decne.) R. Holm, comb. nov. *Ditassa taxifolia* Decne. in DC. Prodr. 8: 578. 1944. BOLÍVAR: vicinity of Salto de Pacairao, about 3 km. east to northeast of Santa Teresita de Kavanayen, alt. 1220 m., November 24, 1944, *Steyermark 60486*.

Cynanchum varians R. Holm, nom. nov.

Metastelma tomentosum Decne. in DC. Prodr. 8: 514. 1844, nec Lam. nec Royle.

MERIDA: dwarf cool forest between El Molino and ridge above San Isidro Alto, alt. 2430-2895 m., February 12, 1944, *Steyermark 56527*.

Cynanchum violator R. Holm, sp. nov.

Suffrutex volubilis, ramis hirtellis. Folia ovata vel suborbiculata acuminata vel mucronata cordata vel truncata 0.8-1.5 cm. longa 0.8-1.1 cm. lata firme membranacea obscure revoluta utrinque glabrata, petiolis 0.1-0.3 cm. longis hirtellis. Inflorescentiae dichasiformes pluriflorae, pedicellis 4-7 mm. longis puberulis. Calycis lobi ovati 0.75 mm. longi extus papillati intus glabri ciliati. Corolla subrotato-campanulata lobis viridulis linearilanceolatis acutis 2 mm. longis utrinque glabris. Gynostegium 1 mm. altum columna obsoleta, antheris 1 mm. longis apicibus membranaceis deltoideis, polliniis obclavatis, caudiculis tenuis, corpusculo minuto, corona cyathiformis 10-lobulata. Ovaria glabra capite stigmatis umbonato. Folliculi et semina non visi.

Another of the minute-flowered species of *Cynanchum* which in its inflorescence illustrates the impossibility of rationally distinguishing *Cynanchum* from *Tassadia*. Apparently in these forms with minute flowers the inflorescence becomes an important variable in the

evolutionary process.

Type in herb. Chi. Nat. Hist. Mus., isotypes in Dudley herb. and herb. Mo. Bot. Gard., collected in wooded quebrada in Montaña of Río Tachira at base of Páramo de Tamá, between Betania and Tamá, by Colombian-Venezuelan boundary, state of Tachira, alt. 2430 m., July 13, 1944, *Julian A. Steyermark 57190*.

Matelea fucata Woodson, sp. nov.

Frutex volubilis fere omnino pilis duplicibus roseo-fuscis vestitus internodiis elongatis. Folia ovalia vel late elliptica apice late obtusa vulga mucronulata basi obscure cordata 7-9 cm. longa 4-6 cm. lata subcoriacea utrinque pilosa; petiolo ca. 1 cm. longo. Inflorescentiae pauciflorae pedunculo perbrevis ca. 0.5 cm. longo pedicellis elongatis ca. 4 cm. longis omnino pilosis. Calycis laciniae obovato-ellipticae late acutae membranaceae ca. 1 cm. longae extus pilosae. Corollae reticulate viridae rotato-campanulatae tubo 5 mm. profundo ca. 7 mm. diam. ostio lobis late ovatis obtusis 8-9 mm. longis margine sinistro albido caeterumque reticulate viridis. Coronae segmenta 5 pro parte dimidio inferiore corollae tubum et gynostegii stipiti adnata ca. 3 mm. longa carnosae albo-roseae oblonga anguste carinata apice bifida. Gynostegium 3 mm. altum pro parte majore coronam et corollae tubum adnatum stigmatate depresso 5-gono; polliniis horizontalibus triangulo-pyriformibus ca. 1 mm. longis dorso convexis ventre profunde excavatis caudiculis late alatis ca. 0.2 mm. longis corpusculo obovato-sagittato caudiculas aequante.

Type in herb. Chi. Nat. Hist. Mus., holotype in Mo. Bot. Gard., collected on south-facing densely forested slopes overlying sandstone, vicinity of "Cave Rock", Ptari-tepui, state of Bolívar, alt. 1800 m., November 8, 1944, *Julian A. Steyermark 59963*.

This species appears to belong to the Central American subgenus *Pachystelma*, and is the only South American species of this complex known to me at present.

Matelea mediocris Woodson, sp. nov.

Suffrutex volubilis omnino glabris. Ramuli graciles internodiis ca. 4-5 cm. longis. Folia oblongo-elliptica apice anguste acuminata basi late obtusa 3-5 cm. longa 1.0-2.5 cm. lata firme membranacea supra saturate viridia nervo medio basi glanduloso subtus glauca; petiolis ca. 0.5-1.0 cm. longis. Inflorescentiae petiolis subaequantibus pauciflores pedunculo perbrevis pedicellis ca. 0.2 cm. longis. Calycis laciniae ovato-ellipticae anguste acutae ca. 1.5 mm. longis extus sparsissime pilosulae squamellis alternatis solitariis. Corollae rotato-campanulatae luteo-viridae ca. 6 mm. diam. lobi ovati acuti ca. 3 mm. longi patuli apice reflexi. Corona disciformis ca. 2 mm. diam. gilva margine minute crenulata intus anteridibus 5 ca. 0.5 mm. longis stipiti gynostegii adnatis et antheras sustinentibus. Gynostegium breviter stipitatum stigmatate rotundato vel latissime 5-gono plano vel paulo convexo ca. 2 mm. diam.

Type in herb. Chi. Nat. Hist. Mus., holotype in herb. Mo. Bot. Gard., collected in vicinity of Tumeremo, between south of town and

airport, state of Bolívar, alt. 305 m., December 18, 1944, *Julian A. Steyermark 60690*.

Closely allied to *M. stenopetala* Sandwith, but with notably smaller leaves and flowers.

BORRAGINACEAE³⁰

Cordia roraimae Johnston, sp. nov.

Frutex 1-1.5 m. altus; ramulis 2-4 mm. crassis, juventate pilis ad 1 mm. longis mollibus gracilibus ascendentibus abundante vestitis; foliis lanceolatis chartaceo-coriaceis 6-9 cm. longis 1.5-3 cm. latis, supra medium vel paulo infra medium apicem saepe acuminatim versus gradatim attenuatis, basi saepe cuneatis, margine praesertim supra medium minute crenato-dentatis, supra subnitidis secus venas impressas sparse minuteque pubescentibus alibi glabris, subtus secus costam et venas prominulas pilos ad 1 mm. longos ascendentis gerentibus, venis utrinque latere costae 4-6 sub angulo 40° abeuntibus arcuatis; petiolis 5-10 mm. longis supra basim geniculatis, parte infima foliis delapsis persistenti patenti et plus minusve hamata; inflorescentia terminali et axillari; pedunculo 2.5-5 cm. longo efoliato basim versus basi petioli connato; spica 1-2 cm. longa, statu floriferi cylindrica vel subclavata 5-7 mm. crassa, fructiferi anguste obovata ad 15 mm. crassa; calyce hispidulo pilis 0.1-0.6 mm. longis fulvis vestito, sub anthesi ad 5 mm. longo, maturitate ad 7 mm. longo, lobis triangularibus 1.5-2 mm. longis acutis apice in alabastro nullo modo liberis; corolla ad anthesin ignota, in statu valde immaturo breviter cylindrico vix lobata, margine limbi eroso-dentata.

Type in herb. Chi. Nat. Hist. Mus., isotype in Gray Herb., collected on southwest forested slope between Rondón Camp and base of sandstone bluffs, Mount Roraima, state of Bolívar, alt. 2040-2255 m., September 30, 1944, *Julian A. Steyermark 59003*, "shrub 5 feet tall in thickets."

A well-marked member of the section *Varronia* having spicate flower-clusters produced singly from the leaf-axils as well as terminal on the shoot. The petioles are decurrent on peduncles they may subtend and form a woody recurving spur that persists on old stems. In this habit it resembles *C. spinescens* L. (*C. ferruginea* R. & S.), from which it differs in having very thick spikes and lanceolate leaves. A collection, *Steyermark 60079*, from the summit of Sororopán-tepui, northwest of Roraima, differs from the type in having the indument on the twigs and calyx shorter and closely appressed, but in other respects it is very similar to the plant above described.

Tournefortia gracilipes Johnston, sp. nov.

Frutex ad 1.5 m. altus, partibus juvenilibus pilis brevibus brunneis donatis maturitate plus minusve glabratis; caulibus fistulosis 3-8 mm. crassis glabratis; foliis obovatis vel obovato-lanceolatis subtus

³⁰By I. M. Johnston

inconspicue hispidulis vel utrinque glabratis; lamina 15-25 cm. longa, 7-13 cm. lata, medium versus vel paulo supra medium latiori deinde basim acutam versus in petiolum 1-3 cm. longum gradatim attenuata, apice acuta vel subacuminata, facie inferiori costa et nervis et reticulo nervulorum prominulo donatis; nervis primariis validis leviter arcuatis utrinque latere costae 8-11 sub angulo 40° abeuntibus; inflorescentia terminali vel extra-axillari sparse lateque dichotoma 5-12 cm. lata, pedunculo gracili cernuo 6-15 cm. longo; calyce sub anthesi 5-7 mm. longo 5-partito, sessili vel breviter pedicellato, lobis lineari-subulatis; corolla 8-12 mm. longa, tubo subcylindrico elongato 1.5-2 mm. crasso brunneo-hispidulo, limbo 5-7 mm. diametro; ovario glabro ca. 1 mm. longo, stylo 3-6 mm. longo; fructu maturis ignoto, immaturo ovoideo ca. 5 mm. longo.

Type in herb. Chi. Nat. Hist. Mus., isotype in Gray Herb., collected on forested southwest-facing slope of Cerro Negro, above La Sabana de las Piedras, northwest of Caripe, state of Monagas, alt. 1500 m., April 5, 1945, *Julian A. Steyermark 61863*, "shrub 5 feet tall."

The following collections in herb. Chi. Nat. Hist. Mus., collected on steep forested slopes above headwaters of Quebrada La Tigra, Cerro San Jose, between Bergantín and Cerro Peonía, state of Anzoategui, *Steyermark 61560*, "shrub 8 feet tall;" and, on north-facing slopes above La Trinidad in cloudforest, southwest of Cocollar, Cerro Turumiquire, state of Sucre, May 8, 1945, *Steyermark 62541*, "shrub with arching stems, 10 feet tall."

A well-marked species native to northeastern Venezuela. Among its notable features are its large, moderately thin leaves prominently and reticulately veined beneath, its sparingly branched inflorescence borne on a slender elongate nodding peduncle, its large tubular flowers, and its slender elongate calyx-lobes.

VERBENACEAE³¹

Aegiphila Steyermarkii Moldenke, sp. nov.

Frutex; ramis acutiuscule tetragonis, in statu juventute densissime adpresso-villosis; nodis non annulatis; internodiis valde abbreviatis; petiolis crassiusculis ca. 5 mm. longis, in statu juventute dense villosis, dein strigilloso-puberula; foliis oppositis, laminis firme chartaceis ellipticis 4.5-8 cm. longis, 2-3 cm. latis, breviter acuminatis integris, in siccitate subrevolutis, supra glabris nitidisque, subtus strigillosis; inflorescentiis axillaribus cymosis paucifloris; calyce 5-lobato.

Shrub, about 5 m. tall; branches rather acutely tetragonal, the younger ones very densely appressed-villous with ochraceous or buff-brown antrorse hairs, the older ones more obscurely grayish strigose or glabrate, slightly sulcate between the angles; nodes not annulate; principal internodes greatly abbreviated, 1-2 cm. long; leaves decussate-opposite; petioles stoutish, about 5 mm. long,

³¹By H. N. Moldenke

densely villous when young, merely strigillose-puberulent when old; blades firmly chartaceous, deep dark-green above, dull-green beneath, elliptic, mostly widest at about the middle, 4.5-8 cm. long, 2-3 cm. wide, mostly short-acuminate, the apex itself obtuse, entire, slightly revolute in drying, glabrous and shiny above, very sparsely and obscurely scattered-strigillose beneath (more densely so and even slightly so above when immature); midrib plane above, prominulous beneath; secondaries slender, 4-6 per side, arcuate-ascending, anastomosing near the margins, subimpressed above subprominent beneath; tertiaries slender, rather conspicuous and subimpressed above, slightly subprominulous beneath; veinlet reticulation not discernible on either surface; inflorescence cymose, axillary, 2 per node in the upper axils, shorter than the subtending leaves, few-flowered; peduncles slender, 1.5-2 cm. long, densely appressed-villous, with ochraceous or buff antrorse hairs, usually only once bifurcate, about 7-flowered; bractlets lanceolate, 1-2 mm. long, densely villosulous; pedicels obsolete or to 1 mm. long and villosulous; calyx campanulate, about 5 mm. long and 3.2 mm. wide, densely villous like the peduncles, its limb 4-lobed, the lobes broadly triangular, about 1 mm. long, rounded and apiculate at the apex; corolla hypocrateriform, whitish, its tube about 4 mm. long, about 2 mm. wide, glabrous, its limb 4-parted, the lobes about 2 mm. long and 1 mm. wide, acute, glabrous, spreading; stamens 4, inserted about 2 mm. from the base of the corolla-tube; included or long-exserted; filaments filiform, glabrous; anthers oblong, about 0.7 mm. long; style capillary, to 7 mm. or more long, glabrous; stigma bifid, its branches to 3 mm. long; ovary subglobose, about 1 mm. long and wide, glabrous, 4-celled.

Type in Britton herb. at the N. Y. Bot. Gard., isotype in herb. Chi. Nat. Hist. Mus., collected along the base of west-facing high sandstone bluffs, *Ptari-tepuí*, state of Bolívar, alt. 2410-2450 m., November 7, 1944, *Julian A. Steyermark 59960*.

The species seems to be closely related to *A. roraimensis* Moldenke, known only from Mount Roraima.

***Aegiphila Steyermarkii* var. *obtusifolia* Moldenke, var. nov.**

Haec varietas a forma typica speciei foliis oblanceolatis obtusis pubescentibus ramulorum brevioribus, calicibus late infundibulariformibus lobis obtusis recedit.

This variety differs from the typical form of the species in having oblanceolate leaves, decidedly widest above the middle and bluntly obtuse (not acuminate) at the apex. The pubescence on the young branchlets and inflorescence is shorter, and the calyxes are broadly infundibular, about 8 mm. long and 5 mm. wide, rather deeply 4-lobed, the lobes 2-3 mm. long, obtuse (not mucronate). The cymes, also, are somewhat more densely flowered.

Type in Britton herb. at the N. Y. Bot. Gard., isotype in herb. Chi. Nat. Hist. Mus., collected on the crest of the cerro between the east and west ends, *Sororopán-tepuí*, state of Bolívar, alt. 2255 m., November 14, 1944, *Julian A. Steyermark 60113*.

Aegiphila venezuelensis Moldenke, sp. nov.

Frutex vel arbor parva; ramis ramulisque obtuse tetragonis medullis saepe acute tetragonis submarginatisque, dense adpresso-villosis, in statu senectute subglabrescentibus; nodis obscure vel non annulatis; internodiis plerumque abbreviatis; foliis oppositis; petiolis crassiusculis 5-15 mm. longis adpresso-villosulis; laminis leviter membranaceis ellipticis vel obovato-ellipticis 8-23 cm. longis, 2.5-7.5 cm. latis, acuminatis integris, ad basin attenuato-acuminatis, supra sparse puberulis, subtus breviter pubescentibus; inflorescentiis axillaribus vel supra axillaribus cymosis paucis; calyce 4-lobato dense villosulo.

Shrub or small tree; to 8 m. tall; branches and branchlets obtusely tetragonal, medullose, sometimes acutely tetragonal and almost margined, densely appressed-villous with grayish or yellowish-gray antrorse hairs on the younger parts, less so or subglabrate in age; nodes obscurely or not at all annulate; principal internodes 1-4 cm. long, mostly abbreviated; leaves decussate-opposite; petioles rather stoutish, 5-15 mm. long, appressed-villosulous; blades thin-membranous, dark- or deep-green above, dull pale-green beneath, elliptic or obovate-elliptic, 8-23 cm. long, 2.5-7.5 cm. wide, acuminate at the apex, entire, attenuate-acuminate at the base, sparsely puberulent above, sparsely or rather densely short-pubescent beneath, villosulous along the midrib, with appressed grayish or yellowish-gray antrorse hairs; midrib plane above, prominent and rather stout beneath, densely villosulous beneath like the petioles and young twigs; secondaries slender, 7-9 per side, arcuate-ascending, not extending to the margins anastomosing in many loops several mm. from the margins, plane on both surfaces or slightly subprominent beneath; vein and veinlet reticulation sparse; inflorescence axillary and supra-axillary, cymose, two per node toward the apex of the branchlets, apparently not numerous; peduncles slender, 3-6.5 cm. long, densely appressed-pubescent with grayish antrorse hairs, usually bifurcate and each branch again once or at most twice dichotomous, few-flowered, usually about 11-14 flowered, but apparently only a few of the flowers producing fruit, the branches appressed-pubescent like the peduncles; pedicels slender, 1-3 mm. long, elongating in fruit to 7 mm., densely appressed-pubescent or villosulous, with yellowish-gray antrorse hairs; bractlets and prophylla linear, 1-5 mm. long, densely appressed-villosulous; calyx infundibular, 6-8 mm. long, about 3 mm. wide at the apex, the lobes 4, 2-2.5 mm. long, triangular-ovate, acute, the entire calyx very densely villosulous with grayish or yellowish-gray appressed hairs like the twigs; only fragmentary corollas seen, the tube slender, about 5 mm. long, 1 mm. wide throughout, glabrous; stamens 4, inserted about 3 mm. from the base of the tube, at one level, included; filaments about 0.2 mm. long, glabrous; anthers oblong, about 0.7 mm. long; style not seen; ovary obconic, about 1 mm. long and wide, slightly 4-lobed at the apex, glabrous, 4-celled; fruiting-calyx greatly enlarged, cupuliform, about 12 mm. long and wide, more or less appressed-pubescent, deeply 4-lobed or -split; fruit ovoid, dull-yellow, about 15 mm. long

and 11 mm. wide, smooth and shiny.

Type in Britton herb. at the N. Y. Bot. Gard., isotype in herb. Chi. Nat. Hist. Mus., collected in rich woods bordering quebradas at the base of slopes, southeast-facing slopes, Ptari-tepui, state of Bolívar, alt. 1585-1600 m., November 10 or 11, 1944, *Julian A. Steyermark 60036*.

The species is obviously closely related to *A. Duckei* Moldenke and *A. intermedia* Moldenke, the former known only from Amazonas, Brazil, and the latter known from Amazonas, Venezuela, and Amazonas, Maranhão, and Pará, Brazil.

***Duranta Steyermarkii* Moldenke, sp. nov.**

Frutex; ramis rigidis acutiuscule tetragonis divaricatis spinosis dense puberulis, in statu senectute glabrescentibus; spinis brevibus crassis decussatis obtusis 3-4 mm. longis; internodiis abbreviatis; petiolis crassis 1.5-5 mm. longis dense puberulis dein glabratis; laminis coriaceis rugosis ovatis 2-5.3 cm. longis, 1.3-3.3 cm. latis, acutis argute serratis, ad basin rotundatis vel subtruncatis, supra minute puberulis dein glabratis bullatisque, subtus puberulis dein punctulatis; inflorescentiis axillaribus racemiformibus rectis vel adscendentibus dense adpresso-puberulis vel strigillosis.

Shrub 3-4 feet tall; branches stiff, rather acutely tetragonal, divaricate, spinose, densely puberulent with buff closely appressed hairs when young, less so and even glabrate in age, the spines on the upper part of the branches (at least) short, stout, decussate, blunt, 3-4 mm. long; principal internodes 1-3 cm. long, mostly abbreviated; petioles stout, 1.5-5 mm. long, densely puberulent when young, glabrous in age; blades coriaceous, dark-green and rugose above, dull-green beneath, ovate, 2-5.3 cm. long, 1.3-3.3 cm. wide, typically acute (rounded on abnormal? leaves), sharply serrate from almost the base to the apex, rounded or subtruncate at base, minutely puberulent with buff hairs above when young, glabrous and bullate in age, puberulent beneath when young, merely punctulate in age; midrib slender, deeply impressed above, very sharply prominent beneath; secondaries slender, deeply impressed above, sharply prominent beneath, 4-6 per side, arcuate-ascending, extending almost to the margins; inflorescence axillary, racemiform, 2.5-6 cm. long, apparently erect or ascending during anthesis, widely divaricate in fruit, the very abbreviated peduncle and rachis densely appressed-puberulent or strigillose, or, after anthesis marked with more or less scattered coarse but very short erect hairs; flowers not seen; fruiting-calyx cucullate, 7-9 mm. long, minutely puberulent, closely appressed to the fruit; fruit yellow-green.

Type in Britton herb. at the N. Y. Bot. Gard., isotype in herb. Chi. Nat. Hist. Mus., collected at Cerro Negro, above La Sabana de las Piedras, northwest of Caripe, state of Monagas, alt. 1500-2180 m., April 15, 1945, *Julian A. Steyermark 62102*.

It gives me great pleasure to dedicate this species and the several others in the Eriocaulaceae on pages 114-129 of this work to my

friend and colleague, Dr. Julian A. Steyermark, who has done such remarkably fine and intensive collecting in North, Central, and South America and to whose labors we owe so much of our present knowledge of the flora of these areas.

SCROPHULARIACEAE³²

Bacopa (*Mella*) *punctata* Pennell, sp. nov.

Planta annua, 1-1.5 dm. alta, villosa; folia lanceolato-attenuata, supra dense pubescentia, infra glabra et dense glandulari-punctata; sepala irregularia, duobus ovatis, tribus lanceolatis; corolla 2.5 mm. longa, albescens, zygomorpha; capsula ellipsoidalis 2.5 mm. longa.

Plants annual, erect, simple, 1-1.5 dm. tall, the stems and inflorescence villose with white hairs. Leaves lanceolate-attenuate, 9-19 mm. long, proximally rounded, distally dentate, above densely pubescent, beneath glabrous (pubescent on midrib) and densely glandular-punctate. Sepals 5, irregular, the wider two ovate, acute, the narrower three lanceolate, attenuate, 3 mm. long. Corolla 2.5 mm. long, white or pale lavender, zygomorphic, narrowly two-lipped, lower lip slightly decurved, upper lip slightly longer and overspreading the lower. Stamens didynamous; anthers small, white. Capsule ellipsoid, 2.5 mm. long. Seeds brown, cylindrical, oblong, 0.3 mm. long.

Type in herb. Acad. Nat. Sci. Phila., isotype in herb. Chi. Nat. Hist. Mus., collected in swampy meadow, south of Divina Pastora, Gran Sabana, south of Mount Roraima, state of Bolívar, alt. 915-1005 m., October 3, 1944, *Julian A. Steyermark* 59263.

Bartsia *spissifolia* Pennell, sp. nov.

Ramosissima; caulis 1.5 dm. altus; folia spissa, 20 mm. longa, ca. 12-bullata, involuta, glandulari-pubescentia.

Ascending, much branched, the stem 1.5 dm. tall. Leaves overlapping, 20 mm. long, about 12-bullate, involute, glandular-pubescent.

Type in herb. Chi. Nat. Hist. Mus., collected on Páramo de Pozo Negro, between San José and Beguilla, state of Mérida, alt. 2590-3220 m., May 3, 1944, *Julian A. Steyermark* 56286.

Bartsia *tachirensis* Pennell, sp. nov.

Caulis erectus 3 dm. altus; folia 11-12 mm. longa, 7-9-bullata, supra pubescentia, infra glabra; calyx 6 mm. longus, glandulari-pubescentia, lobis aequalibus, 1-1.5 mm. longis, acutis; corolla 9 mm. longa, purpurea, labio superiore 6 mm. longo hirsuto, labio inferiore 3.5 mm. longo glabro; capsula 4.5 mm. longa.

Erect, little branched stem 3 dm. tall. Leaves not overlapping, 11-12 mm. long, 7-9-bullate, above pubescent, beneath glabrous. Bracts shorter and wider than leaves, above glandular-hirsute, beneath glandular-pilose. Calyx 6 mm. long, glandular-pubescent (more so ciliolately on margins, less so on sides), the four lobes about even, 1-1.5 mm. long, acute. Corolla 9 mm. long, purple, upper lip

³²By F. W. Pennell

6 mm. long, hirsute with dark-jointed hairs, lower lip 3.5 mm. long, glabrous, appressed. Capsule 4.5 mm. long, finely pubescent, but not glandular.

Type in herb. Acad. Nat. Sci. Phila., isotype in herb. Chi. Nat. Hist. Mus., collected on limestone outcrops of Páramo de Tamá, state of Táchira, alt. 3045-3475 m., July 15, 1944, *Julian A. Steyermark 57409*.

The Venezuelan species of *Bartsia* at present known may be keyed as follows:

- A. Cauline leaves not over 1.2 cm. long, hardly overlapping, the bullae on each leaf less than 10.
- B. Lips both tomentose, violet-purple, of equal length; leaves oblanceolate, finely ciliate with short glandless hairs; stems 1-2.5 dm. tall *B. parvifolia*
- BB. Lips, the upper purple, glandular-tomentose, the lower shorter, glabrous; stem 3 dm. tall *B. tachirensis*
- AA. Cauline leaves 2 cm. long, densely overlapping, the bullae 10-12, narrowly cylindrical and glandular-pubescent *B. spissifolia*

Castilleja meridensis Pennell, sp. nov.

Caules tenaces, 1-2 cm. alti, glandulari-pubescentes; folia divaricate brevi-lobata, 1-1.5 cm. longa; bracteae flavorubrae; calyx 15 mm. longus; corolla 15-20 (-25) mm. longa, galea 7-8 mm. longa et labio inferiore 2 mm. longo; capsula 11-13 mm. longa.

Stem wiry, 1-2 dm. tall or more, glandular-pubescent. Leaves glandular-pubescent, divaricately short-lobed, 1-1.5 cm. long. Pedicels 3-5 mm. long, ascending. Bracts (and galea) yellowish red, with darker red (as contrasting pattern). Calyx 15 mm. long, glandular-pubescent, dorsally entire, ventrally cleft. Corolla 15-20 (-25) mm. long, galea yellowish red, 7-8 mm. long, lower lip knob-like, green, incurved, 2 mm. long. Capsule 11-13 mm. long.

Type in herb. Acad. Nat. Sci. Phila., collected on paramo; Pico de Bolívar, Sierra Nevada de Mérida, above Paso del Toro, state of Mérida, alt. 4120-4420 m., *Joseph A. Ewan 16971*.

Also collected at La Mucuy, state of Mérida, alt. 2000 m. *T. Laser 527* (U. S. Nat. Herb.).

Castilleja Steyermarkii Pennell, sp. nov.

Fruticosa, ramosa, 6-9 dm. alta, albo-hirsuta; folia 2-3 cm. longa, divaricato-lobata; pedicella 10 mm. longa; bracteae citroflavae; calyx 20-25 mm. longus; corolla 25-40 mm. longa, flavescens, labio superiore elongato-attenuato (20 mm.), labio inferiore incurvo viride (1.5 mm.); capsula 15 mm. longa.

Stem shrubby, 6-9 dm. tall, distally white-hirsute with glandless hairs. Leaves dull green, divaricately lobed about 2-3 cm. long, the lobes distal and short. Pedicel 10 mm. long, spreading-ascending. Bracts yellow (pale dull yellow proximally, lemon-yellow distally to

scarlet). Calyx 20-25 mm. long, greenish yellow distally, dorsally entire and prolonged, ventrally deeply cleft. Corolla 25-40 mm. long, pale yellow-green; upper lip elongate-attenuate, 20 mm. long, dorsally glandular-pubescent; lower lip knob-like, incurved, deep green, 1.5 mm. long. Capsule 15 mm. long.

Type in herb. Acad. Nat. Sci. Phila., isotype in herb. Chi. Nat. Hist. Mus., collected between Las Delicias and Paraguita, along Río Táchira, state of Táchira, alt. 1675-1890 m., July 12, 1944, *Julian A. Steyermark 57137*, "bracts pale dull green in lower half, lemon-yellow in upper half; calyx grass-green in lower half, greenish yellow in upper half; corolla pale yellow green. This is the common widespread type found here, yellow-flowered; rarely a plant with reddish bracts is found."

Also collected on rocky gneissic-granitic slopes, between Timotes and Paramito, state of Mérida, alt. 2285-3500 m., March 24, 1944, *Steyermark 55694*, "bracts scarlet; upper half of calyx-tube yellow with orange stripes, pale green in lower half; corolla pale green with yellow green margins."

Castilleja trujillensis Pennell, sp. nov.

Caulis fruticosus, 4 dm. altus vel altior, dense tomentosus; folia 1-1.3 cm. longa, distaliter divaricato-lobato; calyx 16 mm. longus, coccineus; corolla 30 mm. longa, galea 15 mm. longa, labio inferiore 1 mm. longo; capsula 10-11 mm. longa.

Stem shrubby, at least 4 dm. tall, densely tomentose. Leaf-blades 1-1.3 cm. long, distally with 1 or 2 pairs of divaricate lobes. Calyx 16 mm. long, scarlet. Corolla 30 mm. long, distally much exceeding and decurved from calyx; lower lip knob-like, 1 mm. long. Capsule 10-11 mm. long.

Type in herb. Acad. Nat. Sci. Phila., isotype in herb. Chi. Nat. Hist. Mus., collected on páramo, near Las Sabanetas, state of Trujillo, alt. 2600-2800 m., February 6, 1944, *Julian A. Steyermark 55376*, "calyx scarlet; corolla and filaments pale green, anthers and tip of calyx yellow."

The Venezuelan species of *Castilleja* at present known may be keyed as follows:

A. Plant perennial, clumped or tufted; leaves linear or with linear segments, blackening in drying; flowers pedicelled; calyx spathaceous, sepals united posteriorly nearly to apex by anteriorly deeply cleft; corolla 20-35 mm. long, decurved. (*Eucastilleja*). Plants of Tierra Fria.

B. Stems divaricately much branched, pubescent to hirsute; leaf-blades divaricately pinnatifid.

C. Indumentum of glandless hairs.

D. Corolla 25 mm. long; stem hirsute with white hairs; leaves 2.5-3 cm. long; stems tall, stout

..... *C. Steyermarkii*

- DD. Corolla 15-20 mm. long; stem asperous;
 leaves 0.5-2 cm. long; stems low,
 slender..... *C. divaricata*
- CC. Indumentum of close and partially glandular hairs;
 corolla 20-30 mm. long; stems roughish-
 pubescent.
- D. Plant low, with many stems; leaf-blades finely
 divided *C. meridensis*
- DD. Plants taller; stems thicker, widely branched;
 leaf-blades divaricate..... *C. trujillensis*
- BB. Stems simple or virgately branched, glabrous; leaf-
 blades entire to somewhat lobed..... *C. integrifolia*
- AA. Plant annual, solitary from root; leaves lanceolate or
 linear-lanceolate, remaining green in drying;
 flowers sessile; calyx thin, entire, dorsally rup-
 tured by maturing capsule; corolla green or green-
 ish, 9-10 mm. long, falling unopened. Plant of
 Tierra Templada *C. arvensis*

Castilleja arvensis S. & C.

This widespread species of lower mountain-slopes, so long known as *C. communis* Benth. (1846), is clearly the plant earlier (1830) described as *C. arvensis* S. & C., as shown by the type-collection of that plant. This transfer leaves without a name the plant of eastern Mexico, which Bentham had supposed to be *C. arvensis*; I suggest that it become *C. agrestis* Pennell, nom. nov., with type *C. G. Pringle* 3349 from corn fields near Patzcuaro, Michoacan, collected November 18, 1890 (planta annua, 5-9 dm. alta, foliis integris spatulato-vel oblongo-dilatatis corollam superantibus, spicis quam *C. arvensis* majoribus).

Lindernia brachyphylla Pennell, sp. nov.

Planta 2 dm. longa, glabra; folia ovata acuta, integra, 0.5 cm. longa, sessilia; pedicella 10-13 mm. longa; sepala 3 mm. longa, oblongo-lanceolata corolla 9-10 mm. longa, labio superiore minore; filamenta superiora breviora fertilia, antheris anterioribus sterilibus; capsula 4 mm. longa, ut *Lindernia* typice dehiscente.

Plant herbaceous, semi-fleshy, ascending, 2 dm. long, glabrous. Leaves (bracts) ovate, acute, 3-veined, obscurely denticulate or entire, 0.5 cm. long, 3.5 mm. wide, sessile, much exceeded by the spreading, then deflexed, pedicels which become 10-13 mm. long. Sepals 3 mm. long, oblong-lanceolate, distinct, acute to obtuse. Corolla 9-10 mm. long, the upper lip lavender, relatively short and narrow, the lower lip widely spreading, white with lilac on margin and lavender within orifice on lateral lobes, the middle lobe with violet spot between two yellow anthers. Posterior stamens short and fertile, anterior anthers abortive spread along (and detaching from) anterior side of corolla. Capsule 4 mm. long, typically Lindernioid (dehiscing so as to leave median septum entire).

Type in herb. Acad. Nat. Sci. Phila., isotype in herb. Chi. Nat. Hist. Mus., collected on margin of pool in rock, open swamps and

igneous rock-outcrops, Puerto Ayacucho, Territorio Federal Amazonas, alt. 200 m., September 11, 1944, *Julian A. Steyermark* 58522.

GESNERIACEAE³³ALLOPLECTUS³⁴

Key to the Venezuelan species:

- Flowers umbellate, the common peduncle elongate or at least obvious.
- Calyx lobes ovate-deltoid, broadest near base; common peduncle as long as petioles *A. capitatus* Hook.
- Calyx lobes oblong-ovate, narrowed at base; common peduncle shorter than petioles *A. congestus* Linden
- Flowers solitary or aggregate in the leaf axils, or if umbellate, the common peduncle obsolete, not more than 2 mm. long.
- Leaf blades glabrous on the upper surface, almost glabrous beneath.....*A. glabrescens* Morton
- Leaf blades hairy on both surfaces.
- Calyx lobes linear or nearly so, green, entire, 7-8 mm. long, 1.5-3 mm. wide; corolla yellow, very slender *A. microsepalus* Morton
- Calyx lobes much larger and broader, often colored, often toothed.
- Corolla white, red-spotted within throat *A. tigrinus* (Karst.) Hanst.
- Corolla yellow or red, not spotted.
- Corolla not contracted in throat. Leaves ovate, small, subcordate at base; stems densely hirsute; corolla yellow *A. aquatilis* Morton
- Corolla contracted in throat.
- Pedicels elongate, 3-5.5 cm. long *A. deltoideus* Morton
- Pedicels shorter.
- Stems densely hirsute.
- Corolla pale yellow; calyx lobes lanceolate, narrowed at base..... *A. ornatus* Morton
- Corolla with 2 upper lobes vermilion, the 3 lower yellow, the tube rose-red; calyx lobes deeply cordate, broadest at base *A. meridensis* Klotzsch

³³By C. V. Morton. Published by permission of the Secretary of the Smithsonian Institution.

³⁴Several additional species, some of them very dissimilar to those keyed here, are represented from Venezuela by material inadequate for diagnosis.

Stems densely yellowish-sericeous. Corolla
yellow; calyx lobes narrowed at base

..... *A. ichthyoderma* Hanst.

***Alloplectus aquatilis* Morton, sp. nov.**

Suffrutex; caules apice ca. 1 mm. diam., deorsum 5 mm. diam., apice dense hirsuti, pilis fulvis, acutis, patulis, pluricellularibus, demum glabrati; folia opposita paullo inaequalia, conformia, petiolo majore ca. 2 cm. longo, minore 1 cm. longo, densissime hirsuto; laminae foliorum majorum ovatae, 6 x 3 cm. usque ad 7 x 3.8 cm., gradatim acuminatae, basi rotundatae et subcordatae, tenuiter membranaceae, perspicue crenatae, supra hirsutae, subtus praecipue in costa et venis hirsutae, venis lateralibus 5-7-jugis; flores axillares, solitarii, pedunculo florifero ca. 3 cm. longo, dense hirsuto; calyx viridis, 2.3-2.5 cm. longus, lobis liberis, erectis, lanceolatis, 6-7 mm. latis, acuminatis, basi paullo angustatis, marginibus non recurvatis, dentatis (dentibus 5-7 utrinque latere), utrinque hirsutis; corolla lutea, in calyce obliqua, ca. 3 cm. longa, externe parce hirsuta, in fauce ampliata, limbo patulo, paullo obliquo, lobis paullo inaequalibus, non ciliatis.

Type in U. S. Nat. Herb., no. 2028756, collected near waterfall in cool forest between El Molino and the ridge above San Isidro Alto, state of Mérida, alt. 2430-2895 m., May 14, 1944, *Julian A. Steyermark* 56528.

The material is inadequate for a complete diagnosis of the floral parts. However, it is recognizable as an obviously distinct species of the section *Glossoloma*, related most closely, apparently, to *A. panamensis* Morton.

***Alloplectus deltoideus* Morton, sp. nov.**

Suffrutex 0.6-0.9 m. altus; caules non ramosi, apice 3 mm. diam., basi 5 mm. diam., teretes, apicem versus dense velutino-pubescentes, pilis rubescentibus, multicellularibus; folia opposita aequalia, longe petiolata, petiolo 4-5 cm. longo, dense sericeo-velutino; laminae foliorum ellipticae, 13 x 5.5 cm. usque ad 18 x 7.3 cm., acuminatae, basi cuneatae, non decurrentes, membranaceae, margine fere ubique crenulatae vel subserrulatae, supra virides, dense scabridulae, pilis brevibus, paucicellularibus, subtus virides vel purpurascentes, in venis dense et in mesophyllo parce strigosae, venis lateralibus 7-10-jugis; inflorescentia axillaris, umbellata, 2- vel 3-flora, pedunculo communi subnullo (1-2 mm. longo), basi bibracteato, bracteis foliaceis, parvis, lanceolatis, 1-1.2 cm. longis, deciduis, pedicellis elongatis, 3-5.5 cm. longis, subsericeo-velutinis, apice parce incrassatis; calyx ruber, lobis liberis, subaequalibus, late deltoideus, 1.7-1.9 cm. longis, 11-13 mm. latis, longe acuminatis, basi late cordatis, utrinque dense strigulosis marginibus recurvatis, integris; corolla ignota; ovarium pilosulum; discus in glandulam posticam deltoideam glabram acutam et glandulam anticam multo minorem reductus.

Type in U. S. Nat. Herb., no. 2028780, collected on Sororopan-tepuí, state of Bolívar, on a densely wooded slope of a narrow ridge

between the quebrada and the summit, alt. 2130-2250 m., November 15, 1944, *Julian A. Steyermark 60170*.

Related to *Alloplectus capitatus* Hook. (Bot. Mag. Curtis 75: pl. 4452. 1849), which was described from a cultivated plant of unknown origin and which has not been identified with recent collections. It may have been from Venezuela, but more likely came from Colombia.

***Alloplectus glabrescens* Morton, sp. nov.**

Suffrutex 0.9-1.2 m. altus; caules sursum non ramosi, apice ca. 2 mm. crassi, deorsum ca. 8 mm. diam., apicem versus minute strigillosi, mox glabri, straminei, internodiis inferioribus ca. 8 cm. longis, nodis incrassatis; folia per paria leviter inaequalia, petiolata, petiolis foliorum inferiorum usque ad ca. 3 cm. longis, ca. 1.2 mm. diam., minute strigillosis vel glabris; lamina foliorum elliptica, obliqua, 6 x 2.5 cm. ad 14 x 6 cm., herbacea, fragilis, apice abrupte et acriter acuminata, basi late cuneata, obliqua, integra, supra glabra, subtus pallidior, minutissime strigillosa vel fere glabra, venis 6- vel 7-jugis, supra impressis, subtus prominentibus; pedunculus communis subnullus, pedicellis 2 vel 3 axillaribus, basi bracteatis, in anthesi ca. 15 mm. longis, crassis, viridibus et aurantiaco-tinctis, strigillosis, apicem versus incrassatis; calyx pallide viridis (*Steyermark*), ca. 7 mm. longus, lobis paullo inaequalibus, postico brevior, fere libero, ca. 6 mm. longo et 2.5 mm. lato, alteris ca. 3 mm. latis, basi 2-2.5 mm. connatis, omnibus ovatis, acutis, perspicue crenatis, herbaceis, intus dense sericeo-pilosis, externe parce substrigillosis; corolla coccinea (*Steyermark*), in calyce obliqua, ca. 2 cm. longa, basi saccata, tubo supra basin ca. 4 mm. lato, sursum gradatim ampliato, fauce 7-7.5 mm. lato, externe longe sed subsparse piloso, pilis albis, septatis, ca. 1 mm. longis, intus basi parce piloso, limbo subregulari, ca. 8 mm. lato, lobis ca. 3 mm. longis et latis, rotundatis; stamina inclusa, filamentis rectis, basi cum corollam ca. 3 mm. adnatis, parte libera ca. 11 mm. longa, glabra, antheris latioribus quam longioribus, ca. 1 mm. longis et 2 mm. latis, liberis vel leviter cohaerentibus, connectivo crasso, loculis discretis; ovarium sericeo-pilosum; stylus glaber, ca. 1 cm. longus; stigma stomatomorphum; discus in glandulam posticam glabram bilobam reductus; fructus albidus (*Steyermark*), ca. 9 mm. longus, parce pilosus, acutus.

Type in U.S. Nat. Herb., no. 2028742, collected along stream, in woods above Las Cuadras, along Quebrada Molino, north of Torondoy, state of Mérida, alt. 1820-2255 m., March 27, 1944, *Julian A. Steyermark 55818*. *Steyermark* gives the common name as "corallito."

Obviously related to *Alloplectus pycnosuzygius* (Donn. Smith) Morton, comb. nov. (*Besleria pycnosuzygia* Donn. Smith, Bot. Gaz. 52: 53. 1911), of Costa Rica and Panama, which differs in having entire calyx lobes, and narrower leaves, gradually attenuate to apex and cuneate at base. In my revision of *Besleria*, I allowed *B. pycnosuzygia* to remain in the genus, pointing out, however, that the discrete anther-cells contradicted the generic character of *Besleria*. I now believe that these species find their closest allies in the genus *Alloplectus*.

***Alloplectus microsepalus* Morton, sp. nov.**

Suffrutex epiphyticus, ca. 50 cm. longus; caules crassi, apice ca. 5 mm. diam., deorsum ca. 1.5 cm. diam., apicem versus albo-pilosi; folia opposita subaequalia, breviter petiolata, petiolo 0.5-1.5 cm. longo, pallide hirsuto; laminae foliorum anguste ellipticae, 9 x 2.5 cm. usque ad 13 x 4.5 cm., apice vix acutae, basi vix angustatae, late cuneatae, obliquae, subcoriaceae, leviter denticulatae vel subintegrae, utrinque dense subappresso-villosae, venis lateralibus 5-vel 6-jugis, valde arcuatis; flores axillares, plures, pedunculo communi nullo, pedicellis brevissimis, 3-5 mm. longis, albo-pilosis, basi bracteatis, bracteis viridibus, ovatis vel ovato-lanceolatis, 8-10 mm. longis, 3-4 mm. latis, acutis, basi angustatis, integris, utrinque albo-pilosis; calyx viridis 7-8 mm. longus, lobis liberis, erectis, paullo inaequalibus, 4 linearibus ca. 1.5 mm. latis, postico ca. 3 mm. lato, omnibus acuminatis, basi paullo angustatis, integris, utrinque albo-pilosis; corolla flava, in calyce suberecta, ca. 15 mm. longa, basi vix saccata, tubo cylindrico, basi ca. 2 mm. lato, sursum paullo ampliato et 3.5 mm. lato, in fauce contracto et 3 mm. lato, externe piloso, intus glabro, limbo terminali, parvo, subregulari, 4 mm. lato, lobis vix 0.5 mm. longis, 2 mm. latis, non maculatis; filamenta basi ca. 2 mm. connata et cum corolla adnata, glabra; antherae minutae, inclusae, quadratae, ca. 1 mm. longae et latae, loculis discretis; ovarium pilosum; stylus gracilis, glaber; discus in glandulas quinque parvas glabras oblongas divisus.

Type in herb. Chi. Nat. Hist. Mus., no. 1205122, isotype in U. S. Nat. Herb. (no. 2028794), collected on Cerro de la Cueva de Doña Anita, south of valley of Caripe, state of Monagas, alt. 1100-1200 m., April 7, 1945, *Julian A. Steyermark 61905*.

Related only to the rare *Alloplectus congestiflorus* (Donn. Smith) Morton, of Costa Rica, which differs in having obviously serrulate leaves, larger, colored calyx segments, a reddish corolla, narrower bracts, and a solitary disk gland. The flowers are the smallest of any described species of *Alloplectus*.

***Alloplectus ornatus* Morton, sp. nov.**

Suffrutex epiphyticus; caules crassi, apice 4-5 mm. diam., deorsum 7 mm. diam., subquadrangulares, densissime fulvo-hirsuti, pilis 3-4 mm. longis, multicellularibus; folia opposita subaequalia, breviter petiolata, petiolo 1.5-2 cm. longo, crasso, densissime hirsuto; laminae, foliorum ellipticae, usque ad 11 cm. longae et 5 cm. latae, acuminatae, basi angustatae, late cuneatae, obliquae, membranaceae, perspicue crenatae fere usque ad basim, utrinque dense hirsutae, subtus purpurascens, venis lateralibus 5-7-jugis, valde arcuatis; flores fasciculati, axillares, breviter pedunculati, pedunculo 0.5-1 cm. longo, crasso, dense hirsuto; calyx viridis, ca. 2 cm. longus, lobis liberis, lanceolatis, fere aequalibus, ca. 5 mm. latis, acutis, basi paullo angustatis, marginibus non recurvatis, apicem versus parce denticulatis, utrinque hirsutis; corolla flava, in calyce suberecta, ca. 2 cm. longa, basi vix saccata, tubo cylindrico, crasso, basi ca. 7 mm. lato, sursum paullo ampliato et 1 cm. lato, in fauce

paullo contracto et 7 mm. lato, externe dense hirsuto, intus glabro, limbo terminali, parvo, quam fauce vix latiore, lobis minutis, imbricatis, incurvatis, vix 2 mm. longis et latis, intus glabris; filamenta glabra; antherae quadratae, 2 mm. longae et latae, glabrae; ovarium villosum; stylus glaber; discus in glandulam crassam posticam reductus.

Type in U. S. Nat. Herb., no. 2028736, collected in dense woods below páramo, above Humocaro Bajo, La Quebrada Cortijo, state of Trujillo, alt. 2600-2800 m., February 6, 1944, *Julian A. Steyermark* 55355.

The relationships of the present species are uncertain. It perhaps belongs to the subgenus *Heintzia*.

BESLERIA³⁵

Key to the Venezuelan species:

- Common peduncle obsolete (0-2 mm. long), the pedicels seemingly aggregate in the leaf axils.
- Calyx tube much longer than the lobes. Corolla yellow; calyx lobes mucronate below the apex; leaves glabrate or strigillose.
- Calyx tube glabrous; leaf blades spinulose-serrate; lateral veins 10-13 pairs..... *B. spinulosa* Morton
- Calyx tube hirsutulous; leaf blades merely serrulate; lateral veins 8 or 9 pairs *B. conformis* Morton
- Calyx tube much shorter than the lobes or absent.
- Stems and leaf veins beneath hirsute; calyx lobes lanceolate to linear-lanceolate, 14-21 mm. long.
- Corolla white, 1.5-1.8 cm. long; pedicels about 0.7 cm. long; calyx lobes hirsute on both sides
..... *B. disgrega* Morton
- Corolla yellow, 2.5-3 cm. long; pedicels 4-5.5 cm. long; calyx lobes glabrous within *B. ornata* Morton
- Stems and leaf veins beneath strigillose or glabrate; calyx lobes oblong to suborbicular.
- Corolla 1.3-1.5 cm. long, orange, subregular; leaf blades inconspicuously denticulate, not pellucid-punctate.
- Calyx lobes oblong, 3-4 mm. long, obtuse, not mucronate *B. solanoides* H.B.K.
- Corolla 2-4 cm. long, yellow, strongly bilabiate; leaf blades deeply serrate, pellucid-punctate.
- Calyx lobes suborbicular, 8-9 mm. long
..... *B. labiosa* Hanst.
- Calyx lobes oblong-lanceolate, 15-18 mm. long
..... *B. longipes* Urban
- Common peduncle present, usually elongate (sometimes only 5 mm. long), the pedicels umbellate or subcorymbose.

³⁵Several additional species are represented from Venezuela by material inadequate for diagnosis.

Stems and leaf veins beneath hirsute. Calyx lobes linear-lanceolate, subulate-attenuate *B. concinna* Morton

Stems and leaf veins beneath tomentose, puberulous, striatulate, or glabrous.

Ovary and style pilosulous. Corollas yellow.

Leaf blades at maturity entirely glabrous; common peduncles very short, only 5-7 mm. long. Corolla not spurred at base *B. kalbreyeri* Fritsch

Leaf blades persistently pubescent beneath; common peduncles at least 1 cm. long, up to 10 cm. long.

Calyx lobes lanceolate, acuminate, 7 mm. long.

Corolla spurred at base, 3.5-4 cm. long

..... *B. penduliflora* Fritsch

Calyx lobes ovate, obtuse, not over 5 mm. long.

Leaf blades glabrous on the upper surface. Corolla spurred at base,

..... *B. pendula* Hanst.

Leaf blades persistently hispidulous on the upper surface

..... *B. ovoidea* Morton

Ovary and style glabrous.

Calyx 4-5 mm. long.

Stems lanate-tomentose. Calyx lobes not mucronate; corolla red-orange

..... *B. reticulata* Fritsch

Stems strigose or glabrate.

Corolla yellow, 10-12 mm. long; calyx lobes ovate, not mucronate, evenly strigillose externally. Leaf blades entire

..... *B. clivorum* Morton

Corolla red or yellow, 13-16 mm. long; calyx lobes mucronate below apex.

Peduncles up to 21 cm. long; lateral veins 11-15 pairs; leaf blades large, up to 28 cm. long and 13 cm. wide;

calyx glabrous, the lobes ciliolate *B. affinis* Morton

Peduncles 5-6 cm. long; lateral veins 5-7 pairs; leaf blades smaller, up to 12.5 cm. long and 4.5 cm. wide;

calyx sparingly puberulous *B. mucronata* Hanst.

Calyx 7.5-14 mm. long.

Calyx 7.5-8 mm. long, the lobes orbicular.

Corolla yellow, about 2 cm. long; peduncles up to 15 mm.

long; calyx lobes connate about to middle

..... *B. connata* Morton

Corolla purplish- or brownish-orange, 12-15 mm. long; peduncles up to 7.5 cm. long; calyx lobes connate

only at base

..... *B. rhytidophyllum* Hanst.

Calyx up to 14 mm. long, the lobes ovate to lanceolate, acuminate. Corolla about 2 cm. long, orange

.....

..... *B. laxiflora* Benth.

Besleria concinna Morton, sp. nov.

Suffrutex ca. 0.6 m. altus; caules non ramosi, apice ca. 2 mm. diam., deorsum 4 mm. diam., apicem versus dense hirsuti, demum glabrati, internodiis inferioribus ca. 5.5 cm. longis; folia per paria paullo inaequalia, petiolata, petiolis usque ad 2 cm. longis, hirsutis;

lamina foliorum elliptica, 11 x 4 cm. usque ad 15 x 5 cm., apice longe et acriter acuminata, basi longa cuneata, obliqua, membranacea, perspicue sed minute serrulata, dentibus ca. 30 utrinque latere, vix 0.5 mm. longis, supra parce pilosa, subtus praecipue in venis longe hirsuta, pilis hyalinis septatis ca. 1.2 mm. longis, venis lateralibus 13-vel-14-jugis, ex angulo acuto excurrentibus, arcuatis; pedunculus communis 2.5-3.5 cm. longus, pilosus, pedicellis umbellatis, 7-8 mm. longis; calyx 1 cm. longus, tubo brevissimo, vix 1 mm. longo, lobis subaequalibus, lineari-lanceolatis, 1.5-1.8 mm. latis, non imbricatis, subulato-attenuatis, integris, ciliatis, membranaceis, externe parce hirsutis, intus glabris; corolla aurantiaco-rubra, in calyce erecta, ca. 15 mm. longa, tubo basi ca. 4 mm. lato, sursum paullo ventricosus et 5 mm. lato, in fauce paullo contracto, externe glabro, limbo terminali, angusto, ca. 6 mm. lato, lobis subaequalibus, ca. 2 mm. longis et latis, eciliatis; filamenta glabra; antherae cohaerentes, subquadratae, ca. 1 mm. longae et latae, glabrae; ovarium et stylus glabri.

Type in herb. Chi. Nat. Hist. Mus., no. 1205118, collected on dry, brushy slopes between Río León and "Carmelita," northeast of Bergantín, state of Anzoátegui, alt. 600 m., March 9, 1945, *Julian A. Steyermark* 61465.

A member of *Eubesleria*, subsect. *Elongatae*, not closely allied to any known species. In the key in my revision of the genus it will run directly to *B. trichiata* Morton, of Peru, which is different in many respects, notably in the coriaceous, imbricate, oblong, rounded and mucronate calyx lobes.

***Besleria conformis* Morton, sp. nov.**

Herba 0.9-2.1 m. alta; caules irregulariter compressi, non ramosi, apice ca. 2 mm. diam., deorsum 5 mm. diam., apicem versus sericeo-strigosi, demum glabrati, internodiis inferioribus usque ad 8 cm. longis; folia opposita, per paria parum inaequalia, vel omnia alterna, petiolata, petiolis usque ad 6 cm. longis, strigosis; lamina foliorum elliptica vel elliptico-oblonga, 11.5 x 4 cm. usque ad 18 x 8.5 vel 23 x 5.5 cm., longe acuminata, basi cuneata vel longe attenuata, serrulata (basi excepta), membranacea, supra pilos paucos rectos appressos in superficie ferens, subtus in costa, venis, et superficiebus strigillosa, venis lateralibus 8-vel-9-jugis, angulo acuto adscendentibus; pedunculus communis subnullus, pedicellis paucis, floriferis ca. 1.1 cm. longis, hirsutulis, pilis rectis, sursum directis; calyx urceolatus, luteus (*Steyermark*), ca. 11 mm. longus, 7 mm. latus, externe hirsutulus, pilis rectis, adscendentibus, lobis ovato-triangularibus, 4-4.5 mm. longis, 2-3 mm. latis, reticulato-venosi, integri (margine hyalina), rotundatis, sub apice mucronulatis; corolla lutea (*Steyermark*), 15 mm. longa, tubo cylindrico, ca. 4.5 mm. lato, in fauce non contracto, utrinque glabro, limbo subregulari, ca. 5.5 mm. lato, lobis ca. 2 mm. longis, rotundatis; stamina inclusa, filamentis glabris, antheris cohaerentibus, glabris, 1.2 mm. longis, 2.3 mm. latis, loculis confluentibus; ovarium glabrum; discus annularis, integer, glaber; bacca globosa, aurantiaco-rubra (*Steyermark*), ca. 10 mm. diam.

Type in herb. Chi. Nat. Hist. Mus., nos. 1205121 and 1205134, isotype in U. S. Nat. Herb. (no. 2028802), collected on Cerro Turumiquire, on north-facing slopes between La Trinidad and Quebrada El Boquerón, southwest of Cocollar, state of Sucre, alt. 1700-1840 m., May 3, 1945, *Julian A. Steyermark 62440*. A second specimen was collected at Quebrada Seca, between Fila Grande of Cerro Negro and Río Maravilla above Cerro Vaquero, northeast of Los Chorros and El Cielo, east of Bergantin, state of Anzoátegui, alt. 1000-1100 m., March 18, 1945, *Steyermark 61526*.

This species, the fourth known belonging to the subsection *Typicae*, is related to *B. insolita* Morton, of the Guianas, which has a tubular, rather than urceolate calyx, and narrower calyx lobes. The second specimen cited above is remarkable in having the leaves all alternate, a condition unique in the genus. This is possibly just a casual abnormality.

***Besleria ornata* Morton, sp. nov.**

Herba; caules teretes, deorsum ca. 4 mm. diam., parce ramosi, ramis erectis, apicem versus dense hirsuti, pilis albis, septatis, 2-3 mm. longis, patulis; folia per paria paullo inaequalia, longe petiolata, petiolis usque ad 5.5 cm. longis, gracilibus, dense hirsutis; lamina foliorum anguste elliptica vel oblanceolata, 10 x 3.5 cm. usque ad 18 x 6.5 cm., apice longe et anguste attenuata, basi anguste cuneata, tenuiter membranacea, argute serrulata, dentibus remotis, 8-12 utrinque latere, supra parce hirsuta, obscure viridis, subtus pallidior, satis dense hirsuta in venis et superficiebus, venis lateralibus 8-10-jugis, angulo 60° excurrentibus, valde arcuatis, subtus prominulis; pedunculus communis obsoletus, pedicellis 2 vel 3 axillaribus, elongatis, 4-5.5 cm. longis, dense hirsutis; calycis lobi fere liberi, basi ca. 1 mm. connati, anguste lanceolati, paullo inaequales, posticus ca. 18 mm. longus et 6.5 mm. latus, laterales 20 mm. longi et 5 mm. lati, anteriores 21 mm. longi et 4 mm. lati, omnes subulato-attenuati, integri, externe hirsuti, eciliati, intus glabri; corolla lutea, 2.5-3 cm. longa, in calyce erecta, tubo basi ca. 6 mm. lato, cylindrico, vix ventricosus, in fauce non contracto, ca. 8 mm. lato, externe basi glabro, apicem versus piloso, intus annulum pilosum basin versus gerente, fauce glanduloso-pilosulo, limbo patente, ca. 1.5 cm. lato, lobis suborbicularibus, subaequalibus; stamina inclusa, filamentis basi ad corollam ca. 7 mm. adnatis, glabris, antheris cohaerentibus, subquadratis, ca. 1.6 mm. longis et latis, glabris; ovarium conicum in stylum attenuatum, apice pilosulum; stylus glanduloso-pilosulus; discus annularis, tenuis, ca. 1 mm. altus, glaber.

Type in herb. Chi. Nat. Hist. Mus., no. 1222019, isotype in U. S. Nat. Herb. (no. 2928759), collected on rich, forested slopes along Río Onia, near Bolero, north of Mesa Bolivar, state of Merida, alt. 545-915 m., May 23, 1944, *Julian A. Steyermark 56716*.

A member of subsection *Confertae*, related to *B. immitis* Morton, of Amazonian Colombia and Peru, which has much shorter pedicels (5.7 mm. long), shorter and narrower calyx lobes (up to 15 mm. long and

1.5 mm. broad), and smaller and much more conspicuously hirsute corollas with a small narrow limb.

Besleria ovoidea Morton, sp. nov.

Frutex terrestris vel epiphyticus, 1.5-3 m. altus; ramuli teretes, dense sericeo-strigosi, internodiis brevibus; folia per paria paullo inaequalia, petiolata, petiolis elongatis, usque ad 2.5 cm. longis, dense strigosis; lamina foliorum anguste elliptica, parva, 7 x 2 cm. usque ad 10 x 3 cm., acriter acuminata, basi cuneata, membranacea, integra, supra hispidula, subtus dense sericeo-strigosa, venis lateralibus 6-8-jugis, ex angulo lato excurrentibus; pedunculus communis 1-3 cm. longus, dense strigosus, pedicellis solitariis (vel paucis?), fructiferis 2-2.5 cm. longis, dense strigosis, tenuibus, apice non incrassatis; calyx 4-5 mm. longus, tubo brevi, ca. 1 mm. longo, lobis ovatis, 3-3.5 mm. longis, ca. 2 mm. latis, vix inbricatis, obtusis, mucronulatis, integris, externe strigosis, intus glabris; fructus viridescens, pendens, ovoideus, 8-9 mm. longus, acutus, styli basi coronatus, minute hirsutulus, verrucosus.

Type in U. S. Nat. Herb. no. 2028770, collected on rich, steep, wooded slopes, Alto de Lirio, between Bramón and Las Delicias, state of Táchira, alt. 1890-2285 m., July 18, 1944, *Julian A. Steyermark* 57442.

Related to *B. triflora* (Oerst.) Hanst., especially to the Colombian var. *australis* Morton, but hardly referable to that species, which has much larger, broader imbricate calyx lobes, and pedicels becoming conspicuously clavately-thickened at apex. The leaf blades also are only sparsely strigose beneath in *B. triflora*, rather than densely sericeous as in the present species.

Besleria spinulosa Morton, sp. nov.

Herba 0.9-1.5 m. alta; caules non ramosi, apice ca. 1.5 mm. diam., deorsum ca. 4 mm. diam., subquadrangulares, apicem versus dense sericeo-strigillosi, pilis minutissimis, fulvis, mox glabri, internodiis inferioribus 4.5-5 cm. longis; folia per paria subaequalia, petiolata, petiolis usque ad 1.4 cm. longis, 2 mm. diam., parce strigillosi, levissime canaliculatis; lamina foliorum elliptico-oblonga, 18.5 x 6.5 cm. usque ad 32 x 11 cm., chartacea, fragilis, acuminata, basi longe cuneata, perspicue subspinuloso-serrata, dentibus 2-2.5 mm. longis, rectis vel curvatis, basi integra, supra in venis glabra, in superficie pilos paucos minutos appressos ferens, subtus pallidior, minute strigillosa, venis 10-13-jugis, subtus prominentibus, angulo subacuto excurrentibus; pedunculus communis obsoletus (1-2 mm. longus), pedicellis paucis, in anthesin ca. 15 mm. longis, strigillosis; calyx viridis, floriferus urceolatus, glaber, 13 mm. longus, basin versus ca. 8 mm. latus, tubulosus, lobis aequalibus, parvis, ca. 3 mm. longis, ovatis, rotundatis, infra apicem mucronatis (mucrone fere 1 mm. longo), integris; corolla lutea, in calyce erecta, ca. 2 cm. longa, non saccata vel calcarata, tubo basi ca. 5 mm. lato, sursum paullo ventricosus et 7 mm. lato, fauce 6 mm. lato, externe et intus glabro, limbo subbilabiato, ca. 8 mm. lato; stamina inclusa, filamentis rectis, glabris, antheris cohaerentibus, ca. 1 mm. longis et 2 mm. latis, locu-

lis confluentibus; ovarium glabrum; stylus crassus, ca. 8 mm. longus, glaber; stigma subbilobatum; discus annularis, ca. 1 mm. altus, tenuis, glaber; fructus ruber (*Steyermark*), baccatus, globosus, in calyce inclusus.

Type in U. S. Nat. Herb., no. 2028795, collected along stream of Quebrada Colorado Grande, southwest of Caripe, state of Monagas, alt. 850-1350 m., April 9, 1945, *Julian A. Steyermark 61966*. A fruiting specimen referable to this species is: Montaña de Aguacate, along Quebrada de Pajarral, between Caripe and Caripito, state of Monagas, alt. 600-900 m., April 19, 1945, *Steyermark 62208*.

The present species belongs to *Eubesleria*, subsect. *Typicae*, and is very closely allied indeed to *B. lutea* L., the type of the genus *Besleria*. That West Indian species has leaf blades serrate or merely serrulate, but never saliently spinulose-serrate as in the present species.

COLUMNEA

Key to the Venezuelan species:

Corolla strongly bilabiate; leaves of a pair equal or subequal.

Corolla orange, the tube broad, curved; leaf blades more than 6 cm. long *C. aurantiaca* Dcne.

Corolla red, the tube straight; leaf blades less than 6 cm. long.

Calyx lobes long-subulate at apex, the lateral teeth subulate *C. fendleri* Sprague

Calyx lobes acuminate only, the teeth not subulate *C. scandens* L. var. *australis* Morton

Corolla regular or nearly so; leaves of a pair strongly unequal.

Peduncles 3.5-5 cm. long; corolla 3.5 cm. long or more *C. erythrophylla* Hanst.

Peduncles much shorter; corollas smaller.

Leaves with a conspicuous red area beneath medially *C. sanguinea* var. *trinitensis* Morton

Leaves green beneath.

Bracts and calyx lobes red *C. affinis* Morton

Bracts and calyx lobes green, coarsely golden-pilose *C. aureonitens* Hook.

Columnea affinis Morton, sp. nov.

Herba saepe epiphytica, usque ad 2.4 m. longa; caules crassi, apice ca. 5 mm. diam., deorsum ca. 1 cm. diam., densissime subappresso-pilosi, pilis aureis, 2-3 mm. longis, septatis; internodia brevia, 2.5-4 cm. longa; folia per paria valde inaequalia, majora breviter petiolata, petiolis ca. 1 cm. longis, crassis, hirsutis; lamina foliorum majorum herbacea, oblanceolata, usque ad 23 cm. longa et 6 cm. lata, apice acriter acuminata, basi angustata valde inaequalis, glanduloso-denticulata, supra pilosa, subtus dense subappresso-pilosa, pilis aureis, tenuibus, venis lateralibus 9-11-jugis, valde arcuatis; lamina foliorum minorum parva, 2-3 cm. longa, sessilis,

longa attenuata, basi valde inaequalis; inflorescentia axillaris, sessiles, 2-vel-3-flora, bracteata, bracteis rubris, ellipticis, 2.5-3.3 cm. longis, 7-10 mm. latis, basi angustatis, apice subulato-acuminatis, serratis, dentibus utrinque 2 vel 3, subulatis, utrinque subappressopilosis; pedicelli ca. 6 mm. longi, crassi, dense roseo-hirsuti; calyx ruber, 2-3 cm. longus, lobis subaequalibus, liberis, erectis, linearilanceolatis, 4-5 mm. latis, basi paullo angustatis, apice subulatis, utrinque latere dentibus 2 vel 3 subulatis gerentibus, externe dense roseo-subappressopilosis, intus parce substrigosis; corolla flava, ca. 2.7 cm. longa, in calyce erecta, basi postice saccata, tubo ca. 2.4 cm. longo, supra basim ca. 4 mm. diam. sursum ampliato et 6.5 mm. diam., in fauce paullo contracto et 5.5 mm. diam., externe dense roseo-hirsuto, intus glabro, limbo brevi, ca. 7 mm. lato, lobis parvis, ca. 3 mm. longis et 2 mm. latis, rotundatis, subaequalibus, intus glabris; stamina inclusa, filamentis basi ca. 6 mm. connatis, glabris, rectis, antherae quadratim cohaerentibus, ca. 2 mm. longis et 1.5 mm. latis, glabris; ovarium pilosum; stylus inclusus, glaber; stigma bilobum; discus in glandulam posticam glabram crassam apice 3-dentatam reductus.

Type in U. S. Nat. Herb., no. 1187029, collected at El Portachuelo, between Ocumare de la Costa and Maracay, state of Aragua, January 29, 1922, *H. Pittier 10130*.

Additional specimens examined (U. S. Nat. Herb.):

VENEZUELA: Cloud forests of Ocumare Valley, state of Aragua, 1100 m., April 3, 1926, *Pittier 12173*. La Cumbre, state of Aragua, 1775 m., June 14, 1942, *Fernández 99*. Parque Nacional, state of Aragua, 500 m., May 19-20, 1943, *Killip & Lasser 37773*. Colonia Tovar, state of Aragua, December, 1924, *Allart 478*.

The above specimens have been identified as *Columnea aureonitens* Hook. (in Bot. Mag. Curtis 73: pl. 4294. 1847), which was described from cultivated material of unknown origin. Hooker indicated that he had seen wild specimens of the same species from Colombia, but no collections are cited.

Only three or four species of the section *Collandra* have been described or reported from Colombia, but there are specimens of recent collection in the National Herbarium of about 30 species. The specimen agreeing most closely with the original description and figure is *Haught 2574*, collected in forest near Villavicencio, Meta, 500 m., January 29, 1939. I would refer the following collections of Steyermark to the same species:

VENEZUELA: South-facing forested slopes above limestone bluffs, northeast of Guácharo, state of Monagas, alt. 1300-1400 m., April 11, 1945, *61995*. Montaña de Aguacate, along Quebrada de Pajarral, between Caripe and Caripito, state of Monagas, alt. 600-900 m., April 19, 1945, *62199*. Woods along Río Leon, by Quebrada Danta, northeast of Bergantín, state of Anzoátegui, alt. 500 m., February 20, 1945, *61008*. Between Hacienda Agua Blanca, above La Azulita, and Río Capaz, state of Mérida, alt. 975 m., April 26, 1944,

56142. Cerro Duida, along Caño Negro, Territorio Federal Amazonas, August 25-26, 1944, 57965.

The new species described above, *C. affinis*, is closely allied to *C. aureonitens*, but may be distinguished by the larger, red, rather than green, calyx lobes, and the larger, red (not green) bracts of the inflorescence. A third species of this alliance is represented by *Steyermark* 56679 (from Mérida) and 57447 (from Táchira), but the material is scarcely suitable for determining the differential characters accurately.

Columnea scandens L. var. *australis* Morton, var. nov.

Frutex scandens, epiphyticus; caules apice 1 mm. diam., deorsum 3.5 mm. diam., apicem versus fulvo-pubescentes, pilis densis, antorsis, ca. 1 mm. longis, demum glabrati, internodiis brevibus, usque ad 1.5 cm. longis; folia opposita aequalia, breviter petiolata, petiolis usque ad 5 mm. longis, antrorse appresso-pilosis; laminae foliorum ellipticae, rat. long.: lat. = 2.4: 1, 2-2.7 cm. longae, 9-11 mm. latae, apice obtusae, basi anguste cuneatae, crassae, integrae, marginibus (siccis) revolutis, utrinque subappresso-pilosae, venis 3-jugis, obscuris; flores axillares, solitarii, pedunculo 7-9 mm. longo, piloso, pilis adscendentibus, multiseptatis, septis rubescentibus, basi bibracteato, bracteis parvis, anguste oblongis, intus glabris; calyx pallide viridis, 1-1.2 cm. longus, lobis liberis, aequalibus, oblongis, medio ca. 3 mm. latis, acuminatis sed non apice subulatis, basi angustatis, marginibus unidentatis, dentibus 0.5-1 mm. longis, externe ubique et perspicue pilosis, intus apicem versus pilosulis; corolla rubra, ca. 4.3 cm. longa, in calyce erecta, tubo basi ca. 2 mm. lato, sursum gradatim ampliato, 2.7 cm. longo, apice ca. 5.5 mm. lato, externe rubro-piloso, intus basi glabro, sursum pilosulo, limbo valde bilabiato, galea ca. 1.5 cm. longa, apice obtusa, integra, lobis lateralibus cum galea alte connatis, partibus liberis ca. 5 mm. longis, lobo antico lanceolato, ca. 8 mm. longo et 2 mm. lato, acuto, patulo; filamenta glabra; antherae inclusae, cohaerentes, ca. 1.5 mm. longae et 1 mm. latae, loculis discretis, oblongis; ovarium apice appresso-pilosum; stylus exsertus, basi glaber, sursum dense glanduloso-pilosus; discus in glandulam posticam glabram crassam bilobatam reductus.

Type in herb. Chi. Nat. Hist. Mus., no. 1205116, isotype in U. S. Nat. Herb. (no. 2028801), collected in the Montaña de Aguacate, along Quebrada de Pajarral, tributary to Río Caripe, between Caripe and Caripito, state of Monagas, alt. 600-900 m., April 19, 1945, *Julian A. Steyermark* 62229.

This is the first authentic record of *C. scandens* in South America. The var. *australis* is near var. *vincentina* Morton (Contr. U. S. Nat. Herb. 29: 13. 1944) of St. Vincent and Grenada, differing chiefly in the smaller, more slender corolla and shorter anterior corolla lobe. The leaves are more narrowly long-cuneate at base.

Drymonia crassa Morton, sp. nov.

Frutex epiphyticus scandens; caules apice 2.5 mm. diam., deorsum

9 mm. diam., parce ramosi, apice dense hirtelli, demum glabrati, internodiis brevibus, 1-1.5 cm. longis; folia opposita aequalia, petiolata, petiolo 1-1.5 cm. longo, dense hirtello; laminae foliorum oblanceolatae, 5 x 1.5 cm. usque ad 8 x 3 cm., apice abrupte breviter acuminatae, basi angustatae, cuneatae, coriaceae, subintegrae, in marginibus minute glanduloso-denticulatae, supra parce substrigillosae, subtus pallidiores, dense hirtello-puberulae, venis lateralibus 4-jugis, valde arcuatis; flores axillares, solitarii, pedunculo ca. 1.5 cm. longo, albo-puberulo, apice incrassato, basi bibracteato, bracteis lineari-oblongis, ca. 2 cm. longis et 5 mm. latis, acuminatis, basi paullo angustatis, integris, utrinque pilosulis; calyx viridis, lobis lilacino-marginatis (*Steyermark*) ca. 2.5 cm. longus, lobis liberis, paullo inaequalibus (postico brevior, angustiore, 6-7 mm. lato), 9-12 mm. latis, acutis, basi paullo angustatis, apicem versus inconspicue dentatis, externe pilosulis, intus strigillosis; corolla alba, crassa, ca. 5.5 cm. longa, in calyce obliqua, basi postice calcarata (calcare ca. 5 mm. longo et lato), tubo campanulato, supra basim 1.2 cm. lato, sursum 2.3 cm. lato, in fauce non contracto, externe parce pilosulo, intus glabro, limbo magno, patente, ca. 3 cm. lato, lobis subaequalibus, suborbicularibus, ca. 13 mm. longis et latis, subintegris; filamenta basi dilatata, glabra; antherae inclusae, oblongae, ca. 7 mm. longae et 2.5 mm. latae, supra basim affixae, basi calcaratae, glabrae; ovarium conicum, dense velutinum; stylus crassus, pilosulus, ca. 15 mm. longus; stigma bilobum; discus in glandulam posticam magnam glabram reductus.

Type in U. S. Nat. Herb., no. 2028765, collected in wooded quebrada in Montaña of Río Táchira, at the base of the Páramo de Tamá, between Betania and Tamá, Táchira, alt. 2430 m., July 13, 1944, *Julian A. Steyermark 57178*.

The relationship of the species is uncertain. The thick, oblanceolate, subentire, few-nerved leaves and the white, fleshy corolla are distinctive.

***Pterobesleria* Morton, gen. nov.**

Herba perennis parva, caulibus parce ramosis, internodiis paucis; folia opposita, per paria conformia sed inaequalia, satis longe petiolata, laminis membranaceis; inflorescentiae solitariae, axillares, umbellatae, ebracteatae, pedunculo communi elongato, pedicellis paucis; calyx coloratus, membranaceus, bilabiatus, campanulatus, basi tubulosus, lobis valde inaequalibus, dorso perspicue alatis, alis apice in mucronibus terminantibus, lobo postico patente, acuto, angusto, lobis 2 lateralibus latioribus, rotundatis, lobis 2 anterioribus omnino in labio connatis, labio obdeltoideo, truncato, dorso bilalato, bimucronato; corolla tubulosa, in calyce erecta, non saccata vel calcarata, sub apice perspicue postice ventricosa, in fauce paullo contracta, limbo terminali, subregulari, lobis minutis, erectis, subaequalibus; stamina inclusa, filamentis basi cum corollae tubo ca. 3 mm. adnatis, antheris cohaerentibus, loculis confluentibus; ovarium superum; stigma leviter bilobatum; placentae lamellae intus solum ovuliferae; discus annularis, integer, crassus, glaber.

***Pterobesleria rosea* Morton, sp. nov.**

Herba usque ad 25 cm. alta; caules apice ca. 1 mm. diam., deorsum 3 mm. diam., apicem versus densissime tomentoso-hirsuti, pilis albis, septatis, 2-2.5 mm. longis, internodiis 4 vel 5, inferioribus usque ad 5 cm. longis; folia petiolata, petiolis usque ad 3.5 cm. longis, dense tomentoso-hirsutis; lamina foliorum ovata, usque ad 10 cm. longa et 5 cm. lata, apice breviter acuta, basi obliqua, late cuneata, membranacea, serrulata, dentibus apice glandulosis, supra juventute strigillosa, mox glabra, subtus in costa, venis venulisque tomentoso-hirsuta, in superficiebus glabra, venis lateralibus 8-10-jugis, angulo lato excurrentibus; inflorescentiae paucae, pedunculis communibus 2-3 cm. longis, tomentoso-hirsutis, pedicellis 3, 8-10 mm. longis, pilosis, apice incrassatis; calyx roseus, 11-12 mm. longus, lobo postico basi cum lobis lateralibus 5 mm. connato, pars libera lineari-oblongo, 8 mm. longo et 2.5 mm. lato, acuto, dorso perspicue et oblique alato-carinato, ala ca. 0.5 mm. lata, apice in mucrone 1.5 mm. longo excurrente, lobis lateralibus basi ca. 4 mm. cum lobis anterioribus connatis, partibus liberis late oblongis, ca. 7.5 mm. longis et 4 mm. latis, rotundatis, ala dorsalis ca. 6 mm. lata apice in mucrone 1 mm. longo excurrente praeditis, lobis anterioribus in labio omnino connatis, labio sub apice 9.5 mm. lato, mucronibus duobus 1 mm. longis, lobis omnibus utrinque glabris (tubo basi parcissime piloso), integris; corolla alba, 15-16 mm. longa, tubo basi 4.5 mm. lato, sub apice ventricosus et 6 mm. lato, in fauce 4 mm. lato, externe glabro, intus basin versus annulo piloso praedito, limbo ca. 4 mm. lato, lobis 1 mm. longis et 2 mm. latis, rotundatis, marginibus minute pilosulis; filamenta partibus liberis glabra, incurvata, antheris ca. 0.8 mm. longis, 1 mm. latis, glabris, connectivo purpureo, subquadrato; ovarium ellipsoideum, acutum, ca. 3 mm. longum, 1.5 mm. latum, laeve, glabrum; stylus rectus, 6 mm. longus, glaber; discus vix 0.5 mm. altus; fructus ignotus.

Type in U. S. Nat. Herb., no. 703588, collected in the Páramo de Pinaño, state of Mérida, March 17, 1915, *Alfredo Jahn 417*. Collected also between Los Corales and Las Cuadras, state of Mérida alt. 1490-3210 m., March 25, 1944, *Steyermark 55764*.

Pterobesleria is closely allied to *Besleria*, which agrees in the characters of the androecium and gynoecium. However, the calyx is so different that this segregate genus may conveniently be recognized. In *Besleria* the calyx is regular or nearly so, and the lobes are not winged. In *Pterobesleria* the calyx is conspicuously bilabiate, the two anterior lobes being completely united into a truncate labelium, the posterior lobes erect and rounded, and the posterior lobe narrow, acute and spreading or perhaps sometimes reflexed. All the lobes are crested on the back by a membranous wing which ends at the apex in a mucro exceeding the sepal in length. When fresh the calyx would therefore be 5-angled. The general aspect of the calyx is very like *Tussacia*, which has, however, different anthers.

The genus, which is monotypic, so far as known, probably originated from *Besleria*, section *Gasteranthus*, from some such species

as *B. quitensis* (Benth.) Hanst., the type species of *Gasteranthus* Benth., which might possibly be recognized itself as a genus distinct from *Besleria*. The corolla of *Pterobesleria* is in some respects intermediate between *Gasteranthus* and *Eubesleria*.

LENTIBULARIACEAE

Genlisea esmeraldae Steyermark, sp. nov.

Herba 6 cm. alta; foliis basalibus spatulatis in petiolum abrupte angustatis longe decurrentibus; petiolis 3-3.5 mm. longis; laminis spatulato-obovatis rotundatis 2.5 mm. longis 1.2-1.5 mm. latis; scapis erectis solitariis pilis patentibus pilosis praeditis superne pilis glandularibus obtectis; squamis 8 ovatis acutis 0.6-1.5 mm. longis pilosulis; pedicellis 1.2 mm. longis glandulari-pilosis; calyce 1 mm. longo glandulari-pilosulis, lobis inaequalibus ovatis vel lanceolatis acutis vel obtusis 1 mm. longis; corolla lutea, labio superiore 2.5 mm. longo 2 mm. lato, labio inferiore 3 mm. longo; calcari 4 mm. longo.

Type in herb. Chi. Nat. Hist. Mus., collected between Esmeralda Savana and southeastern base of Cerro Duida, Territorio Federal Amazonas, alt. 200 m., August 22, 1944, *Julian A. Steyermark 57835a*.

Although the type material is scanty, it is obvious that it differs from *G. roraimensis* N. E. Brown and other related species in the smaller size of the stems, corolla, cauline scales and bracts, pubescent cauline scales, and in the more densely glandular-pubescent scapes and calyx. In *G. roraimensis* the scapes are subglabrate or only sparsely puberulent in the lower half. The blades in the new species are conspicuously and suddenly narrowed into a long petiole, whereas in *G. roraimensis* the blades are gradually narrowed into a petiole. From *G. pygmaea* A. St. Hil. it differs in having the leaves present at flowering time.

Genlisea sanariapoana Steyermark, sp. nov.

Herba 21-28 cm. alta; foliis basalibus spatulatis in petiolum graduatim decurrentibus; laminis anguste vel lanceolato-spatulatis obtusis 1.3-2 cm. longis 2-3 mm. latis glabris; scapis simplicibus erectis glandulari-pilosulis basin versus parce pilosulis vel glabrescentibus; squamis 6-7 basifixis ovatis acutis 1.5-2 mm. longis dense pilosulis; floribus plerumque 11-16, racemosis; pedicellis 5-10 mm. longis dense glanduli-pilosulis; bracteolis lateralibus distinctis lanceolatis acutis 1-1.7 mm. longis dense pilosulis; calyce 1.8-2 mm. longo 5-partito, lobis ovato-lanceolatis acutis dense glandulari-pilosulis; corolla dimidia parte superiore violacea dimidia parte inferiore lavendera 15-16 mm. longa, labio superiore 5-5.5 mm. longo, labio inferiore 7-8 mm. longo 9-10 mm. lato; calcari late oblongo obtuso 11 mm. longo parce glandulari-piloso; capsula 3 mm. diam.

Type in herb. Chi. Nat. Hist. Mus., collected among rock outcrops below mouth of Río Sanariapo, along Orinoco River, Territorio Federal Amazonas, alt. 100 m., September 8, 1944, *Julian A. Steyermark 58445*.

This species is related to *G. guianensis* N. E. Brown, from which it differs in the larger corolla, less pointed spur, which is broader

in the upper half, and the more densely glandular-pubescent pedicels, bracts, calyx, and scapes.

Utricularia amazonasana Steyermark, sp. nov.

Planta aquatica; foliis omnibus submersis capillaceo-multipartitis vesiculiferis; scapis nudis 3-6-floris; floribus distantibus; pedicellis 3-5 mm. longis glabris basi unibracteatis; bracteis basifixis amplectentibus apice truncatis 1.5-2 mm. longis; lobis calycis inaequalibus glabris, lobo superiore ovato obtuso 1.5 mm. longo 1 mm. lato, lobo inferiore late ovato obtuso subemarginato 1.7 mm. longo 1.5 mm. lato; corolla pallido-lavendula, labio superiore 2 mm. longo, labio inferiore 3 mm. longo calcarem aequante vel excedente.

Type in herb. Chi. Nat. Hist. Mus., collected in pool of water, vicinity of Sanariapo, near Río Sanariapo, tributary of Orinoco River, Territorio Federal Amazonas, alt. 100 m., September 8, 1944, *Julian A. Steyermark 58505*, "corolla pale lavender."

Although the material is rather poor, it cannot be matched by any of the lavender-flowered aquatic species. It is characterized by the small flowers and several-flowered scape. It is related to *U. Fockeana* Miq. which has smaller flowers.

Utricularia arenicola Tutin, var. *kavanayena* Steyermark, var. nov.

Planta 1-2 cm. alta; caule purpureo; squamis ovatis obtusis 1:5 mm. longis 0.75 mm. latis; bracteis 3-4 distinctis ovatis obtusis 1-1.2 mm. longis; floribus solitariis; pedicellis 2.5-3 mm. longis; lobis calycis majoribus, lobo superiore ovato obtuso integerrimo 3.2 mm. longo 2 mm. lato; lobo inferiore late ovato rotundato paullo emarginato 3 mm. longo 2.5 mm. lato; corolla aureo-lutea, labio superiore lingulato-oblongo apice rotundato-truncato 2-2.5 mm. longo, labio inferiore cristato integerrimo medio barbato aliter utrinque puberulente suborbiculari rotundato 6 mm. longo 7.5 mm. lato; calcarum descendente 4.5 mm. longo.

Type in herb. Chi. Nat. Hist. Mus., collected in swampy ground following streamlet, Gran Sabana, on large mesa between Mission of Santa Teresita de Kavanayén northwest to Río Karuai, state of Bolívar, alt. 1220 m., October 26, 1944, *Julian A. Steyermark 59335*, "corolla deep golden yellow; stems purple; plants only 1-2 cm. tall."

From typical *U. arenicola* this differs in the much larger sepals, and longer spurs, these being almost twice as long as they are in typical *U. arenicola*. The dwarf habit, solitary flowers, and entire lower lobe of the corolla are characteristics of this variety.

Utricularia aureolimba Steyermark, sp. nov.

Herba terrestris annua 10-12 cm. alta, radice fibrosa; scapo plerumque simplice gracillimo 2-8-floro glabro; foliis nullis; bracteis ovatis obtusis 1.2 mm. longis 0.75 mm. latis integris; floribus brevipedicellatis, pedicellis 2-3 mm. longis; bracteolis 2 distinctis lanceolatis acutis 1 mm. longis 0.3 mm. latis; calycis lobo superiore ovato subacuto 3.8 mm. longo 1.5 mm. lato integro; lobo inferiore elliptico-oblongo obtuso 2.2 mm. longo 0.75 mm. lato; corolla lutea; labio superiore suborbiculari 2-2.5 mm. longo 2.5 mm. lato apicem versus

undulato; labio inferiore 3-4 mm. longo 4-5 mm. lato apice rotundato crista conspicua basin versus barbato; calcari conico 3.5 mm. longo apicem versus gradatim angustato.

Type in herb. Chi. Nat. Hist. Mus., collected in sandy wet meadow, on large mesa, Gran Sabana, between Mission of Santa Teresita de Kavanayén northwest to Río Karuai, state of Bolívar, alt. 1220 m., October 26, 1944, *Julian A. Steyermark 59351*, "corolla deep yellow."

This species is related to *U. Peckii* Blake, from which it differs in the longer pedicels and much longer spur. From *U. rubricaulis* Tutin it differs in its longer pedicels and calyx lobes, from *U. laxa* A. St. Hil. in the broad upper corolla lobe, from *U. Selloi* G. Weber in the larger lower corolla lobe, and from *U. spicata* Sylvén and *U. Meyeri*' Pilger in the smaller spur, smaller upper corolla lobe, and smaller calyx lobes.

***Utricularia aureomaculata* Steyermark, sp. nov.**

Herba 10-15 cm. alta; foliis basalibus petiolatis, petiolis 3-5 mm. longis; laminis suborbicularibus vel orbicularibus 2.25-2.5 mm. longis 2-2.5 mm. latis; scapis erectis glabris; squamis 1-2 solitariis integris oblongis medio fixis obtusis 1 mm. longis; floribus 3-5 racemosis; pedicellis 1.5-3 cm. longis glabris; calycis lobo superiore suborbiculari 2 mm. longo 2.5 mm. lato 9-nervato mergine incurvato; lobo inferiore minore late rhomboideo-oblongo rotundato 1 mm. longo et 1 mm. lato 5-nervato; corolla lutea crista aureolineata, labio superiore oblongo-ovoideo integro obtuso vel paulo bilobo plurinervio 3.5-4 mm. longo 2.5-3 mm. lato; labio inferiore majore trilobo 7-8 mm. longo 13-15 mm. lato, lobis oblongis rotundatis; calcari late oblongo labio inferiore brevior (Fig. 111).

Type in herb. Chi. Nat. Hist. Mus., collected on moist dripping face of sandstone bluff, at base of first line of sandstone bluffs, on south-facing part, east of "Cave Rock", Ptari-tepuí, state of Bolívar, alt. 2130 m., November 4, 1944, *Julian A. Steyermark 59852*, "corolla bright yellow, the inflated part of lower lip with a patch of orange."

Cotype in herb. Chi. Nat. Hist. Mus., collected at base of and on main south-facing, high, sandstone, moist mossy bluff, Ptari-tepuí, alt. 2400-2410 m., October 30, 1944, *Steyermark 59603*, "corolla deep rich yellow except for orange line on crest."

This new species can be placed in the group of *Setiscapella* in which the bracts are peltate. Belonging to this group are *U. subulata* L., *U. pusilla* Vahl, *U. nervosa* G. Web., and *U. triloba* Benj.

In the new species the basal leaves are often abundant and evident at flowering time, but in the other species mentioned the basal leaves are rarely seen, being delicate and evanescent. From *U. nervosa* it differs in the shorter spur, longer pedicels, and presence of leaves, from *U. triloba* in the obtuse or rounded tips of the bracts and scales, rounded summit of the upper calyx lobe, small rounded lower calyx lobe, rounded tip of spur, longer pedicels, spur shorter than lower lobe, and presence of leaves at flowering time (this would exclude it from section *Aphyllae* in which *U. triloba* was placed by

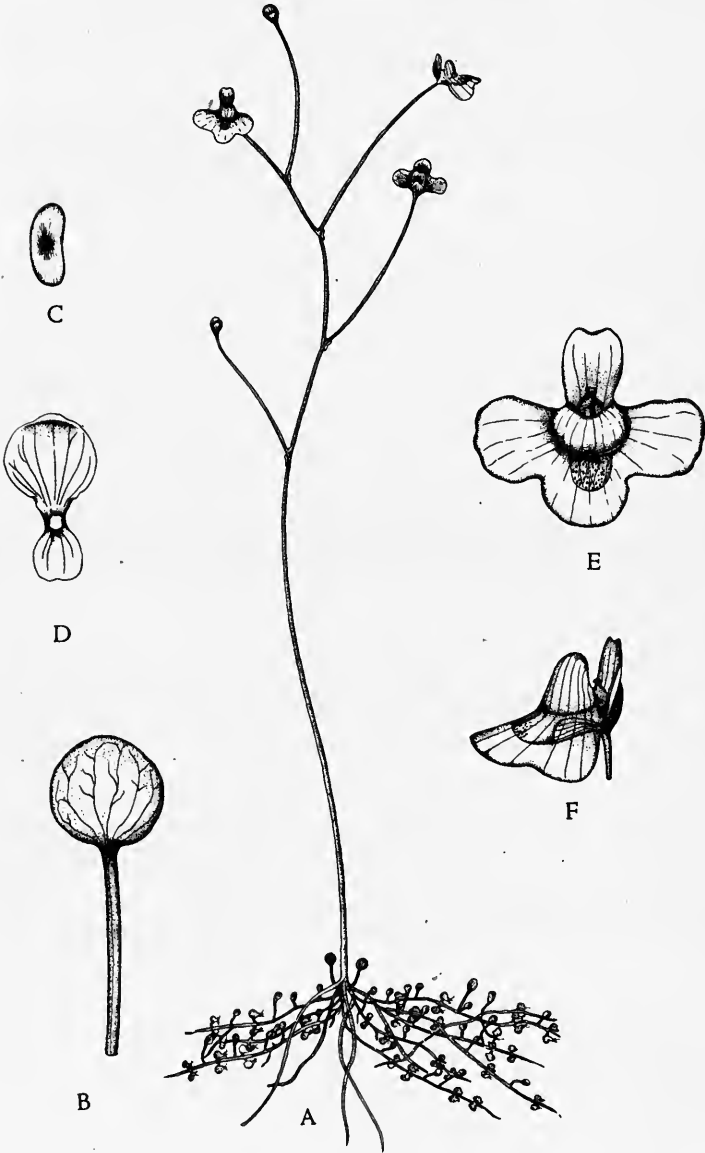


FIGURE 111

Utricularia aureomaculata

A, Habit (X 1); B, Leaf (X 5); C, Bract (X 10); D, Calyx (X 5); E, Corolla, frontal view (X 5); F, Corolla, lateral view (X 5).

Benjamin in Martius' Flora Brasiliensis), from *U. subulata* in the broader lower lip and longer upper lip of the corolla, and the longer, very unequal calyx lobes.

The distinguishing features of *U. aureolimba* are the large corolla and calyx, very unequal calyx lobes, spur much shorter than lower lip, elongated pedicels, and orbicular leaf blades.

***Utricularia ayacuchae* Steyermark, sp. nov.**

Planta aquatica, caulibus filiformibus; foliis omnibus fluitantibus multipartitis verticillatis valde ampulliferis, ampullis globoso-ovoideis 1.5-2 mm. longis apice piliferis; scapis nudis unifloris 1.5-2 cm. longis glandulis sessilibus vel subsessilibus parce obtectis; bractea solitaria basifixa late ovata rotundata 0.9-1 mm. longa glandulis sessilibus vel subsessilibus parce obtectis; pedicellis 2.5-3 mm. longis glandulis sessilibus vel subsessilibus parce obtectis; calycis lobis inaequalibus suborbicularibus rotundatis 1.1 mm. longis 1 mm. latis; corolla 6.5 mm. longa apice labii superioris 2 maculis flavidis notata praedita aliter purpurea, labio superiore rhomboideo-ovato apice rotundato 1.5 mm. longo 1.3 mm. lato; labio inferiore 3.75 mm. longo; calcari 3 mm. longo; ovario glandulis sessilibus parce obtecto.

Type in herb. Chi. Nat. Hist. Mus., collected around pools of water in rocks, open savanna and igneous rock outcrops, Puerto Ayacucho, Territorio Federal Amazonas, alt. 200 m., September 11, 1944, *Julian A. Steyermark 58520*, "corolla rich purple with 2 dull yellow cream spots near summit of lower lip; bladders enlarged, in scarcely any water."

This species most closely resembles *U. Malmeana* Sylveń of Brazil, but differs in the smaller corolla with the upper lobe rounded and not bidentate, a shorter spur which is directed downwards instead of horizontally, and in the broader, not linear, lower lobe of the corolla.

***Utricularia bolivarana* Steyermark, sp. nov.**

Herba terrestris radicularis parvis fibrosis, scapo simplice erecto 5-7 cm. alto glabro squamoso; foliis basalibus spatulatis rotundatis basi angustatis 2 mm. longis; squamis ovatis subacutis integris 0.8 mm. longis; bracteis et bracteolis lateralibus 2 distinctis basifixis ovato-lanceolatis acutis 0.5 mm. longis integris; floribus 1-2, pedicellis 3-6 mm. longis; calycis lobo superiore suborbiculari subacuto 1.5 mm. longo 1 mm. lato extus dense glandulari-puberulente, lobo inferiore rhomboideo late rotundato 1 mm. longo 0.8 mm. lato extus dense glandulari-puberulenti; corolla alba, labio superiore rhomboideo-suborbiculari 2 mm. longo 1.5-2 mm. lato, labio inferiore integro vel obscure lobo 2-3 mm. longo; calcari late conico 3-3.5 mm. longo basi 2 mm. lato paullo glandulari-puberulente.

Type in herb. Chi. Nat. Hist. Mus., collected on dry, sandy upland, Gran Sabana, between waterfall at Rue'-meru' (tributary of Río Kuke-nán) and Divina Pastora on Río Kuke-nán north of Santa Elena, south of Mount Roraima, state of Bolívar, alt. 1065 m., October 3, 1944, *Julian A. Steyermark 59191*, "corolla white."

This species is related to *U. hirtella* St. Hil. of Brazil. It does not have the 3-lobed lower lip of that species and has a much shorter spur. Also the bracts are not 3-parted as in *U. hirtella*. From *U. Spruceana* (Benth.) Oliver and *U. viscosa* (Spruce) Oliver the new species differs in the glandular-puberulent calyx.

Utricularia Campbelliana Oliver, var. *minor* Steyermark, var. nov.

A typo differt lobis calycis paullo minoribus, calcari minore, et labello minore; calycis lobis in anthesi 4.5-6 mm. longis 4-6 mm. latis; calcari 15-17 mm. longo; corollae labii inferioris labello 9-10 mm. longo 15-17 mm. lato.

Type in herb. Chi. Nat. Hist. Mus., collected in *Bonnetia roraimae* forest on southwest-facing shoulder, Ptari-tepuí, state of Bolívar, alt. 2000-2200 m., November 2, 1944, *Julian A. Steyermark* 59753, "sepals dull rose-salmon or orchid-salmon-brick; corolla scarlet as is spur; spur upwardly curved or arched."

This differs from *O. Campbelliana* of Mount Roraima and Duida in having a smaller spur, smaller lip of the lower lobe of the corolla, and slightly smaller calyx lobes.

Utricularia congesta Steyermark, sp. nov.

Herba terrestris, radiculis parvis fibrosis, ampullis destitutis; scapo simplice erecto 6-15 cm. alto glabro squamoso; squamis 14-50 stramineis suborbicularibus vel late oblongis undique valde setosociliatis 1.5-2 mm. longis (setis inclusis); bracteis oblongo-lanceolatis valde setoso-ciliatis, parte principali 1.5 mm. longa 0.5 mm. lata, ciliis 2 mm. longis; bracteis 2 ovatis valde setoso-ciliatis, parte principali 1.8 mm. longa 1 mm. lata, ciliis 1 mm. longis; floribus capitato-congestis; calycis lobis flavidis ovatis vel obovatis acutiusculis vel rotundatis parte principali 2.2-2.5 mm. longa 2 mm. lata ciliis 1-1.5 mm. longis; corolla lutea et aurantiaca, labio superiore 3 mm. longo 1.5 mm. lato; labio inferiore 3-4 mm. longo; calcari conico-oblongo 2.5-4 mm. longo labium superiore aequante vel superante (Fig. 112).

Type in herb. Chi. Nat. Hist. Mus., collected in border of woods in savanna, Gran Sabana, near Rio Karuai, northwest of Mission of Santa Teresita de Kavanayén, state of Bolivar, alt. 1220 m., October 26, 1944, *Julian A. Steyermark* 59404, "calyx pale yellow; corolla yellow and orange."

The following specimens in herb. Chi. Nat. Hist. Mus. may also be referred to this species: BRAZIL: on damp carnauba flat near ocean, 4 km. north of Caucaia (Soure), Ceara, alt. 2 m., June 10, 1945, *Hugh Cutler* 8366. BRITISH GUIANA: savanna, basin of Rupununi River: Wichabai, lat. about 2°52' N.; October 25-26, 1937, *A. C. Smith* 2298.

The congested flowers arranged in a single capitate mass, and the smaller corolla and calyx lobes are distinguishing features of this species.

***Utricularia congesta*, forma *deminutiva* Steyermark, f. nov.**

A typo differt scapo minore 1.5-4 cm. alto, bracteolis minoribus 2 mm. longis (ciliis inclusis), calycis lobis minoribus 2.5 mm. longis (ciliis inclusis), floribus approximatis sed non congestis; foliis 3 mm. longis; squamis 10-11, 1.5 mm. longis (ciliis inclusis).

Type in herb. Chi. Nat. Hist. Mus., collected on dry sandy upland, Gran Sabana, between waterfall at Rue-merú (tributary of Río Kuke-nán) and Divina Pastora on Río Kukenán north of Santa Elena, south of Mount Roraima, state of Bolívar, alt. 1065 m., October 3, 1944, Julian A. Steyermark 59195.

The following collection in herb. Chi. Nat. Hist. Mus. may also be referred here: BRAZIL: Colares, Poeppig.

A great amount of confusion has existed in the *Aranella* group to which *U. congesta* and related species belong. Barnhart conceived of *Aranella* as a monotypic genus consisting of a single species, *U. fimbriata*, variable in size and number of flowers, and in the number and relative incision of the cauline scales. Examination of available material collected reveals at least four species and one variety involved, all previously passing as *U. fimbriata*.

The type of *U. fimbriata* was collected by Humboldt and Bonpland along the Orinoco River by the rapids of Ature, near the present site of Puerto Ayacucho. Three modern collections (*Llewelyn Williams* 13804 and 13814 from Puerto Ayacucho, and *Steyermark* 58434 from the Orinoco River below the mouth of the Río Sanariapo) were obtained at or near the type locality and can be referred to this species, characterized by having much shorter cilia of the calyx lobes than any of the other taxa previously confounded with this species.

The other taxa are distinguished by the type of cauline scales, which are generally ciliate on all sides and below the base (but in *U. longeciliata* not ciliate below the base), and in the size and shape of corolla and calyx lobes and numbers of flowers.

Oliver (Journ. Linn. Soc. Bot. 4: 171-172. 1860) did not distinguish the entities from one another, nor did he differentiate *U. fimbriata*, upon which the genus *Aranella* was based, from *U. longeciliata* DC. He presumed that the latter taxon and *U. fimbriata* were the same. He stated that "if an examination of the specimens of Humboldt and Bonpland confirm this presumed identity, their name must necessarily take precedence" (loc. cit.). But the two species are well marked by differences in their cauline scales alone, those of *U. longeciliata* not being ciliate all around as in *U. fimbriata*. Moreover, in *U. longeciliata* the cilia of the calyx lobes are much longer and the corolla and calyx are larger. Nils Sylven (Ark. Bot. 8, no. 6: 6-9. 1909) expresses his opinion that *U. fimbriata* H.B.K. and *U. longeciliata* DC. are the same species. He did show that *Utricularia laciniata* Mart. (not *U. laciniata* St. Hil.) and *U. longeciliata* DC. were conspecific, a view which the present author accepts. To the synonymy of *U. longeciliata* I would add *U. laciniata* Mart., not St. Hil. and *U. simulans* Pilger, the last two having the large corolla and calyx characteristic of *U. longeciliata*.

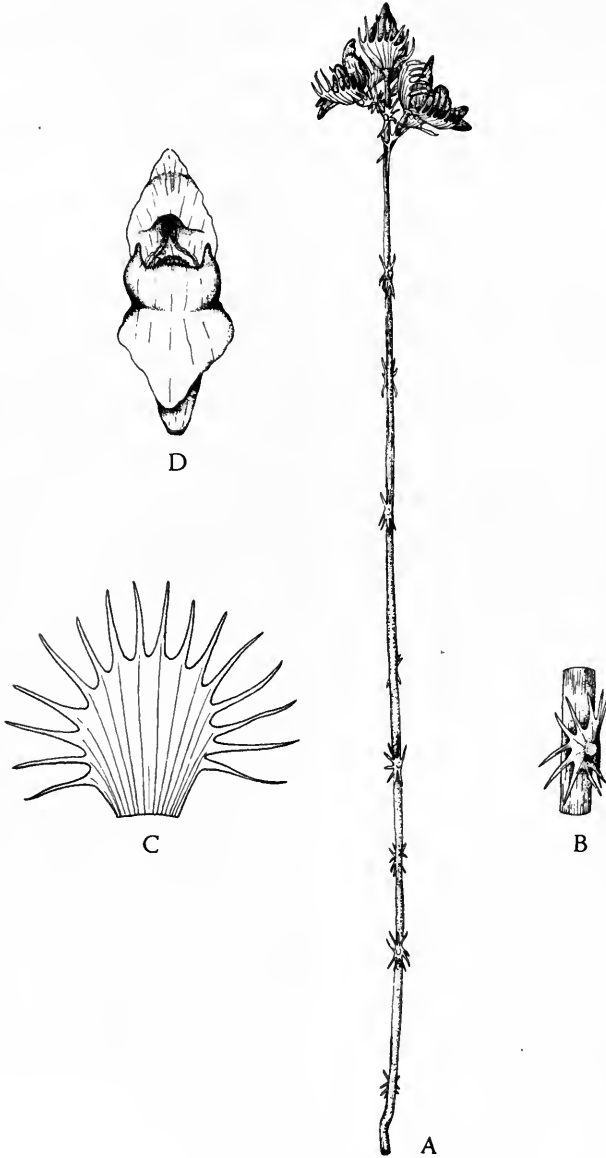


FIGURE 112

Utricularia congesta

A, Habit (X 2.2); B, Bract (X 8); C, One of calyx lobes (X 11);
D, Corolla, frontal view (X 5.5).

The group of species pertaining to the group *Aranella* may be keyed as follows:

- Scales, at least in the upper half of the stem, not ciliate below the base, brown-purplish *U. longeciliata*
 Scales throughout ciliate on all sides and below the base, buff or stramineous.
 Inflorescence of usually 1 solitary flower (rarely 2); upper corolla lobe 4.5-5.5 mm. long; lower corolla lobe 6-9 mm. long; spur 5-7 mm. long *U. orinocensis*
 Inflorescence of 2-several flowers; upper corolla lobe 2.5-3 mm. long; lower corolla lobe 3-5 mm. long; spur 2.5-4 mm. long.
 Cilia of calyx lobes 0.5-0.75 mm. long; lower corolla lobe 4-5 mm. long *U. fimbriata*
 Cilia of calyx lobes 1-1.5 mm. long; lower corolla lobe 3-4 mm. long.
 Flowers congested in a head-like semi-globular mass; stems 6-15 cm. tall *U. congesta*
 Flowers scattered, racemosely arranged; stems 1.5-4 cm. tall *U. congesta f. deminutiva*

Utricularia cuspidata Steyermark, sp. nov.

Herba 5.5-18 cm. alta, radicularis fibris parce ampulliferis; scapo simplice erecto glabro squamoso; squamis ca. 3 ovato-lanceolatis cuspidato-acuminatis 3.5-4 mm. longis glabris; foliis basalibus abrupte petiolatis, petiolis 7-15 mm. longis; laminis firme membranaceis subtus pallido-viridibus suborbiculari-obovatis vel late obovatis rotundatis basi in petiolum cuneatim decurrentibus 10-17 mm. longis 6-15 mm. latis utrinque glabris; inflorescentia simplice, floribus racemosis 5-11, pedicellis 2.5-6 mm. longis glabris; bracteis lanceolatis longe acuminatis 3 mm. longis 0.5 mm. latis; bracteolis 2 angustioribus lineari-lanceolatis longe acuminatis 2.5 mm. longis; calycis lobis papilloso-ciliolatis, lobo superiore late ovato apice subcuspidato-acuminato basi subcordato 4.5 mm. longo 3.5 mm. lato valde nervato, lobo inferiore late ovato apice bidentato 4.2 mm. longo 3 mm. lato, dentibus 0.75 mm. longis; corollae medio labii inferioris lutea aliter corolla lilacea vel lavendula extus glandulari-puberulenti, labio superiore anguste oblongo rotundato 5 mm. longo 2-3 mm. lato; labio inferiore late obovato apice rotundato integro paullo emarginato 8 mm. longo 7 mm. lato; calcar 8 mm. longo (Fig. 113).

Type in herb. Chi. Nat. Hist. Mus., collected by stream bank on open hematite slope, on Sororopán-tepuí, crest of cerro between east and west end, state of Bolívar, alt. 2255 m., November 14, 1944, *Julian A. Steyermark 60119*, "spur lavender, curving under lower lip; lower lip orchid, deeper orchid down center and around inflated part, the center of which is yellow; upper lip pale orchid; leaves firmly membranaceous, rich green above, paler green below."

Steyermark 60488, from vicinity of Salto de Pacairao bordering Río Pacairao, about 3 kilometers east to northeast of Santa Teresita de Kavanayén, state of Bolívar, alt. 1220 m., November 24, 1944, is

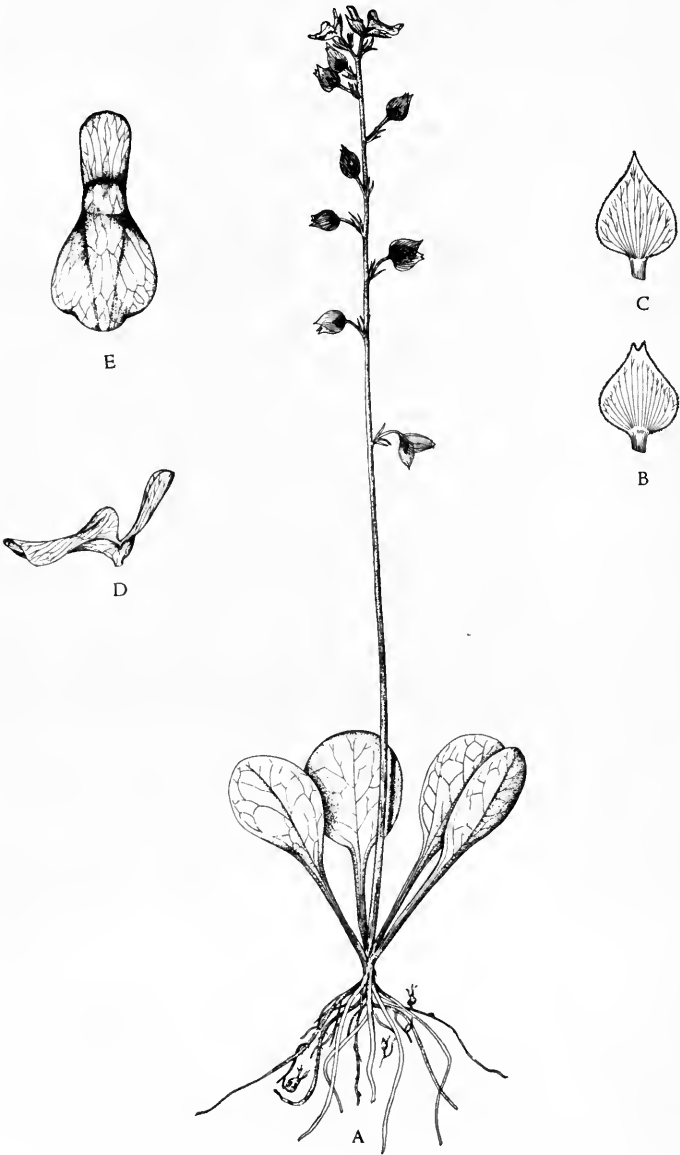


FIGURE 113

Utricularia cuspidata

A, Habit (X 0.85); B, Lower calyx lobe (X 2.6); C, Upper calyx lobe (X 2.6); D, Corolla (X 2.6); E, Corolla, frontal view (X 2.6).

probably to be referred to the new species. It differs in the larger leaves with more elongated obovate blades.

This is a member of the section *Orchioides*, and is most closely related to the recently described *U. Maguirei* Steyerem. of British Guiana. It differs from that species in the more approximate flowers with a yellow spot on the lower corolla lip, more pronounced cuspidate-acuminate upper calyx lobe, ovate lower calyx lobe, and longer corolla lobes and spur. It is somewhat intermediate between the *Calpidisca* group of *U. amethystina* St. Hil. and the *Orchioides* group.

***Utricularia heterochroma* Steyerem., sp. nov.**

Planta repens, radicibus fibrosis valde ampulliferis foliiferis; foliis integris longe petiolatis 6 mm. longis; laminis reniformibus vel ovatis 2-2.5 mm. longis 1.5 mm. latis; scapo nudiusculo vel fere nudo gracillimo 1.5-3.5 cm. longo glabro; squamis bracteisque solitariis late oblongis rotundatis medio affixis extremis solutis 1 mm. longis; floribus 1-2 pedicellatis, pedicellis 5-8 mm. longis; calycis lobo superiore majore suborbiculari rotundato 2 mm. longo 1.5 mm. lato, lobo inferiore rectangulari subtruncato 0.75 mm. longo 0.75 mm. lato; corollae labio superiore albo lateribus lilacea-lineatis notatis late ovato rotundato 3-4 mm. longo 2.5-4 mm. lato, labio inferiore albo dimidia parte inferiore lilacea-lineata palato aureo-maculato notato dimidia parte superiore alba trilobato 6-7 mm. longo 7-8 mm. lato, lobo medio 3 mm. lato lobis lateralibus 2 mm. latis; calcar aureo-luteo recto descendente oblongo obtuso 3 mm. longo 1 mm. lato (Fig. 114).

Type in herb. Chi. Nat. Hist. Mus., collected along base of dripping, vertical, east-facing, high sandstone bluffs, Ptari-tepuí, state of Bolívar, alt. 2410-2450 m., November 7, 1944, *Julian A. Steyerem.* 59930, "spur golden yellow, vertically depressed, upper corolla lobe white with rich orchid vertical lines on sides; lower lip white with rich orchid lines in lower half up to throat of swelling where golden spotted, below this in upper half white."

The reniform leaves mixed with abundant bladders and the varicolored corolla are noteworthy features of this species. It is related to *U. Dusenii* Sylvén of Brazil, but has smaller leaves, smaller flowers, shorter scapes, yellow spur, and a differently shaped lower lobe of the corolla. From *U. picta* Warm. it differs in the type of leaves and the numerous bladders, the vertically depressed spur, smaller corolla, and differently colored corolla.

***Utricularia Humboldtii* Schomb., forma *cuneata* Steyerem., f. nov.**

A typo differt foliorum laminis cuneato-obovatis apice rotundatis basi cuneatim angustatis acutis 5-6 cm. longis 2.3-2.5 cm. latis.

Type in herb. Chi. Nat. Hist. Mus., collected in water at base of leaves of large terrestrial *Brocchinia*, Savana Hills, summit of Cerro Duida, Territorio Federal Amazonas, alt. 1025-1200 m., September 2, 1944, *Julian A. Steyerem.* 58229, "leaves subcoriaceous, pale green; corolla lavender with yellow patch on lower lip in center."

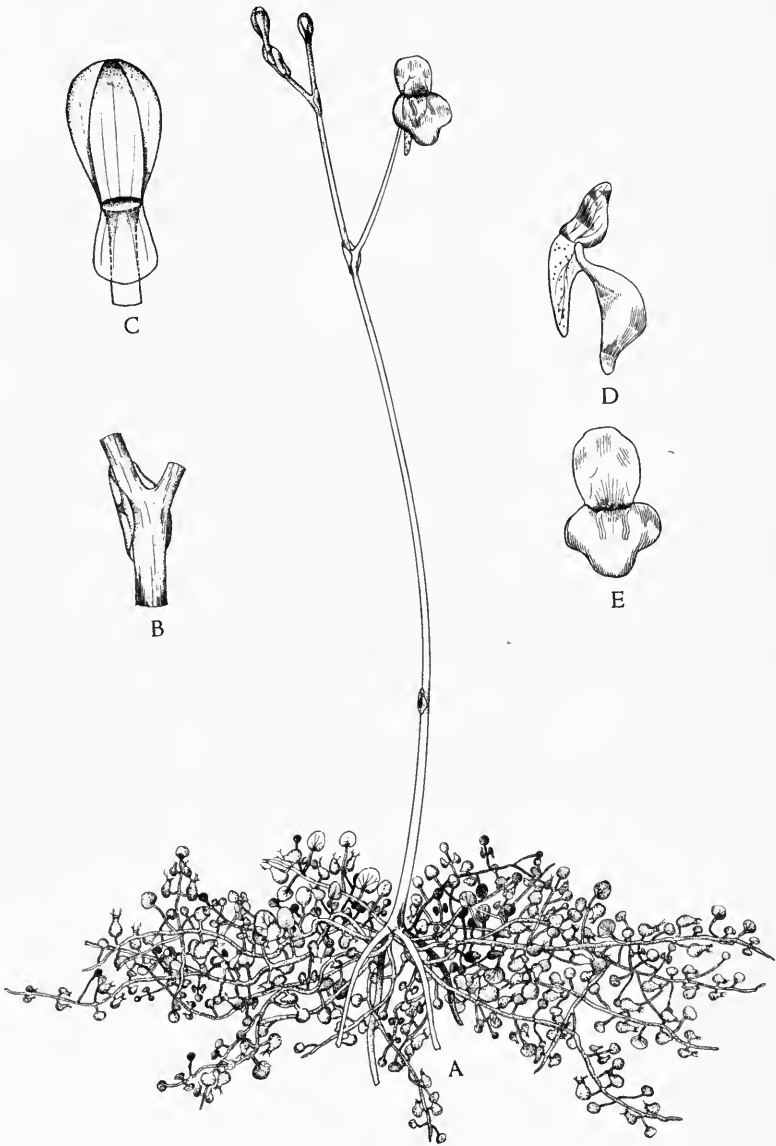


FIGURE 114

Utricularia heterochroma

A, Habit (X 2); B, Bract on part of scape (X 11); C, Calyx (X 14);
D, Corolla, lateral view (X 2); E, Corolla, frontal view (X 2).

Typical *Utricularia* (*Orchyllium*) *Humboldtii* has suborbicular-reniform or orbicular blades. Although it varies somewhat in the texture and size of the leaves, no correlation can be found in the different collections that have been made of this species from Mount Roraima, Ptari-tepuí, Auyan-tepuí, and Mount Duida. The form described above with much narrower, more cuneate-based, obovate blades is occasionally found occurring with the typical plant.

Utricularia *Oliverana* Steyermark, sp. nov.

Herba terrestris, caulibus pluribus erectis paucifloris 2-5 cm. altis glabris squamosis ampulliferis et foliiferis, foliis petiolatis; petiolis 2.8-3 mm. longis, laminis anguste spatulatis rotundatis 1.5 mm. longis 0.5 mm. latis; squamis late ovatis obtusis semiamplexicaulibus 0.5 mm. longis; floribus laxe racemosis pedicellatis, pedicellis adscendentibus 3-4 mm. longis clavatis apice dilatatis; bracteis oblongis extremis solutis; calycis lobis inaequalibus, lobo superiore majore suborbiculari rotundato 1 mm. longo 1 mm. lato, lobo inferiore lingulato-oblongo obtuso 0.7 mm. longo 0.3 mm. lato; corolla alba, labio superiore suborbiculari 1.5 mm. longo 1.5 mm. lato, labio inferiore trilobato 4 mm. longo 5 mm. lato, labiis 2.5-3 mm. longis 1.5 mm. latis; calcaris brevissimo vel nullo; capsula 6-7-seminibus (Fig. 115).

Type in herb. Chi. Nat. Hist. Mus., collected among rock outcrops below mouth of Río Sanariapo, along Orinoco River, Territorio Federal Amazonas, alt. 100 m., September 8, 1944, *Julian A. Steyermark* 58446, "corolla alba."

This species is related to *U. neottioides* St. Hil., from which it differs in the absence of filiform dissected leaves, abundance of both bladders and leaves, fewer-flowered, less elongated inflorescence, much longer pedicels, larger corollas, and absence of cauline branches.

The present species is named in honor of Mr. D. Oliver, who first called attention to the elongated pedicels of the *Spruce 3011* collection from San Carlos as being different from the type of pedicel found in typical *U. neottioides* and assigned to the collection the name *U. neottioides* β *pedicellata*. He stated (*Journ. Linn. Soc. Bot.* 4: 173. 1860) that "although differing much from *U. neottioides* in habit, I do not discover technical characters sufficiently marked to warrant its publication as a new species.....In Spruce's plant the few flowers are not racemose, but with ascending or divergent pedicels 2-3 lines in length." Oliver observed that bladders and leaves were both present in Spruce's plant, the latter being entire. Later on Oliver states (*ibid.*) of Spruce's plant, "it is not improbable that they may be correctly considered as distinct species." Although I have only the description before me, and have not seen the Spruce collection, it is probable that Spruce's collection is to be referred to the smaller-flowered form described below.

Utricularia *Oliverana*, forma parva Steyermark, f. nov.

A typo differt corollis minoribus; squamis suborbicularibus 0.6 mm. longis extremis solutis; calycis lobo superiore 1 mm. longo, lobo in-

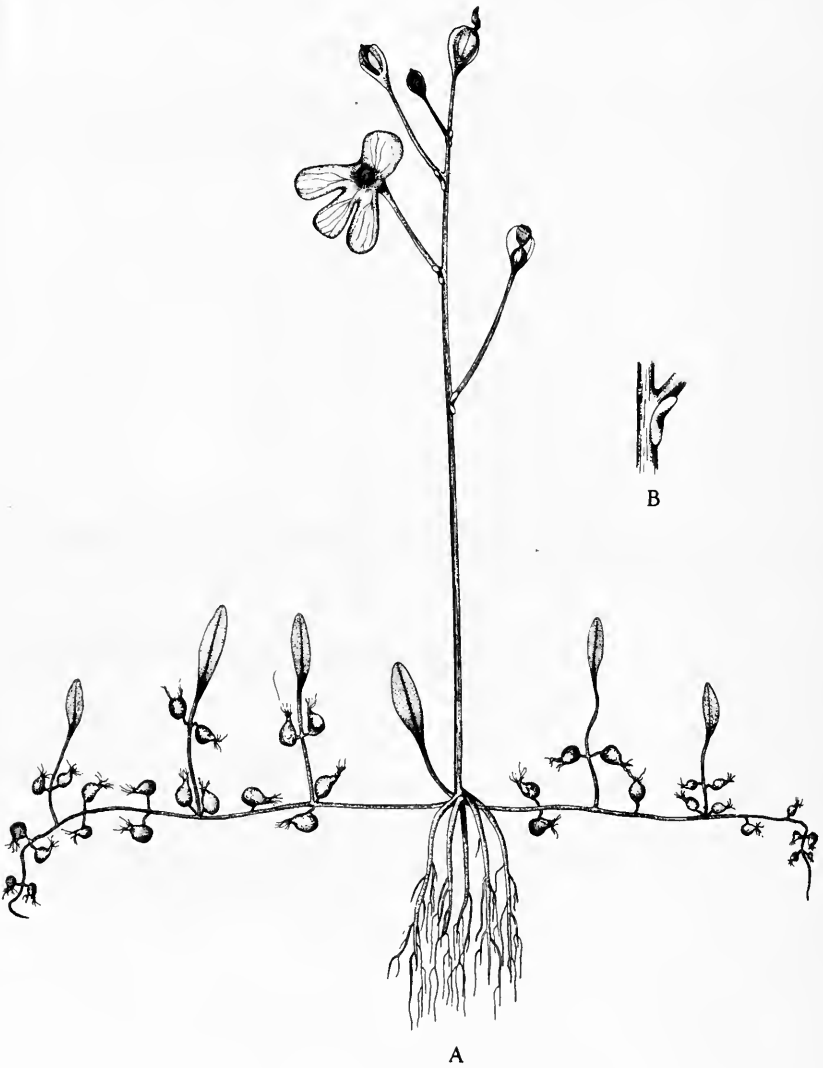


FIGURE 115
Utricularia Oliverana

A, Habit (X 2.2); B, Bract on part of scape (X 15.5).

feriore 0.75 mm. longo; corollae labio superiore 1 mm. longo, labio inferiore trilobato 2.5 mm. longo 3 mm. lato, lobis 1.5 mm. longis 0.8 mm. latis.

Type in herb. Chi. Nat. Hist. Mus., collected in swampy ground following streamlet, on large mesa, Gran Sabana, between Mission of Santa Teresita de Kavanayén northwest to Río Karuai, state of Bolívar, alt. 1220 m., October 26, 1944, *Julian A. Steyermark* 59333.

***Utricularia orinocensis* Steyermark, sp. nov.**

Herba terrestris, radiculis parvis fibrosis, ampullis destitutis, foliis basalibus linearibus 5-6.5 mm. longis; scapo simplice erecto 5-10 cm. longo glabro squamoso; squamis 8-16 stramineis suborbicularibus undique valde setoso-ciliatis 1.5 mm. longis (setis inclusis); floribus plerumque 1 solitariis, vel 2; bractea late lanceolata valde ciliata parte principali 1 mm. longa, ciliis 1.2 mm. longis 0.4 mm. latis; bracteolis 2 supra bracteam 0.5-1 mm. insertis late oblongis valde ciliatis, parte principali 1.75 mm. longa 1 mm. lata, ciliis 1 mm. longis; calycis lobis late obovatis rotundatis valde ciliatis, parte principali 3 mm. longa 2.5 mm. lata, ciliis 1-1.5 mm. longis; corolla aurea, labio superiore rhomboideo-oblongo rotundato-subtruncato 4.5-5.5 mm. longo 3.5 mm. lato, labio inferiore late suborbiculari-ovato rotundato 6-9 mm. longo 6 mm. lato prope basin ore paullo minute glandulari; calcari late conico obtuso 5-7 mm. longo 2-2.5 mm. lato.

Type in herb. Chi. Nat. Hist. Mus., collected in vicinity of Sanariapo, near Río Sanariapo, tributary of Orinoco River, Territorio Federal Amazonas, alt. 100 m., September 8, 1944, *Julian A. Steyermark* 58488, "corolla golden."

There may also be referred to this species the following collection from Brazil: on damp sands, near Río Caponga, Municipio of Cascavel, Ceara, alt. 4 m., May 27, 1945, *Hugh C. Cutler* 8358a, "flowers deep yellow, bracts and markings red."

This species, a member of the *Aranella* group, is distinguished principally by the large solitary, rarely 2, flowers.

***Utricularia subpeltata* Steyermark, sp. nov.**

Folia basales petiolata, petiolis 7-11 mm. longis, laminis orbicularibus asymmetrice subpeltatis 4 mm. latis integris; scapo 5-13 cm. alto 1-5-floro supeme parce puberulo aliter glabro squamoso; squamis lanceolatis acutis 0.75-1 mm. longis ciliatis; pedicellis 1.5-3 mm. longis parce puberulis; bracteis bracteolisque basifixis lanceolatis acutis 1 mm. longis ciliatis; calycis lobo superiore ovato acuto, apice ipso inflexo, 3 mm. longo 1.5 mm. lato carinato, carina paullo puberula; lobo inferiore oblongo obtuso vel rotundato emarginato vel sub-bilobato 3 mm. longo 1.3-1.5 mm. lato, lobis prominente nervatis; corollae labio superiore anguste oblongo 2.5-3 mm. longo; labio inferiore plerumque albido-lilaceo medio maculam flavidam purpureo amplectente notato excepto suborbiculari subintegro 6 mm. longo 7.5-8 mm. lato marginibus apicem versus paullo repandis glabris, palato

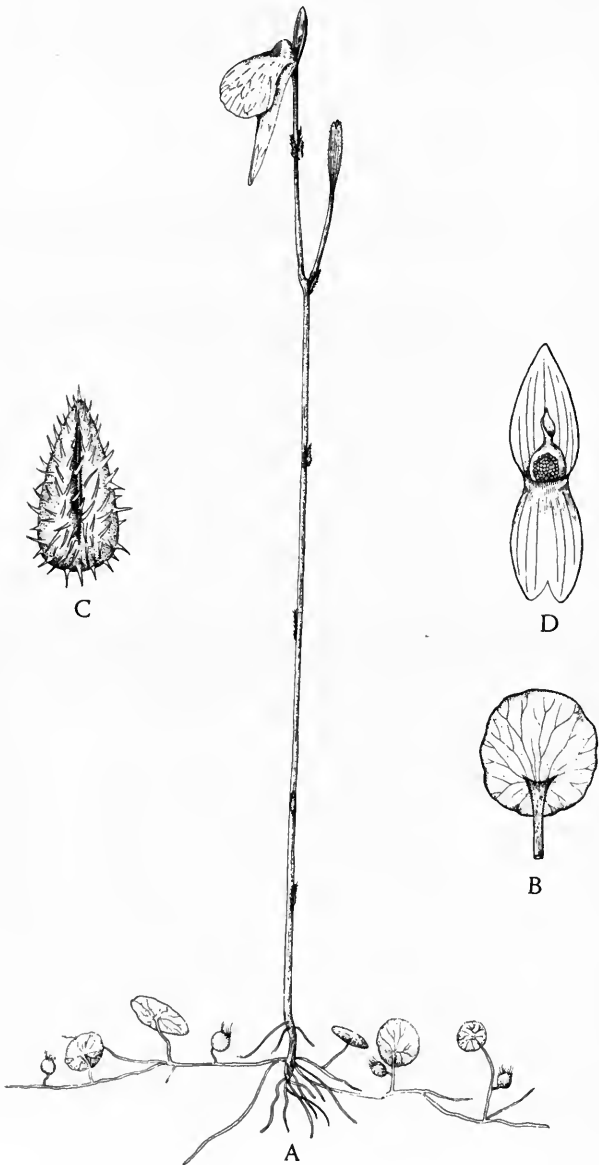


FIGURE 116

Utricularia subpeltata

A, Habit, (X 2.2); B, Leaf (X 17); C, Bract (X 22); D, Calyx opened to show pistil (X 6).

plus minusve glabro; calcar anguste lanceolato-oblongo 8 mm. longo (Fig. 116).

Type in herb. Chi. Nat. Hist. Mus., collected on moist bluffs of wooded ravine below edge of mesa, along mesa escarpment between Santa Teresita de Kavanayén and wooded quebrada about 8 kms. northwest of Kavanayén, state of Bolívar, alt. 1220 m., November 23, 1944, *Julian A. Steyermark 60477*, "corolla lilac-white with circular pale yellow spot in center of lower lip surrounded by purple; leaves disk-shaped green."

Cotype in herb. Chi. Nat. Hist. Mus., collected on rock slide below waterfall, Salto de Iwaracarú-merú, at western end of Sororopán-tepuí, state of Bolívar, alt. 1615 m., November 15, 1944, *Steyermark 60217*, "corolla pale lilac."

This species is related to *U. venezuelana* Steyer., described below, in the acute upper lobe of the calyx which is more prominently ciliate, the longer spur, more prominently bidentate lower lobe of the calyx, the broader lower lobe of the corolla, and the more or less glabrous crest of the corolla. From *U. peltata* (Spruce) Oliver it differs in the larger corolla with the margin of the lower lobe glabrous, the calyx lobes only ciliate on margin and keel, the conspicuously bilobed or bidentate lower lobe of the calyx, the less conspicuous bracts, the less pubescent pedicels and upper part of the scape, and the subpeltate leaves attached to one side of the center instead of at the center.

Utricularia tepuiana Steyermark, sp. nov.

Herba terrestris, radiculis parvis fibrosis, foliis basalibus petiolatis, petiolis 5-11 mm. longis, laminis spatulato-obovatis vel obovatis rotundatis 2.5-5 mm. longis 3.5-4 mm. latis; scapo erecto 10-15 cm. longo glabro vix squamoso 1-3-floro; squamis distantibus paucis minutis ovatis acutis 0.75-0.8 mm. longis glabris; pedicellis 6-8 mm. longis; bracteis bracteolisque connatis trilobatis 0.75-0.8 mm. longis 1 mm. latis glabris, lobis obtusis; calycis lobis inaequalibus glabris, lobo superiore majore suborbiculari rotundato 1.5-2 mm. longo 1.5-1.75 mm. lato, lobo inferiore suborbiculari rotundato 1 mm. longo 1 mm. lato; corollae labio superiore lilacea late obovato-oblongo obtuso vel rotundato 2.5-3.5 mm. longo 2-2.5 mm. lato; labio inferiore lilaceo palato flavido inferne purpureo-marginato notato excepto trilobato 4 mm. longo 6 mm. lato, lobis suborbicularibus rotundatis, lobis 1.5-2 mm. longis 2-2.5 mm. latis; calcar oblongo rotundato 4 mm. longo (Fig. 117).

Type in herb. Chi. Nat. Hist. Mus., collected on Ptari-tepuí, on forested south-facing slopes overlying sandstone, on "Cave Rock" above "Cave Camp," state of Bolívar, alt. 1810 m., October 29, 1944, *Julian A. Steyermark 59517*, "upper lobe lilac; lower lip 3-lobed, lilac; crest creamy yellow bordered below by purple band."

This species differs from *U. tridentata* Sylvén, which also has 3-lobed bracts, in the obtuse lobes of the bracts, the shorter spur and corolla lobes, and shorter calyx lobes. From *U. spatulifolia* Pilger

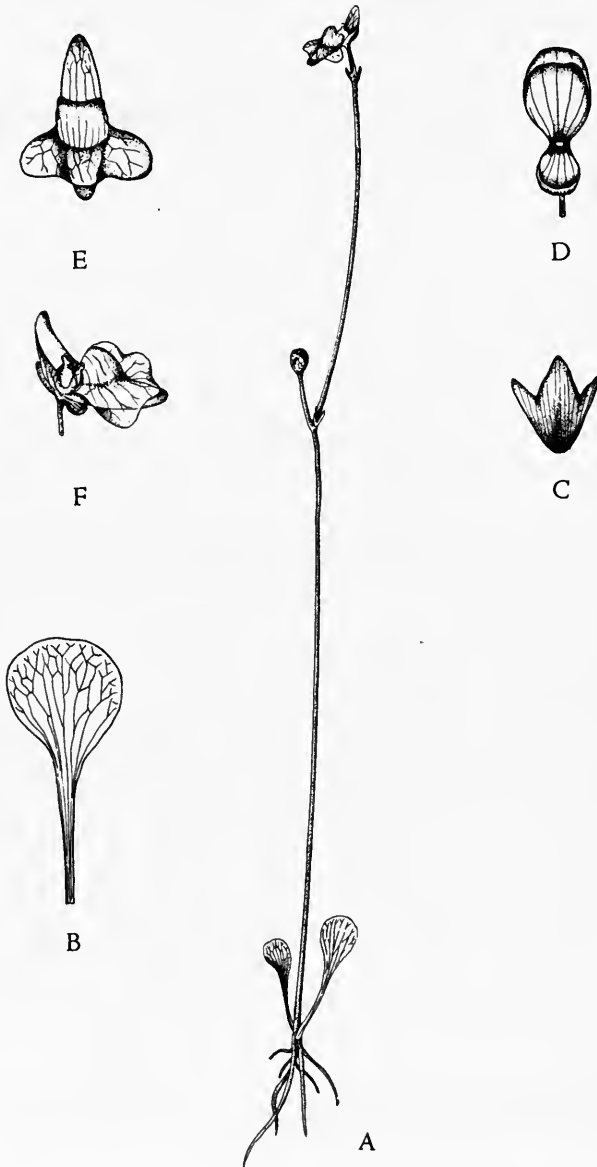


FIGURE 117

Utricularia tepuiana

A, Habit (X 2.3); B, Leaf (X 3); C, Bract (X 18); D, Calyx (X 6); E, Corolla, frontal view (X 6); F, Flower, lateral view (X 6).

it differs in the glabrous calyx lobes, entire lower lobe of the calyx, and the 3-lobed lower lobe of the corolla, while from *U. roraimensis* N. E. Br. it may be distinguished by the broader, more obtuse lateral teeth of the bracts, longer pedicels, larger calyx and corolla, and 3-lobed lower lobe of the corolla.

***Utricularia turumiquirensis* Steyermark, sp. nov.**

Herba terrestris, radiculis parvis fibrosis, ampullis foliisque destitutis; scapo filiformi 6-8.5 cm. alto glabro vix squamoso; squamis 1 vel 2 ovatis obtusis 0.6 mm. longis; floribus 1 vel 2, pedicellis 3-5 mm. longis; bracteis profunde 3-lobatis, lobis ovatis obtusis 0.6-1 mm. longis lateralibus minoribus, basi connatis; calycis lobo superiore ovato obtuso apice inflexo 2 mm. longo 1.3-1.5 mm. lato glabro, lobo inferiore minore suborbiculari rotundato 1.2 mm. longo; corolla alba, labio superiore late ovato obtuso cucullato 1.5 mm. longo 0.75 mm. lato, labio inferiore suborbiculari late rotundato 1.5 mm. longo cristato integro glabro; calcari 1.8-1.9 mm. longo.

Type in herb. Chi. Nat. Hist. Mus., collected in valley between base of Cerro de Diablo (western extension of southern peak of Cerro Turumiquire) and Cerro de Neverí, along headwaters of Río de Amana, state of Sucre, alt. 2000 m., May 11, 1945, *Julian A. Steyermark* 62752.

This species is distinguished by the combination of small white corolla, trilobate bracts, small stature, and apparently leafless condition at flowering time. It differs from *U. hirtella* St. Hil. in the glabrous calyx, entire instead of 3-lobed lower lip of the corolla, and apparently leafless condition at flowering time.

***Utricularia venezuelana* Steyermark, sp. nov.**

Herba terrestris, radiculis parvis fibrosis ampulliferis; foliis basalibus orbicularibus parvis peltatis; scapo 4-9 cm. alto glabro vix squamoso 1-4-floro; squamis 0.75 mm. longis puberulis; pedicellis 2.5-3 mm. longis; bracteis distinctis ovatis acutis 0.8-1 mm. longis; bracteolis angustioribus lanceolatis acutis; calycis lobis subaequalibus integris glabris vel paullo ciliolatis nervatis, lobo superiore late ovato obtuso 2.5 mm. longo 2 mm. lato, lobo inferiore late oblongo-ovato obtuso submarginato 2 mm. longo 1.75 mm. lato; corollae labio superiore pallido-lilaceo erecto spatulato-rhomboido late rotundato vel subtruncato 3 mm. longo supra medium 1.5 mm. lato, labio inferiore porrecto horizontali basi 2 maculas flavidas purpureo amplectente notato aliter lilaceo, palato pubescente; calcari lilaceo porrecto horizontali 5 mm. longo.

Type in herb. Chi. Nat. Hist. Mus., Ptari-tepuí, scrubby forest on rocky open portion of plateau on southeast-facing slopes, state of Bolívar, alt. 1600 m., November 1, 1944, *Julian A. Steyermark* 59625a, "corolla pale lilac; spur horizontally protruding forward as is lower lip; upper lip erect; 2 circles of pale yellow at base of lower lip surrounded by lavender circle; leaves disk-shaped with depression in center."

This species differs from *U. peltata* (Spruce) Oliver in the subgla-

brous instead of pubescent calyx, glabrous scape, much longer pedicels, erect upper corolla lobe, pubescent crest of the lower corolla lobe, the smaller number of leaves present, and the smaller, differently shaped bracts.

ACANTHACEAE³⁶*Aphelandra megaphylla* Leonard, sp. nov.

Frutex usque ad 3 m. altus vel ultra, caulibus usque ad ca. 9 mm. diam., glabris vel sursum adpresse pilosis; lamina foliorum oblongo-ovata, usque ad 35 cm. longa et 20 cm. lata, breviter acuminata vel subacuta (apice ipso obtuso), basi angustata, chartaceo-membranacea, integra vel undulata, subtus minute albo-lepidota, supra sub lente minute papillosa, utrinque subnitida, glabra vel parce pilosa, pilis 0.75 mm. longis, subadpressis, costa et venis (18 vel 19 paribus) prominentibus, venulis crasse reticulatis; petioli crassi, usque ad 3 cm. longi, glabri vel parce pilosi; spicae plures, solitariae vel fasciculatae, pedunculatae, paniculam terminalem usque ad 15 cm. longam et 12 cm. latam formantes, usque ad 6 cm. longae et 3-5 mm. latae, rhachi flocculoso-tomentosa, pilis pallide brunneis, pedunculis usque ad 3 cm. longis, adpresse pilosis vel subtomentosis, infimis laminae parvas subtendentibus, ultimis bracteis triangulares 1 cm. longas, basi 6 mm. latas, adpresso-pilosas subtendentibus; bractee dense imbricatae, rhombico-ovatae, (vivae) stramineo-aureae, marginibus subbrunneo-lilacinae, 5 mm. longae, 3 mm. latae, acutae, coriaceae, carinatae, costa prominente, ciliolatae, extus minute papilloso-puberulae, intus glabrae; ocelli 1 vel 2, 0.25 mm. diam., acutae; bracteolae anguste lanceolatae, 5 mm. longae, 1 mm. latae, acutae, carinatae, extus dense brunneo-flocculosae, intus glabrae et striatae; calycis segmenta lanceolata, 6 mm. longa, striata, glabra, apice puberula, segmento posteriore basi 2.5 mm. lato, obtuso, segmentis anterioribus 1.25 mm. latis, acutis, segmentis lateralibus 0.75 mm. latis, acutis; corolla coccinea, papilloso-puberula, 5.5 cm. longa, tubo basi 2 mm. lato, usque ad 6 mm. supra basim 1.5 mm. lato, prope orem 6.5 mm. lato, bilobata, labio superiore erecto, 1.5 mm. longo, 4 mm. lato, apice bilobato, lobis triangularibus, 3.5 mm. longis, basi 1.5 mm. latis, labio inferiore trilobato, lobo medio recurvato, lanceolato, 5 mm. supra basim usque ad 5 mm. lato, apice acuminato, curvato, lobis lateralibus parvis, cum labio superiore basi connatis, partibus liberis triangularibus, 0.5 mm. longis et latis, acutis; stamina vix exserta (ca. 5 mm. super orem tubi corollae), glabra, antheris 4 mm. longis, 1 mm. latis, curvatis, extremis acutis; ovarium glabrum; capsulae ignotae.

Type in herb. Chi. Nat. Hist. Mus., no. 1205079, isotypes in U.S. Nat. Herb., nos. 1997542 and 1997543, collected between Hacienda Agua Blanca above La Azulita and Río Capaz, state of Mérida, alt. 975 m., April 26, 1944, *Julian A. Steyermark 56152*, "shrub 10 feet tall; corolla scarlet; leaves firmly membranaceous, dark green above

³⁶By E. C. Leonard

with conspicuous areolation of sunken nerves as in *Cinchona pubescens*, pale green below; bracts firm, stramineous golden, margined brownish-lavender."

Together with the next species, *Aphelandra megaphylla* belongs to the *A. pulcherrima-tetragona* group. It can be recognized by its large leaf blades, small peduncled spikes, small rhombic-ovate bracts bearing solitary or paired ocelli, and by the brown woolly rachis. The specific epithet is derived from megas, large and phyllon, leaf.

***Aphelandra pedunculata* Leonard, sp. nov.**

Frutex usque ad 3 m. altus, caulibus teretibus, glabris; lamina foliorum oblongo-lanceolata, usque ad 15 cm. longa et 4 cm. lata, apice acuminata, plus minusve curvata (apice ipso obtuso), basi angustata, integra vel undulata, subcoriacea, supra nitida, utrinque glabra vel parce hirtella, pilis circa 0.25 mm. longis, ascendentibus, costa et venis lateralibus (praecipue subtus) prominentibus, venulis crasse reticulatis; petioli usque ad 1 cm. longi, glabri vel parce hirtelli; spicae terminales et axillares, paniculam terminalem formantes, 2-3 cm. longae, 5 mm. latae, pedunculis ascendentibus, minute hirtellis, usque ad 4 cm. longis, rhachi angulata, flocculoso-tomentosa, pilis albidis; bractae dense imbricatae, ovatae, 6 mm. longae, basi 4 mm. latae, acutae, integrae, ciliolatae, glabrae, basi flocculoso-tomentosae; ocelli 3-5, parvi, usque ad 0.25 mm. diam., nigri vel atrobrunnei; bracteolae lanceolatae, 5 mm. longae, 1.25 mm. latae, acuminatae, carinatae, carina flocculoso-tomentosa; calycis segmenta 6 mm. longa, glabra vel apice ciliolata, striata, (viva) salmonaceo-punecia, (sicca) brunnea, segmentum posterius anguste ovatum, basi 2.25 mm. latum, segmenta anteriora lanceolata, basi 1.5 mm. lata, segmenta lateralia anguste lanceolata, medio 1 mm. lata; corolla 3 cm. longa, papilloso-hirtella, (viva) coccinea, tubo basi 3 mm. lato, 5 mm. supra basim usque ad 2 mm. lato, prope orem 5 mm. lato, bilabiato, labiis pallide salmonaceis, labio superiore oblongo basi lobarum 4 mm. lato, lobis triangularibus, apice acuminatis, basi 2 mm. latis, labio anteriore recurvato, trilobato, lobo medio, anguste lanceolato, 4 mm. lato, acuminato, marginibus crispatis, lobis lateralibus triangularibus, 2 mm. longis, 0.5 mm. latis, subobtusis, cum labio superiore basi connatis; stamina vix exserta, antheris 3.5 mm. longis, apice subobtusis, filamentis planis, glabratis, salmonaceo-gilvis; capsulae clavatae, 2 cm. longae, 5 mm. latae, circa 3 mm. crassae, obtusae, basi angustatae, glabrae, nitidae, puncticulatae; retinacula recta, 3 mm. longa, ca. 0.75 mm. crassa, apice acuto-cucullata; semina matura ignota.

Type in U.S. Nat. Herb. no. 1997540, isotype in herb. Chi. Nat. Hist. Mus., collected in rich forest above Hacienda Agua Blanca, above La Azulita, state of Mérida, alt. 1375-1920 m., April 25, 1944, *Julian A. Steyermark* 56095, "shrub 8-10 feet tall; corolla scarlet; leaves firmly membranaceous, rich green above, pale green below; bracts salmon-pink; lobes of corolla pale salmon; filaments pale salmon-cream."

Aphelandra pedunculata belongs to the *A. pulcherrima-tetragona*

complex, being characterized by flocculose-tomentose rachises and by slender spikes with small ovate quadrifarious bracts bearing on either side of the midrib a group of small dark colored ocelli. The specific epithet alludes to the rather numerous small peduncled spikes.

Beloperone Steyermarkii Leonard, sp. nov.

Herba usque ad 18 cm. alta, caulibus decumbentibus, hirtellis, pilis retrorse ascendentibus, ca. 0.25 mm. longis, nodis infimis radicanibus; lamina foliorum elliptica, usque ad 9 cm. longa et 5 cm. lata, apice rotundata, subapiculata, basi obtusa vel cuneata, membranacea, integra vel undulata, supra griseo-viridis, costa et venis lateralibus (8 paribus) gracilibus sed prominentibus, atro-viridibus, subtrus pallide viridibus, costa et venis hirtellis, pilis sursum curvatis, subappressis, venulis reticulatis, cystolithis multis, gracilibus, usque ad 125 μ longis; petioli usque ad 1 cm. longi, dense hirtelli; spicae terminales, pedunculis usque ad 4 cm. supra basim furcatis, laxae (supra furcam usque ad 10 cm. longae), pedunculo (3 cm. longo) et rhachi (7 cm. longa) quadrangularibus, aliquanto puberulis, pilis retrorse curvatis; bracteae furcam subtendentes anguste lanceolatae, 2.5 mm. longae, basi ca. 1 mm. latae, carinatae, puberulae; bracteae flores subtendentes triangulares, usque ad 1.5 mm. longae, base 0.75 mm. latae, acutae, puberulae, carinatae; bracteolae triangulares 1 mm. longae, 0.75 mm. latae, acutae, 1-nervatae, puberulae; calyx 4 mm. longus, hirtellus, pilis usque ad 125 μ longis, ascendentibus, segmentis triangularibus, inaequalibus, 2.5-3 mm. longis, basi 0.75 mm. latis; corolla lilacina, 1 cm. longa, puberula, labiis subaequalibus, 1.5 mm. longis, labio superiore rotundato, labio inferiore trilobato, lobis rotundatis; stamina inclusa, loculo infero antherarum calcarato, calcare 0.5 mm. longo, apice rotundato; capsulae clavatae, 1 cm. longae, 3 mm. latae, 1.5 mm. crassae, puberulae, pilis sursum ascendentibus; retinacula linearia, 1.5 mm. longa, apice obtusa; semina orbicularia, plana, 2 mm. diam., glabra.

Type in herb. Chi. Nat. Hist. Mus., no. 1222718, isotype in U.S. Nat. Herb., no. 1997551, collected in level rain forest near Taria, state of Yaracuy, alt. 75 m., May 29, 1944, *Julian A. Steyermark 56869*, "herb; terrestrial; leaves flattened-spreading, membranaceous, dull gray green above with deeper green nerves, pale green below; flowers lilac."

Closely related to Lindau's *Beloperone variegata* of Costa Rica and Panama, *B. Steyermarkii* can be separated readily by its rounded apiculate leaves. The leaves of *B. variegata* are acute or short-acuminate at apex.

Dicliptera porphyrocoma Leonard, sp. nov.

Herba 1 m. alta, caulibus ramosis, erectis vel ascendentibus, subhexagonis, hirtellis (pilis recurvatis, 0.25-0.5 mm. longis), angulis anguste alatis; lamina foliorum oblongo-ovata, usque ad 6 cm. longa et 3.1 cm. lata, apice acuta vel subobtrusa, basi angustata, membranacea, ciliata, utrinque parce hirtella, pilis curvatis, ca. 0.25 mm.

longis, subtus pilis praecipue in costa et venis positis, venulis reticulatis; petioli graciles, usque ad 1 cm. longi, subtus glabri, canali dense hirtelli; capitula axillaria et terminalia, sursum aggregata, racemum densum angustum usque ad 4 cm. longum et 2.5 cm. latum formantia, pedunculis brevibus (ca. 1 mm. longis) vel infimis usque ad 2 cm. longis, hexagonis, hirtellis pilis rectis, 1 mm. longis, pilis brevioribus curvatis acutis et pilis brevibus glandulosis intermixtis, pedunculis cymularum 1.5 mm. longis, dense retrorse hirtellis; bracteae cymas subtendentes subulatae, 6 mm. longae, basi 1 mm. latae, 1-nervatae, carinatae, costa et marginibus parce ciliatis; bractea major exterior cymulam subtendens obovata, 9 mm. longa, 4 mm. lata, cuspidata (cuspidate 0.5 mm. longa), basi angustata et expallescens, marginibus plus minusve pallide purpureis, utrinque hirtella, intus pilis acutis et glandulosis intermixtis praedita; bractea minor cymulam subtendens oblongo-obovata, 8 mm. longa, apicem versus 3 mm. lata, cuspidata, aliter bracteae superiori similis; bracteae intimae albae, apice subvirides, anguste lanceolatae, 7 mm. longae, prope basim 1 mm. latae, 1-nervatae, subcarinatae, puberulae, pilis usque ad 150μ longis, obtusis, ciliatae, pilis usque ad 0.75 mm. longis, pallide purpureis, acutis; calycis segmenta anguste triangularia, 2.5 mm. longa, basi 0.5 mm. lata, hirtella, albida; corolla 12 mm. longa, sursum hirtella, deorsum glabra, tubo albo, prope basim 1.5 mm. lato, prope apicem 1 mm. lato, labiis lilacinis (medio albis), subaequalibus, lanceolatis, 6-7 mm. longis, 2-2.5 mm. latis, labio superiore obtuso, inferiore minute trilobato, lobis 0.25 mm. longis et latis; capsulae ovatae, planae, 4 mm. longae, 1.5 mm. latae, 0.5 mm. crassae, dense hirtellae, pilis 0.25 mm. longis, sursum patulis, deorsum retrorsis; retinacula triangularia, 0.75 mm. longa; semina palide brunnea, plana, 1.5 mm. diam., papilloso-puberula, pilis retrorse barbatis.

Type in U.S. Nat. Herb., no. 1997566, isotype in herb. Chi. Nat. Hist. Mus., collected at edge of cafetal, below limestone bluffs, Cerro de la Cueva de Doña Anita, south of and bordering valley of Caripe, state of Monagas, alt. 1000 m., April 7, 1945, *Julian A. Steyermark 61875*, "branching herb 2-3 feet tall; leaves membranaceous, dull green above, pale green below with prominent nerves; anthers orchid; filaments lilac; corolla orchid with white at base and in the middle of lobes."

The specific epithet is derived from porphyreos, purple, and kome, hairs.

Dicliptera pyrrantha Leonard, sp. nov.

Herba, caulibus ramosis, subhexagonis (angulis obtusis), puberulis, pilis 125μ longis, retrorse appressis; lamina foliorum ovata, usque ad 10 cm. longa et 5 cm. lata, acuminata (apice ipso obtuso), basi angustata, in petiolum breviter angustata, supra parce puberula, costa et venis lateralibus (6 paribus) prominentibus, appresse hirtellis, pilis (siccis) subflavo-brunneis, subtus puberula, pilis suberectis, usque ad 0.25 mm. longis; petioli usque ad 1 cm. longi, puberuli; capitula axillaria et terminalia sursum aggregata, racemum

densum angustum 3-5 cm. longum et 3 cm. latum formantia, pedunculis brevibus, usque ad 5 mm. longis vel infimis usque ad 7 cm. longis, hexagonis (angulis subacutis), dense retrorse hirtellis, pilis usque ad 375 μ longis, retrorse curvatis; cymata foliis parvis suffulta; bractea major exterior cymulam subtendens oblanceolata, 1 cm. longa, 3 mm. infra apicem 3.5 mm. lata, illinc ad basim sensim angustata, apice acuta, apiculata (apiculo 0.5 mm. longo), submembranacea, viridis (vel basi marginibus albida), ciliata, pilis patulis, usque ad 1.25 mm. longis, utrinque puberula, costa et nervis prominentibus; bractea minor cymulam subtendens linearis, 2.25 mm. lata, aliter bractee superiori similis; bractee intimae anguste lanceolatae, 6-8 mm. longae, 1.25 mm. latae, albae vel apice virides, ciliolatae vel apice ciliatae (pilis usque ad 1.25 mm. longis), utrinque puberulae, pilis usque 0.15 mm. longis, truncatis vel subacutis; calycis segmenta anguste triangularia, 3.5 mm. longa, basi 0.5 mm. lata, acuta, graciliter striata, puberula (pilis 75 μ longis, obtusis) vel apice pilos paucos usque ad 1 mm. longos ferentia; corolla obscure rutila, 2.5 cm. longa, parce pubescens, pilis 0.25 mm. longis, tubo subentricoso, angusto-hypocrateriformi, basi 2 mm. lato, usque ad 3 mm. supra basim 1 mm. lata, prope orem 4.25 mm. lata, labiis subaequalibus, ovatis, 9 mm. longis, basi ca. 4 mm. latis, labio superiore apice obtuso, inferiore trilobato, lobis parvis rotundatis, ca. 0.5 mm. diam.; stamina supra labiam superiorem vix exserta, filamentis glabris vel deorsum parce retrorse pilosis; ovarium hirtellum; capsulae ignotae.

Type in U.S. Nat. Herb., no. 1997561, isotype in herb. Chi. Nat. Hist. Mus., collected in bamboo woods on ridge top of dryish forested slopes, Cerro La Danta, bordering tributary of Río León, northeast of Bergantín, state of Anzoátegui, alt. 800-1100 m., February 22, 1945, *Julian A. Steyermark 61107*, "flowers dull orange red; leaves membranaceous." Local name: "sangrinaría."

The specific epithet is derived from pyrros, orange red, and anthos, flower.

Habracanthus enarthrocoma Leonard, sp. nov.

Herba scandens vel porrecta, caulibus subteretibus, sulcatis, pilosis, pilis patulis septatis, usque ad 1.5 mm. longis; lamina foliorum oblongo-elliptica vel oblongo-ovata, usque ad 14 cm. longa et 6 cm. lata, acuminata, basi obtusa vel acuta, in petiolum breviter decurrens, membranacea, integra vel undulata, utrinque pilosa, pilis rectis vel ascendentibus, usque ad 1.5 mm. longis, costa et venis ac venulis gracilibus sed prominentibus, cystolithis minutis sed sub lente prominentibus, usque ad 0.25 mm. longis; petioli usque ad 3 cm. longi, aliquanto vel dense pilosi, pilis patulis, septatis, usque ad 1.5 mm. longis; paniculae terminales et axillares, usque ad 30 cm. longae et 8 cm. latae, foliiferae, ramulis ultimis dichasia formantibus, pedunculis (usque ad 1.5 mm. longis) et pedicellis (usque ad 1 cm. longis) gracillibus, dense pilosis, pilis patulis, pulchre septatis, septis saepe purpureis; bractee lineares, usque ad 4 mm. longae et 0.5 mm. latae, pilosae; calyx usque ad 14 mm. longus, pilosus (pilis

pulchre purpureo-septatis), lobis linearibus, usque ad 12 mm. longis, basi 1 mm. latis, apice caudatis; corolla ca. 1.5 cm. longa, glabra, lilacino-rosea, tubo 1 cm. longo, basi 1.5 mm. lato, prope orem 5 mm. lato, bilabiata, labio superiore 15 mm. longo, basi 5 mm. lato, sursum caudato, cauda 1 mm. lata, apice subobtusa, labio inferiore oblongo, ca. 15 mm. longo et 5 mm. lato, apice trilobato, lobis triangularibus, 0.75 mm. longis, subobtusis, lobo medio basi 1 mm. lato, lobis lateralibus 1 mm. latis; stamina valde exserta, ca. 25 mm. longa, filamentis planis, glabris, antheris 3 mm. longis, 0.5 mm. latis, basi apiculatis; stylus ca. 25 mm. longus, glaber, gracilis; capsulae clavatae, ca. 12 mm. longae, 2.5 mm. latae, 0.5 mm. crassae, apice obtusae, apice et marginibus purpureae; retinacula 1.5 mm. longa, apice obtusa; semina plana, albida, ovata, 2.25 mm. longa, basi 2 mm. lata, utrinque verrucosa.

Type in U.S. Nat. Herb., no. 1997555, isotype in herb. Chi. Nat. Hist. Mus., no. 1222722, collected in wooded quebrada in Montaña of Río Táchira at base of Páramo de Tamá, between Betánia and Tamá, by Colombian-Venezuelan boundary, state of Táchira, alt. 2430 m., July 15, 1944, *Julian A. Steyermark 57187*, "sprangling herb; calyx pale green with lavender or rose; corolla orchid-rose as are the filaments and larger than in 57185 and 57186." Other collections are same locality, *Steyermark 57186*, "sprangling herb; calyx dull green tinged brick-red; corolla dull rose or brick-red as are the filaments"; same locality, *Steyermark 57185*, "sprangling herb; calyx pale green; corolla red; filaments red"; in damp woods of ravine of Los Quebraditos, south of Las Sabanetas, above Humocaro Bajo, state of Lara, alt. 2430-2745 m., *Steyermark 55406*, "climbing and sprawling with weak stems and swollen internodes; corolla dull rose; calyx dull maroon; leaves thin, dull blue green above, pale green below."

Local name: "gran judito."

Habracanthus enarthrocoma is well marked by its copious clothing of beautiful segmented hairs, hence the specific epithet is derived from *enarthros*, jointed, and *kome*, hairs.

***Justicia hylobia* Leonard, sp. nov.**

Herba vel suffrutex porrectus, caulibus subteretibus, ascendentibus, aliquando ramosis, deorsum glabris, sursum hirtellis, pilis sursum curvatis, subappressis, usque ad 0.5 mm. longis; lamina foliorum oblongo-elliptica vel lanceolata, usque ad 18 cm. longa et 3.5 cm. lata, acuminata (apice ipso obtuso), basi angustata, subcoriacea, integra vel undulata, supra glabra vel parce hirtella, costa et venis lateralibus (5 paribus) vix prominentibus, subtus hirtella, pilis praecipue in costa et venis (aliquando prominentibus) positis, sursum curvatis, ca. 0.5 mm. longis, venulis obscure reticulatis, cystolithis obscuris, subnigris; petioli usque ad 5 mm. longi, dense hirtelli, pilis sursum curvatis; spicae axillares, 12 mm. longae, pedunculo 5 mm. longo, hirtello, pilis sursum curvatis, subappressis; bractee spicas subtendentes triangulares, 2.5 mm. longae, basi ca. 1 mm. latae, acutae; rhachis puberula; bractee flores subtendentes anguste ovatae, 2.5 mm. longae, 0.75 mm. latae, puberulae vel infima

hirtella, pilis sursum curvatis et subappressis, subobtusae, carinatae, costa et venis lateralibus prominentibus; bracteolae anguste lanceolatae, 4 mm. longae, basi 1 mm. latae, acuminatae, puberulae, pilis patulis, subbrunneis, usque ad 75 μ longis; calycis segmenta anguste lanceolata, 7-8 mm. longa, basim versus 1.25 mm. lata, acuminata, puberula, apice pilis acutis et pilis glandulosis paucis intermixtis praedita, costa prominente; corolla purpureo-lilacina, hirtella (pilis patulis, vel deorsum retrorse ascendentibus), tubo basim versus 1.25 mm. lato, ad orem 3.5 mm. lato, labio superiore triangulari, 5 mm. longo, basi 5 mm. lato, acuto, labio inferiore lineari-oblongo, 7 mm. longo, ca. 2 mm. lato, apice trilobato (?), lobis obovatis, 1.5 mm. longis, 1.25 mm. latis, emarginatis; stamina supra orem tubi corollae ca. 4 mm. exserta, filamentis glabris, lobis antherarum obliquis, connectivo basi 0.75 mm. lato; ovarium glabrum; stylus sursum glaber, deorsum puberulus; capsulae ignotae.

Type in herb. Chi. Nat. Hist. Mus., no. 1222768, isotype in U.S. Nat. Herb., no. 1997545, collected in rich damp forest along northwest- and west-facing slopes of Quebrada de Montaña, in La Montaña de Los Torritos, tributary to Río Canaguá, above Finca La Montaña, 8 kms. southwest of Canaguá, state of Mérida, alt. 1925-2075 m., May 8, 1944, *Julian A. Steyermark 56380*, "sprangling herb; corolla orchid-lavender." Also collected on rocks and bluffs in shaded moist canyon between Mucuchachí and Canaguá, state of Mérida, alt. 1065-1820 m., *Steyermark 56353*, "sprangling herb; corolla or calyx dull purple."

The bracts subtending the flowers in no. 56353 are somewhat larger (about 3 mm. long and 1.5 mm. wide near base) than those of the type. The specific epithet is derived from *hylobios*, a dweller in the woods.

***Justicia lamprophylla* Leonard, sp. nov.**

Herba porrecta, usque ad 3 m. longa, caulibus ascendentibus, deorsum subteretibus, subglabris, sursum subquadrangularibus, hirtellis, pilis usque ad 0.75 mm. longis, rectis et patulis vel sursum curvatis vel deorsum curvatis; lamina foliorum oblongo-elliptica vel oblongo-lanceolata, usque ad 13 cm. longa et 4 cm. lata, acuminata (apice ipso obtuso), basi angustate, in petiolum breviter decurrens, supra (viva) saturate viridis, nitida, parce hirtella, pilis ascendentibus, usque ad 0.75 mm. longis, subbrunneis, costa et venis obscuris, subtus (viva) pallide viridis, aliquanto dense hirtella, pilis ascendentibus vel patulis, usque ad 0.75 mm. longis, brunneis, costa et venis lateralibus (7 vel 8 paribus) prominentibus; petioli usque ad 3 cm. longi, hirtelli; spicae terminales vel subterminales, usque ad 11 cm. longae, laxae, pedunculis usque ad 4 cm. longis, hirtellis (pilis patulis, usque ad 0.5 mm. longis), etiam dense bifariam puberulis, pilis brevioribus, curvatis, subappressis, intermedio infimo 15 mm. longo, aliis sursum brevioribus, rhachi hirtella, pilis rectis, patulis, ca. 0.5 mm. longis; bractae triangulares, 6 mm. longae, basi 2 mm. latae, apice aristatae (arista ca. 3 mm. longa), carinatae, hirtellae, pilis 0.5 mm. longis, subflavis; bracteolae anguste tri-

angulares, 4.5 mm. longae, basi 1.25 mm. latae, acuminatae, aliquanto hirtellae, subfalcatae; calycis segmenta 4, lanceolata, 6 mm. longa, basi 1 mm. lata, acuminata, 3-nervata, ciliolata, parce hirtella, pilis 125 μ longis; corolla saturate purpurea, 3.4 cm. longa, glabra vel in labiis parce et minute hirtella, tubo basi 2.5 mm. lato, ad orem 5 mm. lato, labio superiore ovato, 15 mm. longo, basi ca. 8 mm. lato, apice rotundato, eroso, labio inferiore ca. 16 mm. longo, ca. 6 mm. lato, apice trilobato, lobis ovatis, 5 mm. longis, basi 3 mm. latis, apice rotundatis; stamina supra orem tubae ca. 12 mm. exserta, antheris 1.5 mm. longis et latis, connectivo 0.75 mm. lato, filamentis glabris, apice aliquanto curvatis; ovarium glabrum; capsulae ignotae.

Type in U.S. Nat. Herb., no. 1997539, isotype in herb. Chi. Nat. Hist. Mus., collected in woods above Las Cuadras, along Quebrada Molino, north of Torondoy, state of Mérida, alt. 1820-2255 m., March 27, 1944, *Julian A. Steyermark 55810*, "sprawling branching herb 4-8 feet tall; leaves pale green below, rich green and shining above; corolla deep orchid purple; calyx pale green."

Pittier's No. 7676 collected at the Hacienda Taborda, near El Palito, on the road from Valencia to Puerto Cabello, Carabobo, Venezuela, alt. 0-200 m., December 31, 1917, is also of this species. The specific epithet is derived from lampros, shiny, and phyllon, leaf.

***Justicia leptophylla* Leonard, sp. nov.**

Herba 40 cm. alta vel ultra, caulibus ramosis, subteretibus, glabris vel plus minusve bifariam puberulis, pilis sursum curvatis, ca. 0.25 mm. longis; lamina foliorum lanceolata, usque ad 12 cm. longa et 3 cm. lata, acuta vel acuminata, basi angustata, in petiolum breviter cuneata, membranacea, undulata, utrinque glabra vel costa parce et minute puberula, pilis curvatis, subappressis, costa et venis lateralibus (4 vel 5 paribus) vix prominentibus; petioli usque ad 1.5 cm. longi, glabri vel canali puberuli, pilis minutis, curvatis; spicae terminales, laxae, gracillimae, usque ad 5 cm. longae, pedunculo ca. 1.5 cm. longo, puberulo, pilis sursum curvatis, ca. 0.25 mm. longis, ascendentibus, rhachi plana, plus minusve bifariam puberula, pilis sursum curvatis, ca. 0.25 mm. longis, internodio infimo ca. 1 cm. longo; bracteae anguste triangulares, 3.5 mm. longae, basi 0.75 mm. latae, carinatae, 1-nervatae, membranaceae, glabrae; bracteolae anguste lanceolatae, 2.5 mm. longae, basi 0.5 mm. latae, acuminatae, planae, glabrae, enervatae; calycis segmenta 4, anguste triangularia, 4.5 mm. longa, basi 0.5 mm. lata, apice acuminata, parce et minute ciliolata, glabra vel sursum minute puberula; corolla lilacina, glabra, 11 mm. longa, tubo prope basim 2.25 mm. lato, usque ad 6 mm. supra basim 1.5 mm. lato, ad orem 2.25 mm. lato, labiis aequalibus, labio superiore ovato, 4 mm. longo, ca. 2 mm. lato, apice minute bilobato, labio inferiore trilobato, lobis obovatis, ca. 2 mm. latis, rotundatis; stamina supra orem tubae vix exserta, antherarum lobis parallelis, connectivo 0.5 mm. lato, filamentis glabris, apice curvatis; ovarium glabrum; capsulae ignotae.

Type in U.S. Nat. Herb., no. 1997552, isotype in herb. Chi. Nat.

Hist. Mus., collected in level rainforest near Taria, state of Yaracuy, alt. 75 m., May 29, 1944, *Julian A. Steyermark 56876*, "stems sprangly; terrestrial; corolla lavender."

Egger's No. 13490, collected at La Moca, vicinity of Caracas, Venezuela, is also of this species.

In general appearance *Justicia leptophylla* strongly suggests the West Indian *J. androsaemifolia* Sieber ex Nees, but in that species the leaf blades are usually much smaller and more obtuse and the flowers, calyces, and rachises much stouter and larger. The specific epithet is derived from the Greek leptos, thin, and phyllon, leaf.

***Justicia lindaviana* Leonard, nom. nov.**

Rhytiglossa speciosa Nees in DC. Prodr. 11: 351. 1847; *Dianthera speciosa* Benth. & Hook. Gen. Pl. 2: 1113. 1876; *Justicia speciosa* Lindau, Pflanzenf. 4 Abt. 3b: 350. 1895, not Roxb. 1814.

DISTRITO FEDERAL: Quebrada San Julián, near Caraballeda, alt. 15-75 m., herb; flowers rose-red, *Steyermark 62940* (U.S.).

The type was collected "Ad rivulos prope la Guayna in Colombia" by *Moritz (No. 425)*. This citation is undoubtedly erroneous and should be La Guaira, Venezuela, the coastal port of Caracas. A photograph of *Moritz 425*, taken in the Vienna Herbarium, is in the U.S. Nat. Herb. (No. 32729). A specimen collected at La Guaira, May 7, 1874, by O. Kuntze is also in the U.S. Nat. Herb. No. 700789.

***Justicia pleurolarynx* (Blake) Leonard, comb. nov.**

Dianthera pleurolarynx Blake Contr. Gray Herb. n. ser. 53: 51. 1918.

Characterized by subglabrous leaf blades and a pair of striate plaits on the lower lip and in the throat of the corolla. Colombia and Venezuela.

***Justicia pleurolarynx* var. *hirtella* Leonard, var. nov.**

A forma typica lamina praecipue subtus dense hirtella, pilis rectis, usque ad 0.5 mm. longis, subflavis recedit.

Type: DISTRITO FEDERAL: Dry slopes of the Cerro de la Culebra at Tacagua, collected in May, 1946, by Leon Croizat (U.S. Nat. Herb. 1956036). MERIDA: Rocky dry slopes along Río Chama, between Lagunillas and Estanques, alt. 855 m., July 7, 1944, *Steyermark 57060* (F., U.S.) (leaves membranaceous, dull rich green above, pale green below; flowers lavender).

***Mendoncia albiflora* Leonard, sp. nov.**

Herba vel suffrutex volubilis, caulibus subteretibus, adpresso-hirtellis, pilis fere circa 0.5 mm. longis, flavidis; lamina foliorum ovata, 9-11 cm. longa, 4-6 cm. lata, graciliter acuminata, basi angustata, in petiolum decurrens, integra vel undulata, supra (sicca) saturate brunnea, leviter scabra, pilis usque ad 0.5 mm. longis, plus minusve patulis, praecipue in costa et venis (3 vel 4 paribus) positis e basi stellata inconspicua orientibus instructa, subtus (sicca) pallide

brunnea, minute albo-lepidota, aliquanto dense pubescens, pilis curvatis, circa 0.5 mm. longis, utrinque costa et venis gracilibus sed aliquanto prominentibus; petioli 1.5-4 cm. longi, adpressi-pubescentes, basi curvati; flores solitarii vel pauci, axillares; pedicelli circa 3 cm. longi, hirtelli, pilis 0.5-0.75 mm. longis, adpressis vel apice patulis; bracteae oblongo-ellipticae, 20-21 mm. longae, 8-9 mm. latae, apice subacutae, apiculatae (apiculo 1 mm. longo), intus glabrae, extus parce pubescentes, pilis praecipue minutis, 0.25 mm. longis vel marginalibus rectoribus, 0.75 mm. longis, costa prominente, venis obscuris; corolla alba, in fauce aurantiaco-flava striata, 3.5 cm. longa, glabra, tubo angusto hypocrateriformi, basi 5 mm. lato, usque ad 5 mm. supra basim 4 mm. lato, prope orem 8 mm. lato, labio superiore circa 1 cm. longo, 3-lobato, lobis obovatis, 6-7 mm. latis, rotundatis vel leviter emarginatis, labio inferiore circa 7 mm. longo, bilobato, lobis basi 6 mm. latis, emarginatis; stamina inclusa; ovarium minute et dense lepidotum; drupa non visa.

Type in U.S. Nat. Herb., no. 1997583, isotype in herb. Chi. Nat. Hist. Mus., collected on Montaña de Aguacate, along Quebrada de Pajarral, tributary to Río Caripe, northeast of Alto de Aguacate, between Caripe and Caripito, state of Monagas, alt. 600-900 m., April 19, 1945, *Julian A. Steyermark 62186*, "vine; leaves membranaceous, dark green above, dull paler green below; corolla white with orange streaks in center."

Mendoncia albiflora is closely related to *M. leucantha*, differing in few essential characters except in the size of the bracts and corollas and in the color of the flowers. The corollas of *M. albiflora* are white, marked with orange yellow streaks at center and are 3.5 cm. long, whereas those of *M. leucantha* are pure white and as much as 4.5 cm. long. The bracts of the latter species, although very similar in texture and nature of the pubescence, are more obtuse at the tip and fully 2.5 cm. long and 13 mm. wide, as compared with the acutish bracts of *M. albiflora*, these at the most only 2.1 cm. long and 9 mm. wide.

Mendoncia leucantha Leonard, sp. nov.

Herba vel suffrutex volubilis, caulibus subteretibus, hirtellis, pilis adpressis vel ascendentibus, circa 1 mm. longis, subbrunnescentibus; lamina foliorum ovata, 7-11.5 cm. longa, 3-7 cm. lata, acuminata, basi angustata, in petiolum decurrens, supra (sicca) brunnea, leviter scabra, parce hirtella, pilis usque ad 1 mm. longis e basi stellata parva orientibus instructa, subtus aliquanto dense et molliter pubescens, pilis brunneis, curvatis, ascendentibus, circa 0.75 mm. longis, costa et venis (4 vel 5 paribus) utrinque aliquanto prominentibus; petioli 1.5 usque ad 2 cm. longi, adpresso-hirtelli, plus minusve curvati; flores pauci, axillares; pedicelli usque ad 3 cm. longi, adpresso-hirtelli, pilis usque ad 0.5 mm. longis; bracteae ellipticae, 2.5 cm. longae, 13 mm. latae, apice obtusae vel rotundatae, apiculatae (apiculo 0.5 usque ad 1 mm. longo), basi rotundatae, extus minute hirtellae, pilis usque ad 0.25 mm. longis vel apicem versus longioribus et rectoribus, usque ad 0.5 mm. longis, costa prominente, venis

obscuris, intus glabrae; corolla alba, 4.5 cm. longa, tubo subcylindrico, basi 6.5 mm. lato, usque ad 5 mm. supra basim 3 mm. lato, prope orem 8 mm. lato, limbo bilabiato, labio superiore cuneato, 2.5 cm. lato, trilobato, lobis leviter imbricatis, lobo medio orbiculari, 1 cm. lato, leviter emarginato, lobis lateralibus ovalibus, circa 1 cm. longis et 8 mm. latis, leviter emarginatis, labio inferiore bilobato, lobis circa 1 cm. longis et 8 mm. latis; rotundatis vel leviter emarginatis; stamina inclusa; ovarium glabrum, ut videtur non lepidotum; fructus non visus.

Type in U.S. Nat. Herb., no. 1997581, isotype in herb. Chi. Nat. Hist. Mus., collected at El Páramo, northeast of Las Delicias and Caripe, state of Monagas, alt. 1200-1450 m., April 13, 1945, *Julian A. Steyermark 62030*, "vining; corolla white; leaves firmly membranaceous, rich dull green above, paler dull green below; calyx green."

Further differences between *Mendoncia leucantha* and *M. albiflora* are apparent. The leaf blades of *M. leucantha* (up to 11.5 cm. long and 7 cm. wide) are noticeably larger than those of *M. albiflora* (up to 11 cm. long and 6 cm. wide) but the reverse is true if the petioles are examined. Those of *M. albiflora* are as much as 4 cm. long whereas those of *M. leucantha* do not exceed 2 cm. in length. Moreover, the stem hairs of *M. leucantha* are at least twice as long as those of *M. albiflora*, and the hairs on the lower surface of the leaf blades are likewise longer, 0.75 mm. in *M. leucantha* and 0.5 mm. in *M. albiflora*. In addition it is interesting to note that *M. leucantha* was collected at about 600 meters higher than *M. albiflora*. The specific epithet *leukos*, white, and *anthos*, flower, alludes to the white corollas.

Mendoncia towarensis (Kl. & Karst. ex Nees) Leonard, comb. nov.

Engelia towarensis Kl. & Karst. ex Nees in DC. Prodr. 11: 721. 1847.

MERIDA: Rich woods between La Azulita and La Carbonera, alt. 1280-2378 m., *Steyermark 56074*, "vine; corolla white; leaves deep rich green above, dull green below; bracts grass green."

The type was collected at Colonia Tovar, Aragua, Venezuela (not Colombia), by Karsten.

Neriacanthus nitidus Leonard, sp. nov.

Suffrutex volubilis, caulibus teretibus, glabris vel sursum adpresse pilosis, basi 9 mm. diam. vel ultra, lamina foliorum elliptica, usque ad 8 cm. longa, 3 cm. lata, apice acuminata (apice ipso obtuso), basi angustata, in petiolum breviter decurrens, integra vel undulata, subcoriacea, supra nitida, basi costae adpresse pilosa, pilis pallide brunneis, adpressis, 0.5 mm. longis, alibi glabra, subtus glabra vel parce pilosa, pilis usque ad 0.75 mm. longis, adpressis vel adscendentibus, praecipue in costa et venis (eis aliquanto obscuris) positis; spicae terminales, usque ad 8 cm. longae, 2.5 cm. latae, sublaxae, rhachi angulata, parce et minute puberula, pilis sursum adpressis; bracteae decussatae, ovatae, plerumque 1.5 cm. longae et 8 mm. latae, (siccae) saturate brunneae, (vivae) atrovirides et interdum lilacino-tinctae, glabrae, integrae vel marginibus

dentes paucos minutos (circa 0.25 mm. longos) ascendentes ferentes; bracteae flores subtendentes parvae, lanceolatae, 3 mm. longae, 8 mm. latae, obscure nervatae, ciliatae, pilis ascendentibus, usque ad 0.5 mm. longis; calycis segmenta circa 1 cm. longa, striato-nervata, coriacea, integra, acuta, minute ciliolata (pilis ascendentibus), alibi, glabrae vel apice, puberulae, segmentum posterius ovatum, 5 mm. latum, segmenta anteriora 3 mm. lata, segmenta lateralia 2.5 mm. lata; flores ignoti; capsulae clavatae, atrovirides vel lilacino-tinctae, 18 mm. longae, 5 mm. latae, 4 mm. crassae, apice obtusae, apiculatae, glabrae, nitidae, minute punctatae; retinacula curvata, circa 3 mm. longa, 0.5 mm. crassa, apice cucullata; semina plana, ovata, 6 mm. longa, 3.5 mm. lata, 0.5-1 mm. crassa, brunnea, verrucosa.

Type in herb. Chi. Nat. Hist. Mus., no. 1205072, isotype in U.S. Nat. Herb., no. 1997546, collected in moist rich forest, Quebrada de los Salichales, tributary of Río Canaguá, southwest of Canaguá, state of Mérida, alt. 1950-2135 m., May 9, 1944, *Julian A. Steyermark 56424*, "woody vining epiphyte; leaves subcoriaceous, dark green above, dull green below with raised nerves; bracts decussate, 4-ranked, firmly membranaceous, dull green or suffused, as is the fruit, with lavender." The specific epithet alludes to the shining leaves and capsules.

Ruellia pterocaulon Leonard, sp. nov.

Suffrutex, caulibus simplicibus, erectis vel ascendentibus, usque ad 1 m. altis, glabris, acute alatis; lamina foliorum oblongo-elliptica, usque ad 18 cm. longa et 7.5 cm. lata, apice acuminata (apice ipso obtuso), basi angustata, in petiolum decurrens, integra vel undulata, utrinque glabra, nitida, costa et venis lateralibus (7 vel 8 paribus) aliquanto prominentibus; petioli usque ad 3 cm. longi, glabri, anguste alati; inflorescentia axillaria e dichasiis laxis composita, pedunculo gracili, curvato, subquadrangulari, usque ad 11 cm. longo, minute glanduloso-puberulo, pilis patulis, pedunculis secundariis infimis 3 cm. longis, superioribus 1 cm. longis, glanduloso-pilosis, pilis patulis, usque ad 0.5 mm. longis; bracteae oblongo-lineares, 6 usque ad 2 mm. longae, 1 usque ad 0.5 mm. latae, subobtusae, carinatae, glanduloso-pilosae; calycis segmenta inaequalia, anguste linearia, 8-14 mm. longa, dense glanduloso-pilosa, pilis patulis, 0.5-2 mm. longis; corolla lilacina, 2.5 cm. longa, tubo basi usque ad 15 mm. supra basim 1 mm. lato, prope orem 1 cm. lato, limbo suberecto, lobis obovatis, circa 6 mm. longis et latis, rotundatis; stamina inclusa, circa 7 mm. longa; capsulae clavatae, 1 cm. longae, 3 mm. latae et crassae, basi angustatae, solidae, circa 4 mm. longae, apice obtusae, minute et parce puberulae, sursum pilis paucis glandulosis intermixtis; semina 8, brunnea, plana (sicca), glabra, margine pilosa, vel madefacta subtiliter mucoso-pilosa; retinacula gracilia, linearia, 2.25 mm. longa, recta vel leviter curvata, apice bidentata.

Type in herb. Chi. Nat. Hist. Mus., no. 1205064, isotype in U.S. Nat. Herb., no. 1997558, collected on wooded ridge, Quebrada Bonita, tributary of Río Querecual, northeast of Bergantín, state of Anzoategui, alt. 1200 m., February 17, 1945, *Julian A. Steyermark 60976*, "corolla pale lavender."

Ruellia pterocaulon is a well marked species, easily recognized by its sharply angled or winged stems, nitid leaf blades, and glandular inflorescence. The hairs of the narrowly linear calyx lobes are strikingly long (as much as 2 mm.). The species belongs to a group characterized by dichasial inflorescences.

The specific epithet is derived from pteron, wing, and kaulos, stem.

RUBIACEAE

Alseis microcarpa Standl. & Steyerl., sp. nov.

Arbor, ramulis juvenilibus tetragonis glabris, internodiis 3-6 cm. longis; foliis subcoriaceis vel firme membranaceis supra atroviridibus petiolatis, petiolis 1.2-2.3 cm. longis glabris; laminis elliptico-ovatis 14-22 cm. longis 6-9.7 cm. latis subacutis vel subobtusis, basin versus acutis, costa nervisque supra prominulis, subtus prominentibus, supra glabris subtus per costam mediam et nervos laterales parce patentopilosis, aliter utrinque glabris, nervis lateralibus utroque latere 20-22 adscendentibus ad marginem ipsem exeuntibus, venulis subtus laxè reticulatis; spicis terminalibus basi ramosis dense multifloris usque 18 cm. longis dense puberulentibus pilis

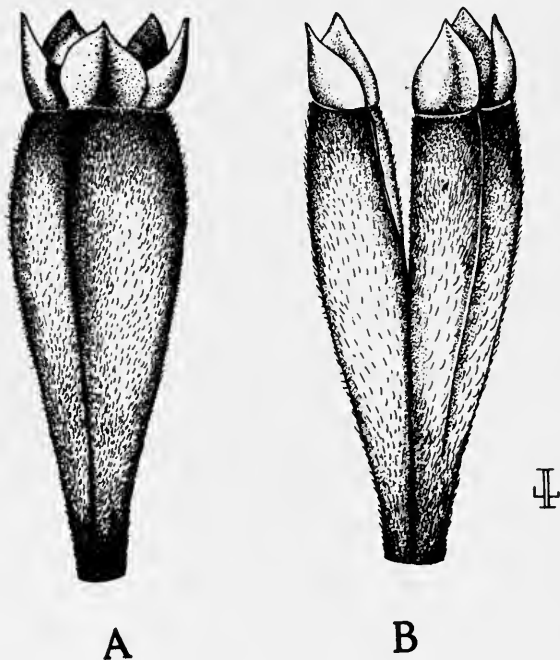


FIGURE 118

Alseis microcarpa

A, Capsule, immature (X 12); B, Capsule, mature, opening (X 12).

crispis brevibus subadpressis obtectis; bracteis ovatis vel late lanceolatis longe setaceo-acuminatis 2-4 mm. longis; lobis calycis plerumque 5 ovatis subito acuminatis ca. 1 mm. longis glabris; corollis non visis; capsulis clavatis 5.5-7 mm. longis basin versus attenuatis apice 2-2.5 mm. latis dense adpresso-puberulentibus (Fig. 118).

Type in herb. Chi. Nat. Hist. Mus., collected on Montaña de Aguacate, along Quebrada de Pajarral, tributary to Río Caripe, northeast of Alto de Aguacate, between Caripe and Caripito, state of Monagas, alt. 600-900 m., April 19, 1945, *Julian A. Steyermark* 62232, "tree with very hard wood, the trunk is divided at base into several trunks with pale brown ridged bark; leaves subcoriaceous to firmly membranaceous, deep green above, pale green below; fruiting rachis and fruit pale green."

Local name: "guarataro."

This species is distinguished by the relatively small densely appressed-puberulent capsules and branches of the inflorescence, the numerous lateral nerves of the leaves, and the sparse spreading hairs along the midrib and nerves of the lower leaf surface.

Alseis trichocarpa Standl. & Steyer., sp. nov.

Arbor 8-10-metralis, ramulis juvenilibus glabris; foliis subcoriaceis petiolatis, petiolis ca. 1.5 cm. longis glabris; laminis obovatis 28-31 cm. longis 9.5-11.5 cm. latis obtusis, apice rotundatis, basin versus acutis, supra glabris subtus in axillis barbatis et per costam mediam minute puberulentibus, nervis lateralibus utroque latere 17-18, costa nervisque subtus prominulis, venulis subtus prominulis; spicis axillaribus simplicibus usque 22 cm. longis dense villosulis; corollis non visis; capsulis cylindrico-clavatis 13-14 mm. longis hirsutulis pilis patentibus 0.75-1 mm. longis praeditis (Fig. 119).

Type in herb. Chi. Nat. Hist. Mus., collected in woods 1-10 kms. northwest of Upata, on road to San Felix, between Upata and Altigracia, state of Bolívar, alt. 700 m., July 31-August 1, 1944, *Julian A. Steyermark* 57713, "tree 25-30 feet tall; leaves subcoriaceous, deep green above, dull green below; fruit green."

This species is easily recognized by the relatively long hirsutulous capsules arranged in a simple axillary spike.

Borreria macrocephala Standl. & Steyer., sp. nov.

Fruticulosa, 0.7-1-metralis, caulibus strictis simplicibus glabris basi lignosis denudatis; internodiis inferioribus 2.5-3 cm. longis; vaginis stipularum glabris; stipulis triangulari-lanceolatis sensim acuminatis non setosis; foliis oppositis erectis rigidis subcoriaceis anguste lanceolatis attenuato-acuminatis sessilibus basi angustatis 3.5-6 cm. longis 2-6 cm. latis glabris uninerviis; inflorescentiis terminalibus multifloris capitatis 3-4 cm. diam. involucri multiphylo suffultis, foliis involucribus late vel anguste lanceolatis 1.8-4.2 cm. longis 3-9 mm. latis; floribus sessilibus; hypanthio oblongo-turbinato extus dimidio superiori villosis; sepalis 4 lineari-setaceis 8-10 mm. longis supra medium 0.4-0.5 mm. latis plerumque glabris

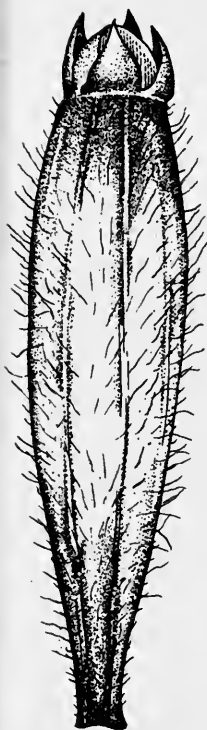


FIGURE 119
Alseis trichocarpa
 Capsule (X 7).

marginibus parce ciliolatis; corollis albis hypocrateriformibus ca. 2 cm. longis extus griseo-villosis, tubo 15.5-16 mm. longo, lobis 4 ligulato-oblongis 4-4.5 mm. longis 1-1.5 mm. latis; staminibus 4 bene exsertis lobis corollae longioribus; filamentis glabris 5 mm. longis in sinu loborum corollae insertis; antheris oblongis 1.7-1.8 mm. longis; stigmatе capitato; capsulis oblongo-turbinatis 5-5.5 mm. longis extus supra medium villosis; seminibus atrofuscis reticulato-rugosis 2.5 mm. longis (Fig. 120).

Type in herb. Chi. Nat. Hist. Mus., collected in sandy soil, banks of Caño Rana, Río Atabapo, Territorio Federal Amazonas, alt. 280 m., January 19, 1942, *Llewelyn Williams 13853*, "slender frutice, 2'6"-3' tall; flowers white; common."

This species is at once distinguished from other members of the genus by the non-setose triangular-lanceolate sepals, and corollas attaining 2 cm. in length. Because of its capitate stigma, it may be placed near *B. Warmingii* Schumann of Brazil.

Cephaelis bolivarensis Standl. & Steyerl.,
 sp. nov.

Frutex 1.8-2.8-metralis, ramulis gracilibus teretibus, novellis hirsutulis, vetustioribus parce pilosis vel glabrescentibus, internodiis elongatis; stipulis erectis 7-8 mm. longis profunde bifidis, lobis triangulari-lanceolatis acuminatis, basi intus et marginibus, strigosis, lobis demum deciduis; foliis oppositis breviter petiolatis, petiolis vinaceis 3-4 mm. longis puberulis; laminis firme membranaceis, subtus pallido-viridibus costa

media vinaceo-purpurea, anguste ellipticis vel oblongo-ellipticis acuminatis basin versus sensim angustatis 5.5-9 cm. longis 1.5-2.5 cm. latis, supra moderatim adpressipilosis, subtus parce adpressipilosis pilis brevioribus, costa media pilis longioribus dense pubescentibus praeditis, marginibus pilis 0.7-0.8 mm. longis prominenter ciliatis, nervis lateralibus subtus prominulis utroque latere 8-9 ascendentibus, nervulis prominulis; inflorescentiis terminalibus 7-8 mm. longe pedunculatis, floribus in capitulis congestis; pedunculis dense hirsutis; capitulis parvis 5-7 mm. longis 8-11 mm. latis, basi bracteis 2 pallido viridibus lanceolatis acuminatis 11-12 mm. longis 2-4 mm. latis ubique dense strigosis fulcratis; bracteis interioribus lineari-lanceolatis 5.5 mm. longis dense ciliatis; floribus sessilibus, hypanthio 2.5 mm. longo dense hirsuto; calyce pallido viride 3.5-4 mm. lon-

go extus hirsutulo lobis late triangularibus acutis ad 1 mm. longis; corollis non visis.

Type in herb. Chi. Nat. Hist. Mus., collected on densely wooded slopes of narrow ridge between quebrada and summit, Sororopán-tepuí, state of Bolívar, alt. 2130-2250 m., November 15, 1944, *Julian A. Steyermark 60185*, "shrub 5-8 feet tall; leaves firmly membranaceous, dull green above, pale green below with wine purple midrib; petiole wine purple; bracts pale green; calyx pale green."

This species is distinguished by its small terminal heads with two conspicuous densely pubescent pale green outer bracts and pubescent leaves, which are prominently ciliate on the margins and appressed-pilose on the upper surface.

Cephaelis tinctoria Standl. & Steyer., sp. nov.

Subherbacea, ramis colonicis adscendentibus omnino glaberrimis, internodiis elongatis; stipulis erectis 6-9 mm. longis profunde bifidis, lobis late lanceolatis subacutis glabris; foliis oppositis petiolatis, petiolis 3-4 mm. longis glabris vel subglabris; laminis firmis subcoriaceis supra lucidis atroviridibus subtus pallido viridibus elliptico-lanceolatis vel late ellipticis utrinque acutis 3-5 cm. longis 1-1.7 cm. latis, supra costa media hirtella aliter glabris, subtus costa media hirtella nervis lateralibus parce puberulis aliter glabris ceterum glabris, nervis lateralibus subtus paullo prominulis utroque latere 7-9 cum venulis prominente conjunctis; inflorescentiis axillaribus in capitulis congestis, capitulis 1.2-1.3 cm. longis 1.5 cm. latis; bracteis exterioribus vinaceo-purpureis suborbiculari-obovatis apice abrupte cuspidatis 1.2 cm. longis; bracteis interioribus subaequalibus subcucullatis obovatis rotundatis supra medium crenulatis 7-9 mm. longis 3-5 mm. latis; frutibus ovalibus lazulinis vel atrocyaneis sulcatis 5-6 mm. longis 4 mm. diam.

Type in herb. Chi. Nat. Hist. Mus., collected in moist cloud forest on south- and southwest-facing slopes of Palojosco above Los Aposentos, above Humocaro Bajo, state of Lara, alt. 2530-2375 m., February 4, 1944, *Julian A. Steyermark 55256*, "stems in colonies, ascending; leaves subcoriaceous, firm, dark green and shining above, pale green below; bracts wine-purple; corolla white; fruit ultramarine blue, 3-sided."

Local name: "cafecito."

This plant is used by the local inhabitants to add color to a tobacco product chewed by the mountain people and known as "chimo."

This species is characterized by its colonial habit, axillary flower cluster surrounded by wine-purple bracts, glabrous stems, hirtellous midnerve, and small leaves.

Chalepophyllum pungens Standl. & Steyer., sp. nov.

Frutex 1-1.3-metralis, ramulis gracilibus pallido griseis teretibus glabris; internodiis congestis brevissimis; stipulis in vaginam brevem glabram connatis, lobis acicularibus 1.5-2.5 mm. longis glabris persistentibus, ad apices ramulorum prominentibus; foliis ad apices



FIGURE 120
Borreria macrocephala
Habit (X 0.7).

ramulorum confertis subsessilibus, petiolis 1.5-2 mm. longis glabris; laminis firme membranaceis supra lucidis subtus pallido viridibus parvis oblanceolatis vel ovato-ellipticis aristatis, arista 1-1.5 mm. longa, basi subacutis, 0.9-2.5 cm. longis 0.4-0.8 cm. latis, glabris, costa prominente nervis aliis obsoletis vel nervis lateralibus utroque latere 1, venulis obscuris vel obsoletis; floribus apices ramulorum brevium terminantibus; corollis non visis; capsulis obovoideis 10-13 mm. longis 9-10 mm. latis glabris; seminibus suborbicularibus vel late oblongis alatis brunneis 4-4.5 mm. longis 2.5-2.75 mm. latis.

Type in herb. Chi. Nat. Hist. Mus., collected on open granitic rocks at Puerto Ayacucho, Territorio Federal Amazonas, alt. 100 m., May 18, 1940, *Llewelyn Williams 12970*, "low shrub (up to 75 cm. or 1 m.); fruit is dehiscent, brownish."

Cotypes in herb. Chi. Nat. Hist. Mus., collected among rocks on the savana of Esmeralda, Upper Orinoco, Territorio Federal Amazonas, alt. 130 m., May 16, 1942, *Williams 15419*, "arbusto achaparrado raras veces más de 75 cm. de alto, usualmente con corona aplanada y el fruto morenizco es dehiscente; el tronco es torcido y la corteza gris claro a morenizca, algo lisa y el liber colorado fuerte; la albura es de color claro y el duramen bien definido por ser poco más obscuro; común"; vicinity of Sanariapo, near Río Sanariapo, tributary of Orinoco River, Territorio Federal Amazonas, alt. 100 m., September 8, 1944, *Steyermark 58453*, "shrub 3-4 feet tall; leaves firmly membranaceous, rich deep green above and shining, paler green below."

Local name: "guayabito."

A very distinct member of the genus, recognized at once by the acicular persistent stipules, small pungent aristate-tipped leaves and slender branches. It is unfortunate that no flowering material is available in the three collections cited.

Chimarrhis venezuelensis Standl. & Steyerl., sp. nov.

Arbor 10-13-metralis, cortice griseo calvo, ramulis subtetragonis superne pilis patentibus vel adscendentibus hirsutulis praeditis; stipulis subfoliaribus late obovatis apice late rotundatis 10-18 mm. longis extus dense pubescentibus; foliis oppositis petiolatis, petiolis 8-13 mm. longis dense pubescentibus supra late sulcatis; laminis divaricatis firme membranaceis supra atroviridibus lucidis subtus pallido viridibus late oblongo-vel ovato-ellipticis apice acuminatis basi acutis decurrentibus 5.5-16 cm. longis 2-8 cm. latis, supra parce strigillosis subtus pilis longioribus praesertim ad costam mediam praeditis, nervis lateralibus utroque latere 6-8 arcuato-adscendentibus 3-5 mm. ante marginem anastomosantibus supra sulcatis subtus prominentibus; inflorescentiis terminalibus vel ex axillis supremis nascentibus paniculatis multifloris 10-17 cm. longis; rhachi pedunculi atque pedicellis ubique dense hirsutulis pilis patentibus praeditis; calyce 1.6 mm. longo, lobis 4 lanceolatis acutis 0.9 mm. longis glabris, hypanthio 0.7 mm. longo extus moderatim hirsutulo; corolla viridi-albida 4 mm. longa, omnino glabra, tubo 1 mm. longo, lobis 4 ovato-oblongis subacutis 3 mm. longis 1.5 mm. latis;

staminibus 4; filamentis albidis 2.5 mm. longis glabris; antheris oblongis 1.2 mm. longis glabris; stylo ca. 2 mm. longo; capsulis late obovoideis vel turbinatis 5-5.5 mm. longis 3-3.5 mm. latis basi acutiusculis ca. 10-costatis parce pubescentibus basin versus praesertim calyce persistente coronatis; seminibus suborbicularibus vel obovoideis 0.8-0.9 mm. longis brunneis vel nigris valde rugoso-reticulatis (Fig. 121).

Type in herb. Chi. Nat. Hist. Mus., collected on slopes of mountain between Santo Domingo and Los Quebraditos, south of Las Sabanetas, above Humocaro Bajo, state of Lara, alt. 2430-2475 m., February 8, 1944, *Julian A. Steyermark 55408*, "tree 35 feet tall; corolla fragrant, greenish-white; filaments white; anthers buff; leaves dark shining green above with sulcate nerves, pale green below."

Cotype (fruiting specimen) in herb. Chi. Nat. Hist. Mus., collected in moist cloud forest on southwest-facing slopes at Los Aposentos, above Las Sabanetas, above Humocaro Bajo, state of Lara, alt. 2500-2530 m., February 3, 1944, *Steyermark 55220*, "bark slightly bitter, smooth and cream-colored when stripped from wood, but not discoloring; tree 30-40 feet tall, 4-8 inches in diam., with smooth gray bark; plentiful; leaves horizontally spreading, dark green and slightly shining above, dull green below; young fruit deep shining green."

Local name: "quina blanca."

This species is most closely related to *C. dioica* K. Schum. & K. Krause of Peru, Ecuador, and Colombia. It differs from that species in the hirsutulous pubescence of spreading longer hairs of the branches, peduncles, and pedicels, pubescent hypanthium, larger capsules, and shorter stamens which only equal the corolla lobes in length.

It is questionable whether this species is dioecious, as is described for *C. dioica*. The bitter bark is employed as a substitute for quinine.

Chiococca lucens Standl. & Steyer., sp. nov.

Frutex 3.3-4-metralis, ramulis teretibus glabris; stipulis erectis late ovato-triangularibus apice obtusiusculis 2-3 mm. longis glabris; foliis oppositis petiolatis, petiolis 3-7 mm. longis glabris; laminis subcoriaceis supra nitidis atroviridibus subtus pallido viridibus oblongo-ellipticis breviter et obtuse acuminatis basi subacutis 3.5-8 cm. longis 1.5-4 cm. latis marginibus subrevolutis glabris, costa media prominente, nervis lateralibus supra obsoletis subtus utroque latere 4-5 obscuris; inflorescentiis axillaribus binis, racemis simplicibus 2-floris vel floribus solitariis; pedunculis 1-3 cm. longis glabris, pedicellis 6-8 mm. longis glabris; calyce 4-4.5 mm. longo 4-fido, hypanthio 25 mm. longo campanulato in speciem glabro, sed sub lente minutissime puberulenti, lobis late lanceolatis obtusis 25-27 mm. longis 1.2 mm. latis marginibus minute puberulentibus ceterum in speciem glabris sed ubique minutissime remote vix puberulentibus; corolla purpurea, lobis intus albidis, 11 mm. longa, tubo 9 mm. longo extus praesertim basin versus minute puberulo infra medium dense

pilosulo, lobis 4 imbricatis ovatis obtusis 2 mm. longis 1.5 mm. latis marginibus incrassatis; staminibus 4 basi corollae insertis, antheris dorsifixis lineari-oblongis 5 mm. longis glabris, filamentis 5 mm. longis dimidia parte inferiore pilosulis; stylo 9 mm. longo apice 2-lobo; ovario 2-loculari, ovulis solitariis ab apice pendulis; drupis (immaturis) 10 mm. longis (Fig. 122).

Type in herb. Chi. Nat. Hist. Mus., collected on densely wooded slopes of narrow ridge between quebrada and summit, Sororopán-tepuí, state of Bolívar, alt. 2130-2250 m., November 15, 1944, *Julian A. Steyermark 60184*, "shrubby, 10-12 feet tall; leaves subcoriaceous, dark green above, pale green below; corolla dull purple, lobes whitish within."

This species is remarkable in possessing a dull purple corolla with the lobes whitish within, flowers solitary or in 2-flowered racemes, and elongated calyx lobes, the latter much larger than in any other species of the genus. In the color of the flowers it resembles the genus *Faramea*, but the ovules are solitary and pendulous from the apex of the cells.

Elaeagia Karstenii Standl.

This species ranges from Venezuela, where it occurs in the Cordillera de la Costa as well as in the Andes, to eastern cordillera of Colombia. There is considerable variation in leaf-shape, pubescence of the lower surface of the leaf, length and pubescence of the petiole, and base of leaf blade. The original description was based upon *Fendler 594*, "prope coloniam Tovar," a locality near Caracas. In this collection the leaf-blade becomes gradually narrowed to a subacute base and the pubescence on the lower leaf surface is confined to the midrib and lateral nerves.

In some recent collections from Venezuela, specimens are on hand which show marked dense pubescence over the entire lower surface of the leaf and the base of the leaf blade is rounded to subtruncate. The rounded to subtruncate character of the base of the leaf-blade may be found, however, in otherwise typical *E. Karstenii*.

The extreme pubescent-leaved type may be considered a form of variation, which may be expected to occur throughout the range of this species and may be designated as follows: *Elaeagia Karstenii* Standley, forma *hispidula* Standl. & Steyer., forma nova.

A typo differt laminis foliorum subtus dense atque molliter breviter pilosulis; laminis basi saepe late rotundatis vel subtruncatis.

Type in herb. Chi. Nat. Hist. Mus., isotype in U.S. Nat. Herb., collected in forest, between Agua Negra and El Junquito, Distrito Federal, alt. about 1850 m., March 26, 1943, *E. P. Killip & E. Rohl 37160*, "tree, 3.5-9 m. high, branched above; panicle 3 m. wide; buds green."

Cotypes in herb. Chi. Nat. Hist. Mus., collected in rich woods, east of El Junquito, Distrito Federal, alt. 1980-2130 m., June 25, 1944, *Steyermark 56994*, "tall tree 80 feet tall; leaves subcoriaceous, deep green above, buff green below; stipules buff"; rich steep wooded



FIGURE 121

Chimarrhis venezuelensis

A, Habit of flowering branch (X 0.45); B, Fruit (X 4.5); C, Flower (X 7); D, Corolla, opened (X 7).

slopes, Alto de Lirio, between Bramón and Las Delicias, state of Táchira, alt. 1890-2285 m., July 18, 1944, *Steyermark 57461*, "tree 50 feet tall; leaves chartaceous-subcoriaceous, deep green above, buff green below with raised nerves; peduncle yellow green; pedicels and calyx yellow green."

***Elaeagia laxiflora* Standl. & Steyer., sp. nov.**

Frutex 7-metralis, ramulis novellis glabratis; stipulis oblongo-ovatis rotundatis ca. 2 cm. longis 9 mm. latis ubique glabris; foliis oppositis brevissime petiolatis vel subsessilibus, petiolis ca. 3 mm. longis glabris; laminis firme membranaceis supra atroviridibus subtus pallidioribus obovatis apice abrupte acuminatis basi sensim acute attenuatis 15-25 cm. longis 7.5-10.5 cm. latis supra glabris subtus secus costam mediam atque nervos minutissime puberulentibus ceterum minutissime papillato-asperioribus, nervis lateralibus utroque latere 18-21 arcuato-ascendentibus subtus paullo prominulis; inflorescentiis terminalibus late paniculatis laxe multifloris 11-21 cm. longis 10-20 cm. latis, ramis basalibus ascendentibus ceteris divaricatis minutissime densiuscule puberulentibus; floribus laxe pedicellatis, pedicellis gracilibus 3-4 mm. longis minutissime puberulentibus; bracteis subulatis ca. 1 mm. longis; hypanthio late turbinato vel subcampanulato 1.5-1.8 mm. longo extus minute adpresso-puberulis 5-mucronatis, dentibus late triangularibus apiculatis 0.2 mm. longis; corolla alba 5 mm. longa 5-lobata, lobis recurvatis oblongis rotundatis 3.5-4 mm. longis 1.2-1.5 mm. latis infra medium vel fauce intus dense albido-hirsutis, tubo 1 mm. longo; staminibus 5, filamentis exsertis 2.5-2.8 mm. longis prope medium cum appendicibus crassiusculis dense hirsutulis, ceterum glabris, antheris oblongis 1 mm. longis; stylo bifido 2.5 mm. longo glabro, styli ramis divaricatis 2 mm. longis; capsulis depresso-globosis 2 mm. longis 2-3 mm. latis parce adpresso-pubescentibus (Fig. 123).

Type in herb. Chi. Nat. Hist. Mus., collected along forested slopes of headwaters of tributaries of Río Neverí, between Río León and "Carmelita," northeast of Bergantín, state of Anzoátegui, alt. 800-1200 m., March 5, 1945, *Julian A. Steyermark 61373*, "shrub 20 feet tall; leaves firmly membranaceous, dark green above, dull pale green below; flowers fragrant; filaments and style white; corolla lobes recurved-revolute, white; calyx and peduncle and pedicels pale green."

This species is distinguished by the relatively thin subsessile or very shortly petiolate leaves, the small depressed-globose capsules, the flowers on slender pedicels, and the densely barbate interior of the corolla lobes with densely hirsutulous enlarged appendages of the filaments.

***Faramea Cardonae* Standl. & Steyer., sp. nov.**

Frutex (?) vel arbor (?), ramulis glabris, internodiis 3.5-4.5 cm. longis; foliis oppositis petiolatis, petiolis 8-10 mm. longis glabris; laminis subcoriaceis supra lucidis atroviridibus subtus pallido viridibus late oblongo-ellipticis subacuminatis, acumine obtuso, basi subacutis 9.5-15 cm. longis 3.4-6.8 cm. latis utrinque glabris, costa

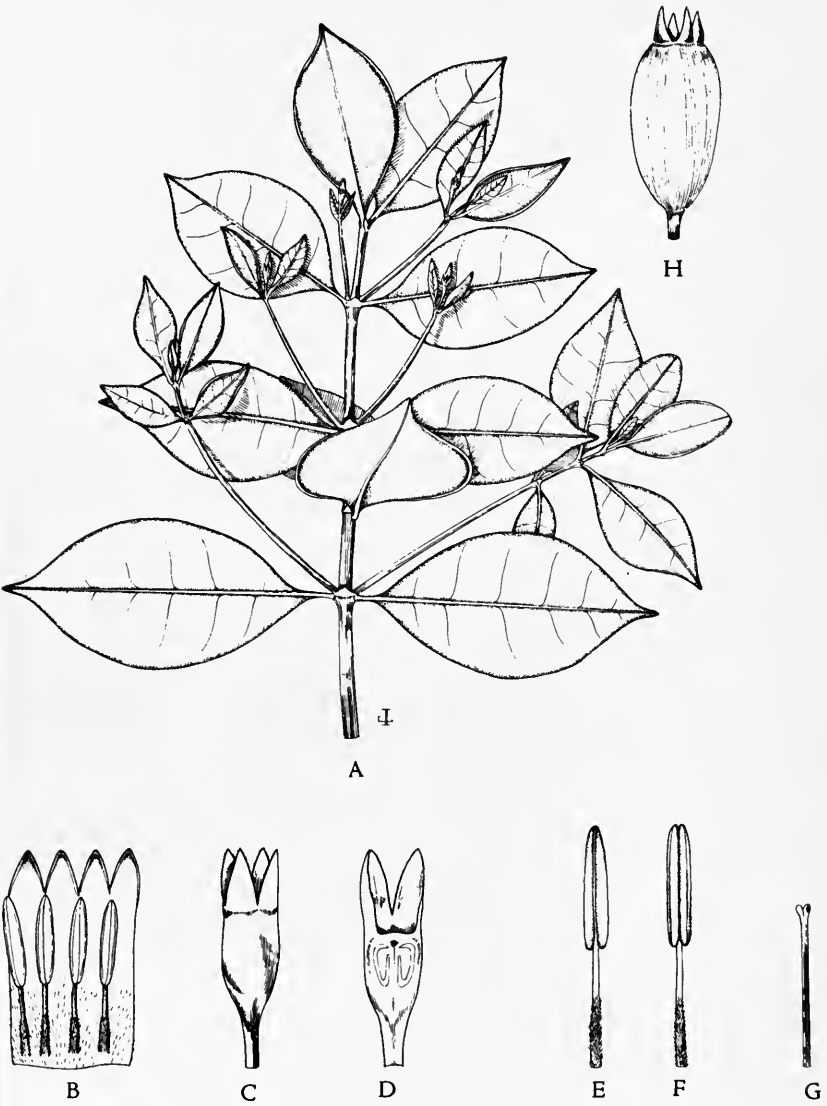


FIGURE 122

Chiococca lucens

A, Habit of flowering branch (X 0.6); B, Corolla opened, from within (X 4); C, Calyx and hypanthium (X 8); D, Longitudinal section through hypanthium (X 8); E and F, Stamen (X 4); G, Style and stigma (X 3); H, Immature fruit (X 3).

media et nervis lateralibus subtus utroque latere 8-9 divaricate adscendentibus 9-11 mm. ante marginem anastomosantibus cum venulis prominenter reticulatis late ovato-triangularibus cuspidatis 5 mm. longis; cymis terminalibus sessilibus ca. 6-rameis, ramis plerumque 3-floris 1.5-2 cm. longis erectis; bracteis exiguis subulatis 1.25-1.5 mm. longis; pedicellis 3-5 mm. longis; hypanthio clavato-turbinato 2.7 mm. longo 2.7-3 mm. lato e calyce vel pedicello vix distincto, calyce inaequaliter 4-lobato, 4.5-5.5 mm. longo, tubo 1.5-2 mm. longo 4 mm. diam., lobis 4 inaequalibus uno brevissimo late triangulari-suborbiculari rotundato 0.5 mm. longo 0.5 mm. lato ceteris oblongo-lanceolatis obtusis 3-3.5 mm. longis 1.5 mm. latis; corolla 15 mm. longa, tubo 8 mm. longo 3 mm. lato, lobis 4 oblongo-lanceolatis obtusis vel obtusiusculis 7-7.5 mm. longis 3-3.5 mm. latis intus minute papillatis; staminibus 4 infra medium tubi altitudinibus alternis insertis; antheris linearibus 4.8-5 mm. longis 0.8-1 mm. latis; filamentis brevissimis; fructibus ignotis (Fig. 124).

Type in herb. Chi. Nat. Hist. Mus., isotype in U.S. Nat. Herb., collected on Cerro Guaiquinima, Alto Río Paragua, state of Bolívar, alt. 1200 m., July 10, 1944, *Félix Cardona P. 1115*.

This species is somewhat anomalous in *Faramea* in having an unequally lobed calyx in which 3 of the lobes are equal and elongated and in the alternate levels of insertion of the stamens. Other characteristics possessed are the branches of the cymes arising directly from the tip of the branch without a common peduncle, the insertion of the stamens well below the middle of the corolla tube, and the lobes of the corolla tube about equalling the tube. This species does not appear to have any close relatives in the genus.

***Guetarda Steyermarkii* Standl., sp. nov.**

Arbor 20-30-metralis, ramulis teretibus novellis minute tomentellis vel subhirtellis; stipulis ovatis acuminatis 11 mm. longis 3.5 mm. latis extus parte media solum strigosis; foliis oppositis petiolatis, petiolis 10-22 mm. longis strigilloso-hirtellis; laminis firme membranaceis supra atroviridibus subtus griseo-viridibus, anguste oblongo-ellipticis acuminatis basi sensim acutate angustatis 8-15 mm. longis 2.5-5 cm. latis, supra plerumque omnino glabris vel foliis juvenilibus per costam mediam atque nervos laterales strigillosis nervis sulcatis, subtus ad nervos atque costam mediam strigillosis inter nervos valde graciliter reticulatis reti per se sericeo pilis albidis minutis brevibus obtectis nervis principalibus atque secundariis venisque prominenter elevatis, nervis lateralibus utroque latere 8-10 valde ascendentibus juxta marginem conjunctis; inflorescentiis axillaribus furcatis, pedunculis 16-35 mm. longis substrigilloso-subhirtellis, ramis cymae ca. 4, 12-20 mm. longis multifloris, floribus secundis sessilibus; hypanthio 2-3 mm. longo tetragono minute griseo-tomentello atque subhirtello; calyce breviter 5-dentato, dentibus late triangularibus obtusiusculis 0.5-0.75 mm. longis 0.75-1 mm. latis; corollis in anthesi 11-13 mm. longis, tubo 11.5 mm. longo 3 mm. lato pilis brevibus reflexis dense obtectis, lobis subbilobatis suborbiculari-oblongis rotundatis 3 mm. longis 2.5 mm. latis; staminibus supra medium insertis; antheris 4 mm. longis; stylo 11 mm. longo;

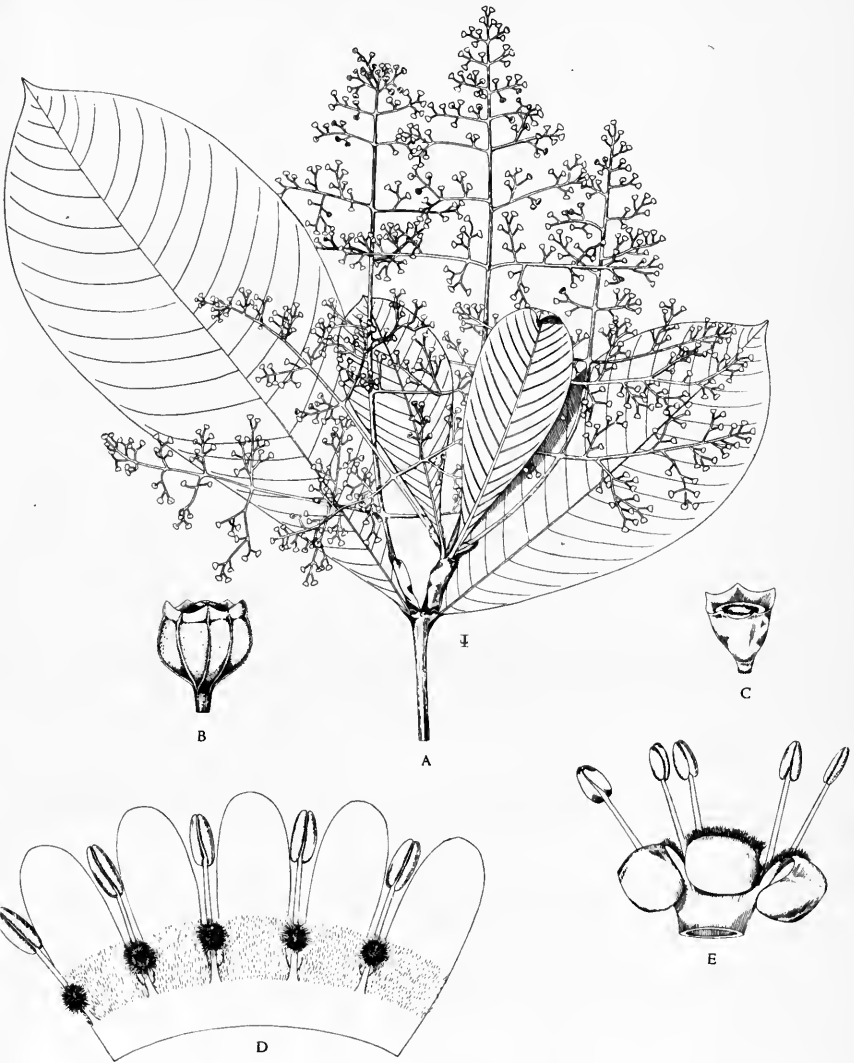


FIGURE 123

Elaeagia laxiflora

A, Habit of flowering branch (X 0.3); B, Fruit (X 5); C, Calyx and hypanthium (X 4.5); D, Corolla, opened from within (X 6); E, Corolla in position (X 6).

drupa ovali vel late oblonga 5-6 mm. longa 4 mm. diam. minute tomentella, putamine 4-loculari (Fig. 125).

Type in herb. Chi. Nat. Hist. Mus., collected on rich steep northwest- and northeast-facing forested slopes above "La Isla," above Tabay, state of Mérida, alt. 2285-2745 m., May 18, 1944, *Julian A. Steyermark 56601*, "tree 60-90 feet tall; leaves firmly membranous, dark green above with subsulcate nerves, gray pale green below with conspicuous pale green nerves and areolate nervation; calyx pale gray green as is fruit; corolla tube buff-yellow-green suffused with brick-lavender, especially colored in upper part; corolla lobes without suffused brick-lavender, within greenish white with ruffled white margins (almost bilobate at apex as in *Joosia*)."

Local name: "salvio quino."

This species appears to be well-marked by having the lower surface of the leaves conspicuously reticulate, this reticulum well-defined by a gray tomentum of dense short hairs. It is more prominently reticulate than either *G. argentea* Lam., *G. sabiceoides* Standl., or *G. discolor* Rusby, and has shorter and less conspicuous hairs on the lower leaf surface than in *G. argentea*, but more numerous and paler gray hairs than in either *G. sabiceoides* or *G. discolor*. The 4-celled ovary also distinguishes it from *G. sabiceoides*.

Guettarda Steyermarkii, forma *latior* Standl. & Steyer., forma nova

A typo differt stipulis ad 22 mm. longis, petiolis 2.5-5 cm. longis, laminis late ovatis vel elliptico-ovatis 15-20 cm. longis 7-11 cm. latis cuspidato-acuminatis basi obtusis vel subtruncatis, costa media et nervis lateralibus densiuscule hirtellis pilis longioribus obtectis (Fig. 126).

Type in herb. Chi. Nat. Hist. Mus., collected in thickets around Hacienda El Joque of Dr. Ricardo Sargent, above Jají, state of Mérida, alt. 2195 m., April 20, 1944, *Julian A. Steyermark 55965*, "tree 60 feet tall; leaves dark green above, gray green below; corolla dull rose; calyx green."

The longer more pubescent petioles, much broader more ovate leaf blades obtuse to subtruncate at base, and the longer, more numerous hairs on the lower midrib and lateral nerves serve to distinguish this from typical *G. Steyermarkii*. In details of flower structure and in the gray, strongly reticulate lower surface of the leaf it shows its relationship with *G. Steyermarkii*.

Hoffmannia costensis Standl. & Steyer., sp. nov.

Frutex gracilis ad 2.8 m. altus vel subherbacea, ramulis gracilibus teretibus vetustioribus griseis junioribus brunneis, novellis villosulis, internodiis 1.5-7 cm. longis; stipulis late triangularibus villosulis ca. 1 mm. longis; foliis oppositis petiolatis, petiolis 0.7-3 cm. longis villosulis; laminis membranaceis subtus pallido viridibus oblanceolatis vel elliptico-obovatis acutis vel subacuminatis, acumine subobtusis, basin versus sensim attenuatis, 4-15 cm. longis 1.1-5 cm. latis, undique densiuscule strigilloso-puberulis subtus ad nervos dense villosulis, subtus costa media paulo ele-

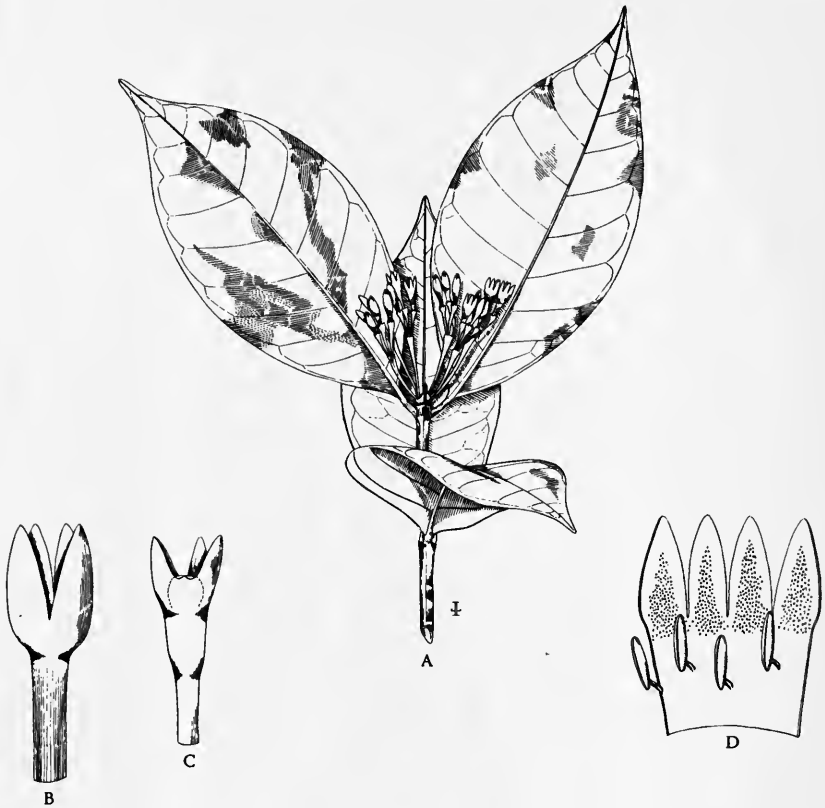


FIGURE 124
Faramea Cardonae

A, Habit of flowering branch (X 0.4); B, Corolla, unopened (X 2); C, Calyx and hypanthium (X 4.5); D, Corolla opened, from within (X 2).

vata nervis ceteris lateralibus obscuris utroque latere ca. 8 arcuato-
adscendentibus; cymis axillaribus solitariis vel fasciculatis 4-5-
floris 2-4 mm. longe pedunculatis, petiolis brevioribus, pedicellis
0.5-2 mm. longis parce puberulis; hypanthio oblongo-turbinato 2.5 mm.
longo densiuscule puberulo vel villosulo; calyce 5-lobato 1.5 mm.
longo, lobis lanceolatis acutis 1.1-1.5 mm. longis 0.5 mm. latis ex-
tus villosulis; corolla albida vel pallido-viride 5.5-6 mm. longa extus
densiuscule puberula, tubo 1.5 mm. longo, lobis ovato-oblongis
acutiusculis 4-4.5 mm. longis 1.5-2.75 mm. latis; antheris exsertis
lineari-oblongis 2.5 mm. longis; filamentis 1 mm. longis; bacca rubra
9-10 mm. longa parce puberula.

Type in herb. Chi. Nat. Hist. Mus., collected on north-facing

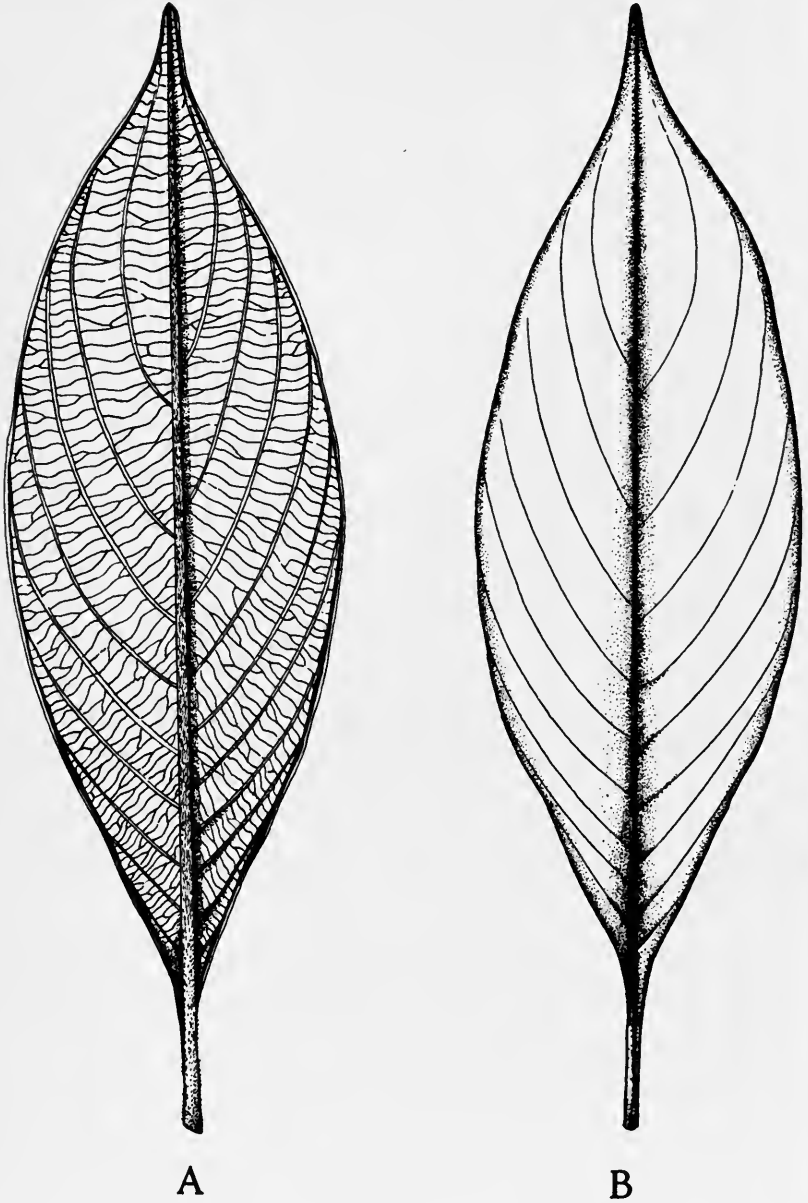


FIGURE 125
Guettarda Steyermarkii
A, Leaf, lower side (X 1); B, Leaf, upper side (X 1).

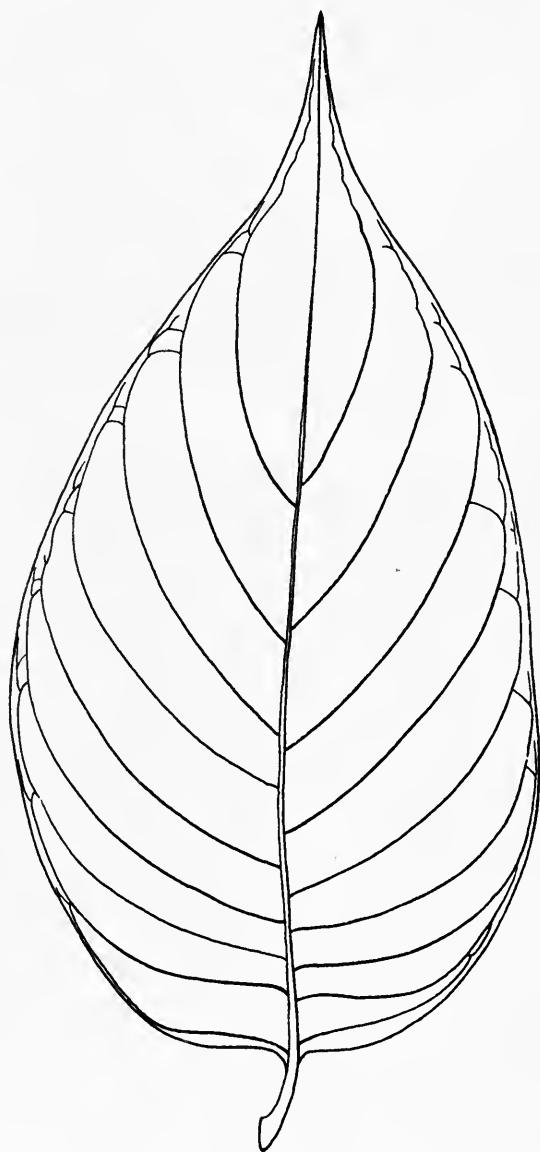


FIGURE 126
Guettarda Steyermarkii f. *latior*
Leaf, upper side (X 1).

slopes above La Trinidad in cloud forest zone, southwest of Cocolar, state of Sucre, alt. 2100-2200 m., May 5, 1945, *Julian A. Steyermark 62542*, "shrub 5-8 feet tall; fruit deep red; corolla pale greenish; leaves membranaceous, dull green above, pale green below."

Cotype in herb. Chi. Nat. Hist. Mus., collected on forested southwest-facing slopes of Cerro Negro, above La Sabana de las Piedras, northwest of Caripe, state of Monagas, alt. 1500 m., April 5, 1945, *Julian A. Steyermark 61861*, "herbaceous, 2 1/2-3 feet tall; leaves membranaceous, dark green with sulcate nerves above, pale dull green below; calyx pale green; corolla whitish; fruit red."

The cotype collection cited has longer petioles and broader and larger leaves than the type, but in all other details of inflorescence, floral morphology, and pubescence it is conspecific.

This species shows some similarity to *H. pallida* Rusby of Bolivia and to *H. Williamsii* of Peru. From the latter it may be distinguished by the shorter pubescence on the stems and lower leaf surface, and short pedunculate flowering and fruiting clusters, while from the former it differs in the much shorter pedicels and more densely flowered cymes.

Malanea microphylla Standl. & Steyer., sp. nov.

Frutex subscandens, ramulis elongatis teretibus novellis ferrugineo-hirtellis, internodiis brevibus 0.5-2.5 cm. longis; stipulis triangulari-subulatis longe acuminatis 3 mm. longis extus canescentibus; foliis oppositis brevipetiolatis, petiolis 3-4 mm. longis supra valde sulcatis paullo strigillosis subtus plerumque dense cano-strigosis, laminis subcoriaceo-chartaceis supra lucidis subtus pallido-viridibus, suborbicularibus vel ovatis rotundatis vel acutiusculis basi subcordatis vel obtusis 1.7-3.3 cm. longis 1-2.5 cm. latis marginibus, valde revolutis, costa media atque nervis lateralibus supra sulcatis subtus elevatis prominentibus, supra secus costam mediam strigillosis ceterum glabris subtus parce vel densiuscule strigillosis, nervis lateralibus utroque latere 4-5 arcuato-adscedentibus; inflorescentiis axillaribus brevipedunculatis foliis brevioribus; pedunculis 4-7 mm. longis strigillosis; floribus sessilibus vel subsessilibus ad apices pedunculorum 3-4-glomeratis; bracteolis ovatis acutis vel acuminatis 2-2.5 mm. longis glabris; hypanthio subcylindrico-campanulato 1.1-1.6 mm. longo glabro; calyce 1.9-2.2 mm. longo glabro, lobis inaequalibus ovatis vel oblongo-lanceolatis obtusis 1.1-1.4 mm. longis 0.7-0.8 mm. latis; corolla in alabastro 3.8-3.9 mm. longa extus glabra, lobis oblongis rotundatis intus dimidia parte inferiore dense villosulis, tubo 2 mm. longo intus dimidia parte superiore dense villosulis; staminibus 4 in parte superiore tubi corollae insertis; antheris oblongis utrinque rotundatis in alabastro 1 mm. longo; filamentis in alabastro 0.5 mm. longo; fructu atro-purpurascente oblongo-elliptico 9-10 mm. longo 4.5-5 mm. lato glabro, apice calyce persistente coronato (Fig. 127).

Type in herb. Chi. Nat. Hist. Mus., collected on upper slopes of Carrao-tepuí, state of Bolívar, alt. 2130-2430 m., December 7, 1944, *Julian A. Steyermark 60875*, "sprawling shrub or semi-climbing with



FIGURE 127

Malanea microphylla

A, Habit of fruiting branch (X 1); B, Leaf, lower side (X 1); C, Leaf, upper side (X 1).

elongated branches; leaves subcoriaceous-chartaceous, rich deep green and shining above, pale rich green below; corolla greenish-white; fruit turning black-purple, elliptic."

This newly described member of the genus *Malanea* at once may be distinguished from other known species of the genus by its much smaller leaves and few-flowered cymes on short peduncles. It is apparently most closely related to *M. obovata* Hochr. of British Guiana, from which it differs in the glabrous calyx lobes, short peduncles, few-flowered cymes, and much smaller differently shaped leaves with fewer lateral nerves.

Pagamea anisophylla Standl. & Steyer., sp. nov.

Frutex 1.8-2.8-metralis, ramulis teretibus glabris, stipulis deciduis; foliis petiolatis, petiolis 1-2 cm. longis glabris; laminis subcoriaceis ovali-vel oblongo-ellipticis obtusis vel obtuse apiculatis basi cuneatim angustatis in petiolum subdecurrentibus 6-9.5 cm. longis 2-5.3 cm. latis glabris, costa media et nervis lateralibus subtus vix prominulis, nervis lateralibus utroque latere 5-6; inflorescentiis 6-10.5 cm. longis; pedunculis terminalibus vel ex axillis superioribus nascentibus 2-5.2 cm. longis glabris compressis supra vel infra medium ramosis, florum glomerulis secus ramos paniculae interrupte spicatis, ramis 0.7-2.7 cm. longis eis et rhachidibus superioribus minute puberulentibus; hypanthio obpyramidali extus glabro; calyce intus adpresso-hispidulo breviter sed obsolete denticulato, dentibus late triangulari-rotundatis obtusis; bacca atro-cyanea vel atro-purpurea disperma obovoidea vel subglobosa 6 mm. longa 6-8 mm. lata (Fig. 128).

Type in herb. Chi. Nat. Hist. Mus., collected in vicinity of Sanariapo, near Río Sanariapo, tributary of Orinoco River, Territorio Federal Amazonas, alt. 100 m., September 8, 1944, *Julian A. Steyermark 58461*, "shrub 5-8 feet tall; leaves subcoriaceous, deep green above, dull green below; calyx dull rose; fruit black-blue or black-purple; ovary almost superior; corolla whitish; calyx green."

This species approaches *P. coriacea* Spruce and *P. guianensis* Aubl. From the former it differs in the thinner leaf blades with less prominent nerves, shorter more slender peduncles, smaller, scarcely lobed calyx and smaller hypanthium, and densely appressed-hispidulous inner surface of the calyx. From *P. guianensis* it differs in the well-branched inflorescence, differently shaped leaves with obtuse or obtusely apiculate apex, and smaller, less lobed calyx which is appressed-hispidulous on the inner surface.

Pagamea auyantepulensis Steyermark, sp. nov.

Frutex humilis, ramo ligneo erecto simplice parte superiore foliis dense congestis coronato inferne denudato; internodiis brevissimis juvenilibus pilosis; stipulis dense albo-pilosis; foliis sessilibus dense confertis patentibus, laminis lineari-lanceolatis utrinque angustatis apice obtusiusculis basi sensim angustatis 16-17 mm. longis 2.8-3.1 mm. latis supra lucidis glabris subtus per costam mediam parce pilis longis patentibus pilosis marginibus prominenter pilis longis patentibus ciliatis ceterum glabris apice dense pilosis, costa

media et nervis lateralibus supra nullis subtus costa media profunde sulcata nervis lateralibus nullis; floribus dense capitato-congestis, capitulis terminalibus 1 cm. diam., pedunculo simplice elongato 17 cm. longo parce subadpresso albo-piloso; hypanthio obpyramidali basi dense piloso; calyce et hypanthio 5.5-6 mm. longo, eo hypanthioque extus hispidulo intus glabro, lobis 4-5 oblongo-lanceolatis acutiusculis 2.8-3.5 mm. longis extus hispidulis intus glabris; corolla 4-fida, 5.7 mm. longa, tubo 2 mm. longo basi attenuato intus dense papilloso-piloso extus glabro, lobis 4 oblongo-lanceolatis rotundatis 3.2 mm. longis 1.2 mm. latis extus secus lineam mediam parce hispidulis intus inferne dense papilloso-pilosis; staminibus 4 in faucem corollae insertis; antheris oblongis 1 mm. longis glabris; filamentis 1 mm. longis glabris (Fig. 129).



FIGURE 128

Pagamea anisophylla

Habit of branch (X 0.5).

Type in herb. Chi. Nat. Hist. Mus., collected on Mount Auyan-tepuí, state of Bolívar, alt. 2200 m., December 1937-January 1938, G. H. H. Tate 1365.

This unusual species is most closely related to *P. Steyermarkii* of Mount Ptari-tepuí, described below. Both species possess short, narrow, crowded leaves with very shortened internodes arranged in a rosette or cushion habit surmounting a short, woody, mostly unbranched, erect stem. From *P. Steyermarkii* this species is at once distinguished by the entirely different type of pubescence of the much shorter leaves, elongated peduncle, and marked differences in floral details.

Pagamea duidana Standl. & Steyerm., sp. nov.

Frutex 1.3-1.8-metralis, ramulis teretibus gracilibus novellis dense hirtellis vetustioribus hirtellis vel subglabrescentibus; internodiis abbreviatis; stipulis 5-6 mm. longe connatis, vagina dense puberulenti truncata apice dentibus subulatis 0.5-4 mm. longis hispidulis onustis; foliis firme membranaceis vel subcoriaceis subtus pallide viridibus petiolatis, petiolis 4-6 mm. longis supra canaliculatis undique dense minuteque hirtellis; laminis ellipticis apice subacutis basi sensim attenuatis acutis 1.8-3 cm. longis 0.6-1.7 cm. latis, marginibus leviter subrevolutis dense minuteque ciliolatis, costa media supra minute puberulente ceterum plerumque glabris, subtus axillis nervorum lateralium plerumque prominente barbatis ceterum plerumque glabris costa media glabra vel interdum remote parce adpresso-puberulis, costa media supra paullo prominulo nervis lateralibus obsoletis, costa media subtus prominente nervis lateralibus utroque latere 3-4 paullo prominulis; pedunculis terminalibus et ex axillis superioribus nascentibus compressis 11-13 mm. longis, floribus in capitulum simplicem parvum 7-8 mm. diam. congestis sessilibus; hypanthio et calyce campanulato vel subgloboso 3 mm. longo extus plerumque glabro, calycis laciniis late triangulari-ovatis obtuse mucronatis 1.1-1.2 mm. longis marginibus ciliolatis extus glabris sinibus in anthesi rotundatis (u-formi); corolla 5 mm. longa, tubo 2 mm. longo extus parce puberulo intus parte superiore villosa inferne glabro, lobis 5 oblongo-lanceolatis obtusis vel rotundatis 3 mm. longis 1.2 mm. latis extus glabris intus dense villosulis; staminibus 5 exsertis in faucem insertis; antheris 1.4 mm. longis, filamentis 1.3 mm. longis glabris; bacca subglobosa vel globosa 6 mm. longa 6-8 mm. diam. (stato sicco).

Type in herb. Chi. Nat. Hist. Mus., isotype in herb. N.Y. Bot. Gard., collected on slopes at Central Camp, summit of Mount Duida, Territorio Federal Amazonas, alt. 1600 m., December 28, 1928-January 1, 1929, G. H. H. Tate 567, "low bushy tree; calyx green, persistent; flowers apparently white."

Cotype in herb. Chi. Nat. Hist. Mus., summit of Cerro Duida, along valley forest between Central Camp and Brocchinia Hills, Territorio Federal Amazonas, alt. 1675 m., August 31, 1944, *Steyermark 58116*, "shrub 4-5 feet tall; leaves firmly membranaceous to subcoriaceous, dull green above, pale green below; fruit pendent, olive green, globose, 8 mm. in diam.

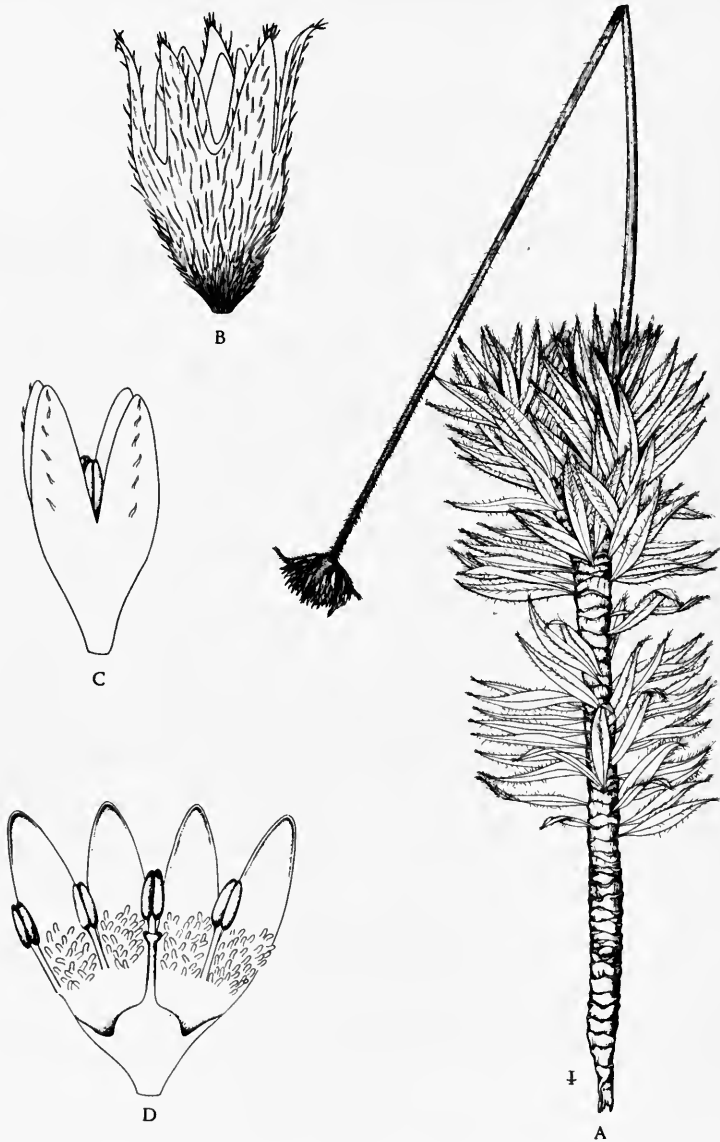


FIGURE 129

Pagamea auyantepuiensis

A, Habit (X 0.8); B, Calyx (X 5.5); C, Corolla, unopened (X 5.5);
D, Corolla, opened from within (X 5.5).

From *P. Standleyana* Steyerl. of Ptari-tepuí, described below, this species differs in the thinner leaves, more densely pubescent stipules with longer teeth, glabrous to sparsely pilose midrib of the lower leaf surface, densely puberulent leaf margins, shorter subcampanulate hypanthium, and oblong-lanceolate rather than ovate corolla lobes.

From *P. montana* Gleason & Standley, also of Mount Duida, *P. duidana* differs in the barbate axils of the lower leaf surface, thinner leaves with more prominent lateral nerves on the lower leaf surface, densely pubescent stipules, peduncles, branches, and margins of leaves.

Pagamea pauciflora Standl. & Steyerl., sp. nov.

Frutex 1.3-2.8-metralis, ramulis novellis roseo-purpureis, minute sed densiuscule puberulentibus vetustioribus griseis glabris; internodiis abbreviatis; stipulis 6.5-9 mm. longe connatis, vagina puberulenti truncata apice vel sub apicem dentibus subulatis 0.3-1.5 mm. longis puberulis onustis; foliis coriaceis supra lucidis subtus pallide viridibus petiolatis, petiolis 4-5 mm. longis supra canaliculatis undique puberulentibus; laminis ellipticis apice acutis vel obtusiusculis basi sensim attenuatis acutis 2-3.5 cm. longis 0.8-1.7 cm. latis, marginibus valde revolutis costa media utrinque minute puberula vel glabrescenti nervis lateralibus supra obsolete subtus plerumque 4 paulo prominulis; pedunculis terminalibus vel axillariibus compressis 10-18 mm. longis puberulentibus, floribus solitariis vel subsolitariis sessilibus; hypanthio et calyce subcampanulato 3-3.5 mm. longo extus minute puberulo, calycis laciniis triangulari-ovatis mucronatis 0.2-1.2 mm. longis marginibus ciliolatis; corolla (immatura) extus glabra, lobis subovatis intus dense albo-villosis extus glabris; bacca nigra globosa vel subglobosa 8 mm. longa 6 mm. diam. (stato sicco).

Type in herb. Chi. Nat. Hist. Mus., collected on summit of Carrao-tepuí, state of Bolívar, alt. 2470-2500 m., December 7, 1944, Julian A. Steyermark 60888, "shrub 6-8 feet tall; leaves coriaceous, revolute, dark green and shining above, pale green below; corolla lobes white and hairy within, pale greenish white without; calyx pale dull green, the lobes rich green; fruiting calyx dull red; fruit shining, black, subtruncate at tip."

Cotype in herb. Chi. Nat. Hist. Mus., collected in *Bonnetia roraimae* forest on southwest-facing shoulder, Ptari-tepuí, state of Bolívar, alt. 2000-2200 m., November 2, 1944, Steyermark 59769, "shrub 4 feet tall; leaves coriaceous, subrevolute, rich green above, silvery green below; corolla greenish with whitish lobes within; rachis and calyx and young stems dull rose."

Together with *P. montana* Gleason & Standley, and the presently described *P. duidana* Standl. & Steyerl. and *P. Standleyana* Steyerl., this species forms a group of closely related species. Apparently, it is most closely related to *P. Standleyana* of Ptari-tepuí, but differs from it as well as the other species mentioned in the solitary or nearly solitary flowers. In the non-barbate axils of the lower leaf surface it resembles *P. montana*.

Pagamea Standleyana Steyermark, sp. nov.

Frutex 3.3-metralis, ramulis teretibus novellis densiuscule adpresso-hirtellis vetustioribus glabris; internodiis abbreviatis ad 1.5 cm. longis; stipulis 6-10 mm. longe connatis, vagina glabra vel parce puberulenti truncata apice dentibus subulatis 0.2-0.8 mm. longis onustis; foliis subcoriaceis supra atroviridibus subtus pallide viridibus petiolatis, petiolis 2.5-8 mm. longis supra canaliculatis undique densiuscule adpresso-hirtellis; laminis elliptico-oblongis apice obtuse acutis basi sensim attenuatis acutis 1.8-5.2 cm. longis 0.7-1.9 cm. latis, marginibus subrevolutis, costa media supra plerumque minutissime puberulente ceterum glabris, costa media subtus densiuscule adpresso-hirtella axillis nervorum lateralium plerumque prominente barbatis ceterum glabris, costa media supra vix prominula subsulcata subtus prominente, nervis lateralibus supra obsoletis subtus utroque latere 4 paullo prominulis; pedunculis terminalibus et ex axillis superioribus nascentibus compressis 1.5-3.8 cm. longis, floribus in capitulum simplicem parvum usque 11 mm. diam. congestis sessilibus; hypanthio turbinato vel obpyramidali 3.5 mm. longo minute paullo puberulenti; calyce 4-dentato, eo hypanthioque usque 6 mm. longo, lobis late triangulari-ovatis 1.8 mm. longis obtuse mucronatis ciliolatis extus minute puberulentibus sinibus in anthesi subacutis (v-formi) in fructu rotundatis (u-formi); corolla pallide viride 5.5 mm. longa, tubo 2.2-2.5 mm. longo intus glabro extus parce puberulente, lobis 4 ovatis obtusiusculis intus sub apicem crassis incurvatis extus glabris intus dense albo-villosis; staminibus 4 exsertis in faucem insertis, antheris oblongis 1.75 mm. longis, filamentis 1.5 mm. longis glabris; bacca ovoidea vinaceo-rubra 6 mm. longa 4 mm. diam. (Fig. 130).

Type in herb. Chi. Nat. Hist. Mus., collected on Ptari-tepuí, scrubby forest on rocky open portion of plateau on southeast-facing slopes, state of Bolívar, alt. 1600 m., November 1, 1944, *Julian A. Steyermark* 59634, "shrub 8 feet tall; leaves subcoriaceous, dark green above, pale green below; corolla pale green; calyx rich green; young stems dull lavender to purplish-brown; fruit green to wine-red."

From *P. montana* Gleason & Standley of Mount Duida, the species which it most closely resembles, *P. Standleyana* differs especially in the ovate corolla lobes, densely puberulent peduncles, younger stems, and midrib of the leaf blades, and the barbate axils of the lower surface of the leaf blades.

Pagamea Steyermarkii Standley, sp. nov.

Frutex humilis, ramo ligneo erecto simplice vel superne ramoso 0.8-1-metralis, parte superiore foliis dense congestis coronato inferne denudato; internodiis brevissimis; stipulis dense argenteo-sericeis in vaginam truncatam connatis; foliis sessilibus apice caulis dense rosulatis juvenilibus erectis vetustioribus reflexis, argenteo-griseis subcoriaceis lineari-spathulatis vel anguste lineari-oblongeolatis acuminatis basi paullo angustatis 23-45 mm. longis 3-7 mm. latis marginibus subrevolutis, utrinque dense sericeo-pubescentibus subtus prominenter sericeis, costa media subtus fere obsoleta supra nulla

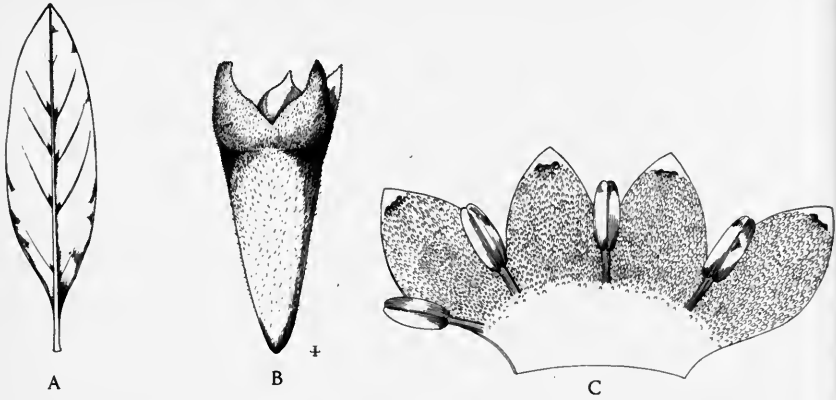


FIGURE 130

Pagamea Standleyana

A, Leaf, lower side (X 1.5); B, Hypanthium and calyx (X 11); C, Corolla, opened from within (X 11).

nervis lateralibus utrinque nullis; floribus dense capitato-congestis, capitulis terminalibus et ex axillis superioribus nascentibus ca. 1 cm. diam., pedunculis simplicibus 1.3-2.3 cm. longis compressis dense sericeis; hypanthio obpyramidali extus dense sericeo-pubescente; calyce et hypanthio 3.5 mm. longo, eo hypanthioque extus dense sericeo intus glabro, lobis 5 vinaceo-purpureis oblongo-vel triangulari-lanceolatis subacutis 1.5 mm. longis extus dense griseo-sericeis intus sericeo-pubescentibus; corollis 5-fidis, 3.5 mm. longis, tubo vinaceo-purpureo vel lavendulis 2 mm. longo intus glabro extus inferne glabro superne sericeo-pubescenti, lobis 5 lilacinis patentibus oblongo-lanceolatis subobtusis 1.5 mm. longis extus sericeis intus dense albo-villosulis; staminibus 5 fere sessilibus ad 1/2 longitudinem tubi corollae insertis, antheris oblongis 0.75 mm. longis, filamentis glabris 0.2 mm. longis (Fig. 131).

Type in herb. Chi. Nat. Hist. Mus., collected on big boulders, *Bonnetia roraimae* forest on southwest-facing shoulder, Ptari-tepuí, state of Bolívar, alt. 2000-2200 m., November 2, 1944, *Julian A. Steyermark 59744*, "stems solitary, erect, 2-3 feet tall; leaves erect, bunched at tip, silvery green or gray green; corolla lobes spreading, pale lilac; corolla tube brick-lavender or wine-purple; bracts wine-purple as are calyx lobes."

Cotypes in herb. Chi. Nat. Hist. Mus., collected in *Brocchinia-Stegolepis-Heliampora* swamp on southwest-facing shoulder, Ptari-tepuí, alt. 2200 m., November 2, 1944, *Steyermark 59770*; and open places on summit of Carrao-tepuí, state of Bolívar, alt. 2470-2500 m., December 7, 1944, *Steyermark 60899*, "leaves gray-silvery, erect; very common."

This remarkable species differs from all others in the genus by the densely gray-silvery sericeous linear-spatulate leaves arranged in a rosette at the summit of the usually simple woody stem. The species is most closely related to the above-described *P. auyantepuiensis* and in turn to *P. garryoides* Standl. of Mount Duida. Besides the remarkable habitual aspect of the plant, it differs in floral details from both *P. auyantepuiensis* and *P. garryoides*.

Palicourea Chimo Standl. & Steyerl., sp. nov.

Arbor vel frutex 3-13-metralis, ramulis novellis obtuse subtetragonis vel teretibus glaberrimis; stipulis in vaginam glabram persistentem 5 mm. longam et 4-6 mm. latam connatis, vagina truncata in lobos 4 remotos oblongo-lineares acutiusculos vel acutos 4-5 mm. longos desinentibus; foliis oppositis petiolatis, petiolis 10-18 mm. longis glabris supra sulcatis; laminis firme membranaceis vel chartaceis late ellipticis vel oblongo-ellipticis 7-13 cm. longis 2.5-5.3 cm. latis apice breviterque acuminatis, acumine subobtusum vel acutiusculo, basi acutis, supra glabris subtus tantum costa media et nervis lateralibus pilosis pilis patentibus praeditis ceterum glabris, nervis lateralibus eis et costa media subtus prominulis utroque latere 10-13 arcuato-patentibus vel adscendentibus juxta marginem laxae conjunctis, venulis paulo prominulis; inflorescentia usque ad 3 cm. longe pedunculata laxae multiflora 9 cm. longa 10 cm. lata, rachis rubra glabra, ramulis primariis 2-4.5 cm. longis divaricatis vel adscendentibus; bracteis late ovatis vel suborbiculari-ovatis 1.5-3 mm. longis acutis vel acuminatis ciliolatis; pedicellis citrinis 5-12 mm. longis gracilibus glabris; hypanthio turbinato 1.5-2.5 mm. longo glabro; calyce citrino 2.5-2.6 mm. longo 5-lobo, lobis inaequalibus late triangulari-ovatis acutis 1.2-1.6 mm. longis 1.8-2 mm. latis plerumque omnino glabris; corolla citrina tubulosa 20 mm. longa extus glabra, tubo 17 mm. longo ad 4.5 mm. lato, lobis ovato-oblongis 3 mm. longis 2.2 mm. latis apice subobtusis infra apicem inflexis cucullatis incrassatis extus glabris intus minute papillois; antheris lineari-oblongis 5 mm. longis; fructibus non visis.

Type in herb. Chi. Nat. Hist. Mus., collected in upper limit of dwarf woods between Las Sabanetas and ridge top by boundary line Lara-Trujillo, above Humocaró Bajo, state of Lara, alt. 2600-2800 m., February 6, 1944, *Julian A. Steyerl.* 55371, "shrub 10-15 feet tall; rachis dull red; pedicels, calyx, and corolla lemon yellow; leaves dark green above, dull green below."

This species is related to *P. crocea* (Sw.) R. & S., but is distinguished by the larger corolla and by the leaves, which are spreading-pilose beneath on the nerves and midrib.

Steyerl. 56016 from the state of Mérida and *Steyerl.* 55385 from the state of Lara may belong here, but are not in good flowering condition. The rachis and branches of the inflorescence in 56016 are villous, and the flowers are more crowded with less slender and less elongated pedicels.

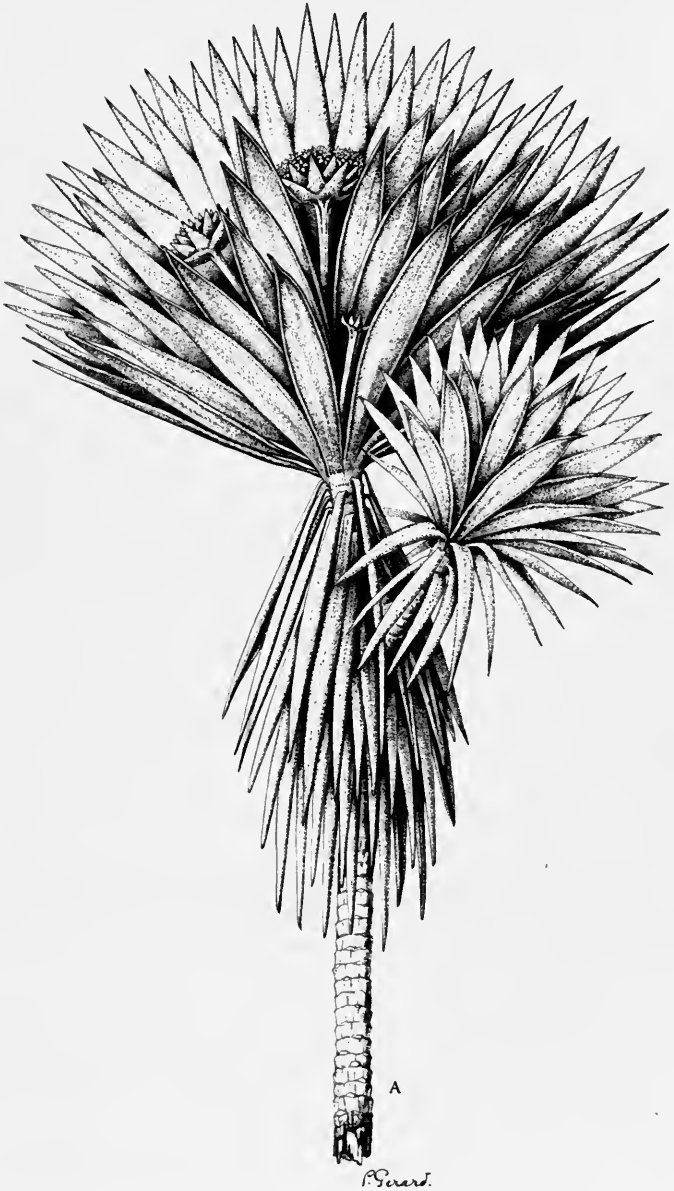


FIGURE 131

Pagamea Steyermarkii

A, Habit of plant (X 0.8).

The specific name "Chimo" refers to the use of this and other similar species by the local inhabitants with reference to the leaves being boiled with those of the tobacco plant to make tobacco juice, known in this area as *chimo*.

Palicourea tachirensis Standl. & Steyerl., sp. nov.

Frutex 3-5-metralis, ramulis gracilibus glabris; stipulis in vaginam apice paullo ciliolatam ceterum glabram persistentem 1.5-1.75 mm. longam et 1.5-2 mm. latam connatis, vagina truncata in lobos 4 remotos lanceolato-aristatos longe acuminatos basi induratos 0.75-1.5

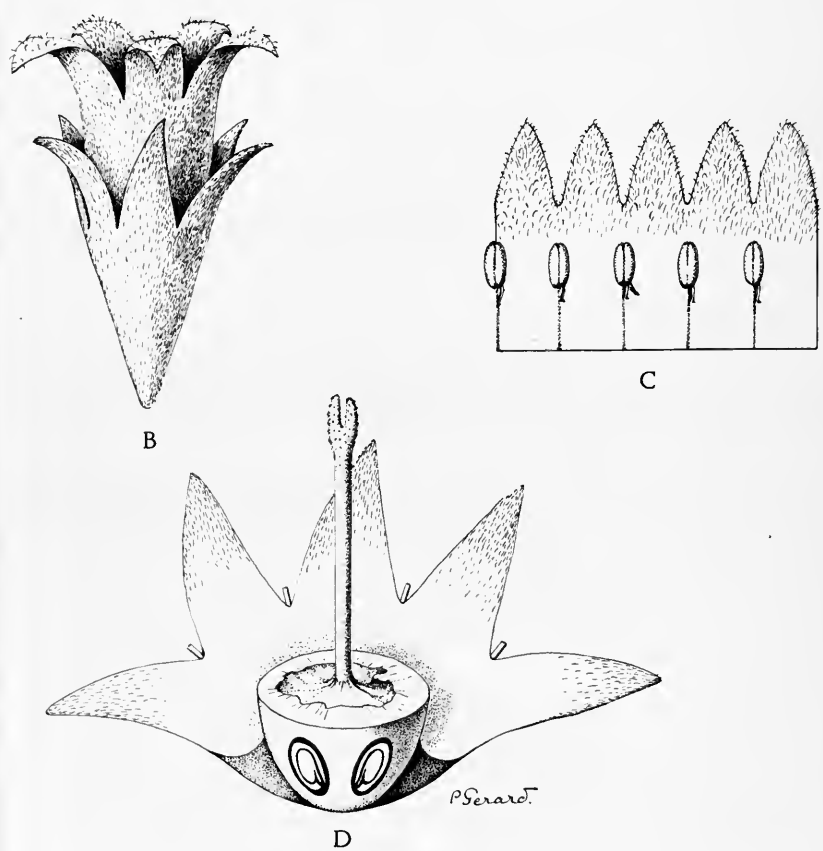


FIGURE 131

Pagamea Steyermarkii

B, Flower (X 9); C, Corolla opened, from within (X 7); D, Calyx opened to show attachment to pistil, and vertical section through ovary (X 19).

mm. longos desinentibus; foliis oppositis petiolatis, petiolis tenuibus 5-8 mm. longis glabris supra sulcatis; laminis firme membranaceis subtus pallido-viridibus lanceolato-ellipticis 6.3-9 cm. longis 1.9-2.5 cm. latis apice longe sensimque acuminatis, acumine 0.7-1.5 cm. longo acuto, basi cuneatim angustatis, utrinque minute remoteque strigillosis ceterum glabris, nervis lateralibus utroque latere 11-12 arcuato-patentibus juxta marginem laxè conjunctis utrinque eis et costa media paullo prominulis; inflorescentia usque ad 3 cm. longe pedunculata trichotoma cymoso-paniculata laxè pauciflora 1.3-1.7 cm. longa, pedunculo glabro tenue; floribus sessilibus; bracteis ovatis acuminatis vel cuspidatis 1.5-2 mm. longis glabris; hypanthio pallido-viride oblongo-turbinato 0.8-1.5 mm. longo glabro; calyce pallido-viride ca. 1 mm. longo 5-lobo, lobis inaequalibus late triangulari-vel suborbiculari-ovatis acutiusculis 0.7-0.8 mm. longis 0.8-1 mm. latis glabris; corolla alba interdum basi lilacina anguste tubulosa 16.5 mm. longa extus glabra fauce et supra medium villosulo, tubo 14 mm. longo 1-1.5 mm. lato, lobis late oblongis obtusis vel rotundatis 3.5 mm. longis 2 mm. latis; staminibus in faucem corollae affixis, antheris 1.8-2.2 mm. longis; stylo 16-17 mm. longo; fructu ignoto.

Type in herb. Chi. Nat. Hist. Mus., collected on rich steep wooded slopes, Alto de Lirio, between Bramón and Las Delicias, state of Táchira, alt. 1890-2285 m., July 18, 1944, *Julian A. Steyermark 57441*, "shrub 10-15 feet tall; leaves firmly membranous, deep green above, pale green below; flowers white, sometimes with pale lilac at base; calyx pale green."

This species is distinguished by the white-lilac corollas villous within, few-flowered cymose-paniculate inflorescence with sessile flowers, and narrow, thin, long, acuminate leaves.

Psychotria arenaria Standl. & Steyer., sp. nov.

Frutex 2-3.3-metralis, ramulis novellis viridibus teretibus glabris nodis constrictis, internodiis plerumque elongatis; stipulis erectis persistentibus 2-4 mm. longis in vaginam brevem glabram truncatam connatis, vagina in lobos 4 triangulari-ovatis acutis 1-1.5 mm. longos desinente intus et marginibus pilis erectis adpresso-pubescentibus; foliis oppositis petiolatis, petiolis 0.9-1.5 cm. longis glabris, laminis firme membranaceo-chartaceis supra atroviridibus oblongo-vel lanceolato-ellipticis apice cuspidato-acuminatis, acumine anguste 1-2 mm. longe cuspidato, basi cuneatim angustatis acutis et breviter decurrentibus, 10.5-12 cm. longis 3.2-4.5 cm. latis utrinque glabris, nervis lateralibus utroque latere 8-9 arcuato-patentibus prope marginem nervum connectivum efformantibus utrinque prominentibus subtus praesertim, venulis paucis prominulis laxè reticulatis; inflorescentia terminali cymoso-paniculata 3-4 cm. longe pedunculata 4.5-6 cm. longo 7-9 cm. lata multiflora, pedunculo glabro, ramis patentio-adscendentibus glabris infimis 2.5-3 cm. longis basi bracteatibus, floribus subsessilibus vel ad 2 mm. longe pedicellatis; bracteis evolutis lanceolato-subulatis vel ovato-lanceolatis longe acuminatis 1-5 mm. longis glabris; hypanthio late oblongo-cylindrico 1 mm. longo glabro; calyce campanulato 1-1.2 mm. alto glabro intus ima basi ante

sinus fasciculatim 3-4-glandulifero, 5-lobo, lobis inaequalibus triangulari-subulatis 0.5-1.2 mm. longis remote serrulatis; corolla alba cylindrico-tubulosa supra medium paullo dilatata 9.5 mm. longa, tubo 6 mm. longo inferne 2.5 mm. lato supra medium 3.5 mm. lato extus verruculoso-papillato intus medio paullo villosulo, lobis 5 ovato-oblongis obtusis 3-3.25 mm. longis 1.2-1.5 mm. latis intus sub apicem acutate cornutis; staminibus 5 medio tubi insertis, antheris lineari-oblongis 3.2-3.5 mm. longis, filamentis 3 mm. longis 0.5 mm. latis; fructibus atropurpureis vel coeruleis depresso-globosis 5 mm. longis (10 mm. longis in sicco) 7-10 mm. latis (Fig. 132).

Type in herb. Chi. Nat. Hist. Mus., collected along base of south-facing high sandstone bluffs, Ptari-tepuí, state of Bolívar, alt. 2410 m., November 6, 1944, *Julian A. Steyermark 59869*, "common shrub 6 feet tall; leaves firmly membranaceous-chartaceous, dark green above, dull green below; corolla white, upper part of calyx white, lower part pale green; fruit dark purple to bluish."

Cotype in herb. Chi. Nat. Hist. Mus., collected in densely wooded slopes of narrow ridge between quebrada and summit, Sororopán-tepuí, state of Bolívar, alt. 2130-2250 m., November 15, 1944, *Steyermark 60164*, "shrub 10 feet tall; leaves subcoriaceous, dark green above, paler dull green below; rachis pale green; calyx and pedicels pale green; corolla dull white; fruit depressed-globose, dull to dark blue, the mature fruit 1 cm. in diam. and purplish-blue."

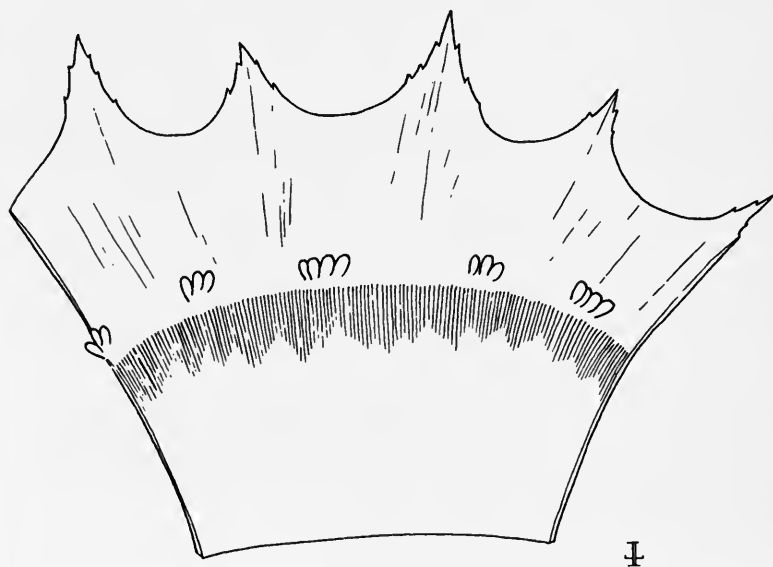


FIGURE 132

Psychotria arenaria

Calyx, opened, from within (X 30).

Other collections which may be referred to this new species are from Ptari-tepuí, alt. 2285-2405 m., October 30, 1944, *Steyermark* 59524; Mount Roraima, southwest-facing forested slopes between Rondón Camp and base of sandstone bluffs, state of Bolívar, alt. 2040-2255 m., September 30, 1944, *Steyermark* 58999.

***Psychotria avia* Standl. & Steyer., sp. nov.**

Frutex 6.8-metralis omnino glaber, ramulis teretibus internodiis elongatis; stipulis supremis ad 16 mm. longis tantum basibus reliquorum persistentibus; foliis oppositis petiolatis, petiolis 1.5-3 cm. longis; laminis coriaceis subtus pallido-viridibus oblongo-vel obovato-ellipticis apice abrupte acuminatis, acumine 8-10 mm. longo subacuto vel obtusiusculo, basi sensim angustatis acutis 18.5-25.5 cm. longis 7.5-11.5 cm. latis, nervis lateralibus utroque latere 10-12 arcuato-adscendentibus prope marginem anastomosantibus subtus prominentibus, nervulis utrinque subtus praesertim prominente laxe reticulatis; inflorescentia axillari 20 cm. longe pedunculata cymoso-paniculata trichotoma 5.5 cm. alta 8 cm. lata, ramis infimis divaricate patentibus 2.7-3.2 cm. longis, pedunculo ramisque minutissime puberulentibus, floribus subaggregatis sessilibus; bracteis minutis ovatis acutis 0.7-0.8 mm. longis minute puberulentibus; hypanthio cylindrico-campanulato 1.5 mm. longo minute hirtello-puberulente; calyce campanulato inaequaliter 5-6-repando-denticulato, dentibus late triangulari-ovatis rotundatis vel obtusis 0.2-0.5 mm. longis extus et marginibus minute hirtello-puberulentibus; corolla viridescenti tubulosa 4.5 mm. longa, tubo 4 mm. longo extus minute hirtello-puberulente intus glabro, lobis 5 late oblongo-ovatis intus sub apicem obtuse cornutis extus minute hirtello-puberulentibus; staminibus 5 medio insertis, antheris lineari-oblongis 2.3-2.5 mm. longis; filamentis 0.2 mm. longis; stylo 1 mm. longo; fructu ignoto.

Type in herb. Chi. Nat. Hist. Mus., collected on Cerro Duida, southeastern-facing sandstone bluffs near Caño Negro (tributary of Caño Iguapo), Territorio Federal Amazonas, alt. 1095-1520 m., August 26, 1944, *Julian A. Steyermark* 58056, "shrub 20 feet tall; leaves coriaceous, dull deep green above, pale green below; flowers dull green."

This species may be related to *P. mombachensis* Standl. of Central America and Colombia. It is easily distinguished by the elongate axillary peduncle, small hirtellous-puberulent corolla, repand-denticulate hirtellous-puberulent calyx, and glabrous coriaceous conspicuously reticulate leaves.

***Psychotria Blakei* Standl. & Steyer., sp. nov.**

Ramuli ad 5 mm. diam. ad nodos constricti glabri, internodiis 4.5-5 cm. longis; stipulis in vaginam 2 mm. longam glabram breviconnatis vagina in 4 laciniis setaceo-subulatis aristatis 4 mm. longis glabris; foliis oppositis breviter petiolatis vel subsessilibus, petiolis 2 mm. longis glabris; laminis coriaceis oblongis apice abrupte cuspidato-acuminatis basi rotundatis vel subcordatis 15 cm. longis 5-5.7 cm. latis utrinque glabris, nervis lateralibus utroque latere ca. 13 fere angulo recto divaricate patentibus juxta marginem nervum connecti-

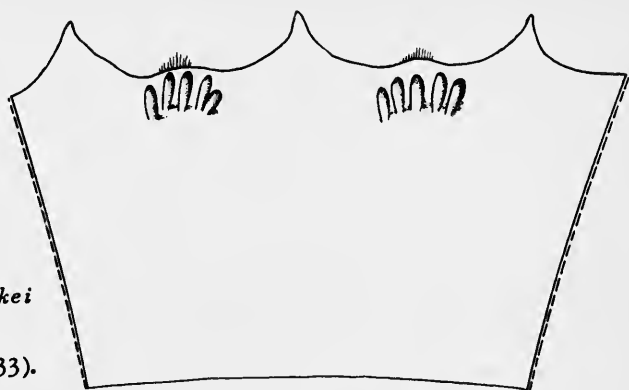


FIGURE 133

Psychotria Blakei
Calyx, opened,
from within (X 33).

vum efformantibus, nervulis utrinque valde laxiterque reticulatis; inflorescentia terminali 2.5 cm. longe pedunculata, pedunculo dense puberulente, capitato-subcymosa compacta 1.7 cm. alta 3 cm. lata, valde bracteosa, bracteis lanceolatis vel lineari-spatulatis cuspidato-acuminatis 9-15 mm. longis 1.5-4 mm. latis valde nervatis glabris; floribus sessilibus; hypanthio urceolari-campanulato 1 mm. longo glabro; calyce breviter 5-denticulato, dentibus late triangularibus acutis marginibus medio ciliatis intus media sub apicem glanduligeris; corolla tubulosa 9-10 mm. longa, tubo 7 mm. longo extus minute papillato-puberulente intus supra basin dense villosulo aliter glabro, lobis 5 ovato-oblongis obtusis; staminibus 5 supra medium insertis, antheris lineari-oblongis 3 mm. longis; filamentis 0.5 mm. longis; stylo 9 mm. longo papillato-puberulente; fructu ignoto (Fig. 133).

Type in herb. Chi. Nat. Hist. Mus., collected on Cerro Yapacana, upper Río Orinoco, Territorio Federal Amazonas, alt. about 100 m., April, 1931, E. G. Holt & E. R. Blake 743.

This species, named in honor of Mr. E. R. Blake, Associate Curator of Birds at the Chicago Natural History Museum, is a member of the section *Bracteosae* of Mueller's subgenus *Eupsychotria*, and is related to *P. paradoxa* M. Arg. and *P. Langsdorffiana* M. Arg. of Brazil. It approaches *P. paradoxa* in the rounded or subcordate bases of the leaf blades, but at once differs from that species in the coriaceous shortly petiolate, prominently reticulate leaves and capitate-subcymose inflorescence, while from *P. Langsdorffiana* and related species of the *Bracteosae* it differs in the subcordate or rounded leaf bases.

Psychotria canaguensis Standl. & Steyerl., sp. nov.

Frutex 3.3-5-metralis, ramulis teretibus sordide brunneis crispo-puberulis; stipulis ca. 3 mm. longis erectis persistentibus in vaginam brevem crispo-puberulentem connatis, vagina in lobos 4 lanceolatos acutos 1-1.3 mm. longos desinente; foliis oppositis petiolatis, petiolis 3-9 mm. longis pilis sordide brunneis dense crispo-puberulentibus; laminis firme membranaceis subtus pallide viridibus

lanceolato-ellipticis vel anguste ellipticis apice longe acuminatis basin versus cuneatim angustatis 5.5-11 cm. longis 1.5-3 cm. latis, supra glabris subtus ad costam et nervos laterales pilosis aliter glabris, nervis lateralibus utroque latere 7-8 arcuato-adscedentibus juxta marginem conjunctis supra sulcatis subtus prominulis; inflorescentia terminali sessile vel 1.1 cm. longe pedunculata cymoso-paniculata 3-5 cm. longa 2.2-2.7 cm. lata, ramis 1.5-2.3 cm. longis pilis sordide brunneis dense crispo-puberulentibus; floribus sessilibus subcapitatis vel cymoso-congestis; bracteis lanceolato-subulatis 3-6 mm. longis 0.5-0.7 mm. latis dense crispo-puberulentibus; hypanthio urceolato-ovoideo 1.3-1.5 mm. longo ca. 1 mm. lato crispo-puberulo; calyce campanulato 1.3-1.5 mm. longo, 5-lobo extus puberulo, lobis inaequalibus ovatis acutis vel subacutis 0.75-1 mm. longis; corollis ignotis; fructibus globosis vel subglobosis aurantiacis 6-6.5 mm. longis 5.5-6.5 mm. latis sulcatis.

Type in herb. Chi. Nat. Hist. Mus., collected in moist rich forest, Quebrada de Los Salichales, tributary of Río Canagua, southwest of Canagua, state of Mérida, alt. 1950-2135 m., May 9, 1944, *Julian A. Steyermark 56441*, "shrub 10-15 feet tall; leaves firmly membranaceous, deep green with sulcate nerves above, paler green below; fruit globose, dull green turning dull orange."

This species may be related to *P. Ottonis* Standley of Bolivia, but differs especially in the pubescent, more prominently lobed calyx, longer, narrower bracts of the inflorescence, densely crisp-puberulous stems, and narrower leaves.

***Psychotria cubitalis* Standl. & Steyer., sp. nov.**

Planta herbacea vel subherbacea 0.3-1-metralis, caulibus adscedentibus viridibus teretibus glabris, internodiis elongatis; stipulis erectis persistentibus in vaginam 2 mm. longam glabram in lobos 4 triangulari-subulatos 1.5-2 mm. longos glabros desinente; foliis oppositis petiolatis, petiolis 4-10 mm. longis glabris; laminis firme membranaceis vel chartaceis oblongo- vel lanceolato-ellipticis apice abrupte acutis vel acuminatis, acumine acutiusculo vel subobtusis, basi abrupte acutis sensim angustatis 5.5-9 cm. longis 1.8-3.3 cm. latis utrinque glabris, nervis lateralibus utroque latere ca. 8 arcuato-adscedentibus in marginem desinentibus supra impressis subtus eis et costa media prominulis; inflorescentia terminali 2.3-4 cm. longe pedunculata depresso-thyrsoideo-paniculata 2-2.5 cm. longa 3.5-4.5 cm. lata, ramis gracillimis purpureis glabris infimis patentibus 11-12 mm. longis apice paucifloris, valde bracteosis, bracteis omnibus evolutis subconsimilibus purpureis lineari-lanceolatis vel subulatis acutis vel obtusis 6-9 mm. longis 0.8-1.1 mm. latis glabris; corollis ignotis; fructibus sessilibus subglobosis vel depresso-ellipsoidalibus viridescentibus vel albidis 3-3.5 mm. longis 3-4 mm. diam. longitersum profunde 8-sulcatis, costis subobtusis.

Type in herb. Chi. Nat. Hist. Mus., collected on wooded slopes of Quebrada O-paru-má, between Santa Teresita de Kavanayén and Río Pacairao (tributary of Río Mouak), state of Bolívar, alt. 1065-1220 m., November 20-21, 1944, *Julian A. Steyermark 60380*, "herbaceous,

2 feet tall; stems ascending; leaves chartaceous, deep green above, with impressed nerves, dull green below; rachis and pedicels dull lavender as are bracts; fruit from dull green to white, globose, 4 mm. in diameter."

Cotype in herb. Chi. Nat. Hist. Mus., collected on Ptari-tepuí, south-facing densely forested slopes between Río Karuai and ridge below "Misia Kathy Camp," state of Bolívar, alt. 1250-1520 m., October 27, 1944, *Steyermark 59426*, "herbaceous, 1-3 feet tall; stems and petioles dull green; leaves firmly membranaceous, deep green above, dull green below; rachis deep lavender as are bracts."

Local name: "sereu-ka-yek."

This species pertains to section *Inundatae* of Mueller's subgenus *Euppsychotria*, and is related to *P. capitata* R. & P. It differs from that species in the herbaceous or subherbaceous, smaller habit, shortly lobed stipules, shorter and lavender bracts and rachis, and color of fruits.

Psychotria duricoria Standl. & Steyerl., sp. nov.

Frutex 3.3-metralis, ramulis subteretibus novellis minutissime puberulentibus; stipulis persistentibus in vaginam ca. 2 mm. longam minutissime puberulentem connatis, vagina in lobos 2 suborbiculari-ovatos rotundatos ca. 2 mm. longos; foliis oppositis petiolatis, petiolis 5-11 mm. longis minutissime puberulentibus; laminis chartaceo-subcoriaceis supra atroviridibus costa media alba ovato-lanceolatis vel lanceolato-ellipticis acutis vel breviter acuminatis basi acutis 5-9.3 cm. longis 1.7-4 cm. latis, utrinque glabris, nervis lateralibus utroque latere ca. 8 arcuato-adscedentibus juxta marginem conjunctis eis et costa media subtus prominulis; inflorescentia terminali 3-5.5 cm. longe pedunculata cymoso-corymbiforme ad 5-6 cm. longa 5-8 cm. lata, inflorescentiae ramis subsecundifloris dichotomis basi bracteatis, floribus in dichotomis sitis arcte sessilibus, ramis patentibus infimis 1.3-1.5 cm. longis glabris; bracteis lanceolatis vel ovatis acutis vel acuminatis 1.3-1.5 mm. longis extus marginibusque minute hirtellis; hypanthio urceolato-globo 1 mm. longo minutissime hirtellis; calyce 1.5-2 mm. longo 4-fido, laciniis lanceolatis acutis 1.2-1.6 mm. longis 0.5-0.6 mm. latis ad apicem et marginibus hirtellis intus inferne ante sinus minute adpresso-glanduligeris; corolla viridi-alba tubulosa 3.8-4 mm. longa 1.1-1.2 mm. lata, tubo 3-3.2 mm. longo extus minutissime hirtello-puberulenti medio villosa, lobis 4 inapteris ovato-oblongis intus sub apicem obtuse cornutis 1.2-1.3 mm. longis 0.6-0.7 mm. latis extus minutissime hirtello-puberulentibus; staminibus 4 infra medium tubi corollae insertis; antheris 1.3-1.4 mm. longis, filamentis 0.5 mm. longis; stylo 2-2.5 mm. longo; fructibus compresso-subglobosis 3 mm. longis 4.5 mm. latis profunde sulcatis.

Type in herb. Chi. Nat. Hist. Mus., collected at edge of woods by bluffs, Cerro Duida, southeastern-facing slopes along Caño Negro (tributary of Caño Iguapo), Territorio Federal Amazonas, alt. 1665 m., August 25-26, 1944, *Julian A. Steyermark 58048*, "shrub 10 feet tall; leaves chartaceous-subcoriaceous, deep green above with whitish

midrib, dull green below; rachis and peduncle pale green; corolla greenish-white; fruit dull green."

This species is a member of the group *Nitidulae* of Mueller's subgenus *Euppsychotria*, section *Brachythysae*, distinguished by the dichotomous branches of the inflorescence with the flowers sessile and subsecund in the dichotomous forks. The species is most closely related to *P. brachyceras* M. Arg. of Brazil, on account of the gland-bearing calyx, but is amply distinct in the much smaller corolla, deeply 4-lobed calyx, thicker leaves, and broad lobes of the stipules.

***Psychotria heterocarpa* Standl. & Steyerl., sp. nov.**

Frutex 2.8-3.3-metralis, ramulis novellis viridibus subteretibus glabris, internodiis 2.5-3.5 cm. longis; stipulis erectis persistentibus, in vaginam 4-4.5 mm. longam glabram connatis vagina in lobos 4 triangulari-ovatos acuminatos vel aristatos 1.5 mm. longos desinente, intus et marginibus pilis rectis adpresso-pubescentibus; foliis oppositis petiolatis, petiolis 5-12 mm. longis glabris; laminis chartaceis supra atroviridibus oblongo-vel lanceolato-ellipticis apice acutis, apice ipso breviter cuspidato, basi abrupte cuneatim angustatis acutis et breviter decurrentibus 9.5-15 cm. longis 2.8-5.2 cm. latis, utrinque glabris, nervis lateralibus utroque latere 8-13 fere angulo recto horizontaliter patentibus 2-4 mm. ante marginem anastomosantibus utrinque eis et costa media subtus praesertim prominentibus; inflorescentia terminali 6.5 cm. longe pedunculata minute hirtello-puberulenti vel supra medium glabrescenti paniculata subumbelliforme 4-4.5 cm. longa 5-5.5 cm. lata, rhachi et ramis purpureis, ramis oppositis divaricate patentibus, infimis 6-7 mm. longis divaricate patentibus, minute hirtello-puberulentibus, apice confertim paucifloris valde bracteosis; bracteis omnibus evolutis sub consimilibus purpureis lineari-lanceolatis vel lanceolato-subulatis acuminatis 8-9 mm. longis 0.5-2 mm. latis pilosulis apicem versus et supra medium pilis purpureis piloso-ciliatis; floribus ignotis; fructibus sessilibus vel pedicellis fructuum ad 6 mm. longis minute hirtello-puberulentibus; fructibus eburneis ovato-oblongis 1 cm. longo (in sicco 8-9 mm.) 6 mm. lato (in sicco 4-5 mm.).

Type in herb. Chi. Nat. Hist. Mus., collected on Sororopán-tepuí, wooded ridge between quebrada and waterfall (Salto de Iwaracarúmerú), state of Bolívar, alt. 1615-1980 m., November 15, 1944, Julian A. Steyermark 60191, "shrub 8-10 feet tall; leaves chartaceous, dark green above, dull green below; rachis dull purple; fruit ivory-white, quadroid, 6 mm. broad, 1 cm. high."

Local name: "sereuku-yek."

It is reported by the inhabitants of this region that tapirs eat the fruit of this plant. This species is a member of the section *Inundatae* of Mueller's subgenus *Euppsychotria*, and is related to *P. capitata* R. & P., *P. pseudinundata* Wernh., and *P. violacea* (Aubl.) Willd. From *P. violacea* it differs in the short 4-lobed stipules, fewer-nerved leaves, and hirtellous-puberulent branches of the inflorescence, from *P. pseudinundata* in the horizontally spreading nerves of

the leaves with shorter apices and hirtellous-puberulent branches and bracts of the inflorescence, and from *P. capitata* it differs in the ivory-white ovate-oblong instead of blue or black globose fruits and different stipules.

***Psychotria kukenanensis* Steyermark, sp. nov.**

Frutex 1.8-2.8-metralis, ramulis teretibus glabris, internodiis elongatis; stipulis erectis basi induratis persistentibus, in vaginam 3 mm. longam extus glabram connatis, vagina in 4 lobos setosos rigidos ca. 1 mm. longos desinente, marginibus et intus dense adpresso-pubescentibus; foliis oppositis petiolatis, petiolis 5-12 mm. longis glabris supra canaliculatis; laminis firme membranaceis oblongo-ellipticis apice abrupte et longe acuminatis, acumine 1.5-2 cm. longo anguste acuto, basin versus longe angustatis et breviter decurrentibus, 11.5-17 cm. longis 4-7 cm. latis, utrinque glabris, nervis lateralibus utroque latere ca. 9 adscendentibus 3-4 mm. ante marginem anastomosantibus subtus eis et nervulis laxe reticulatis prominentibus, costa media prominente; inflorescentia terminali 2-2.5 cm. longe pedunculata, pedunculo et rhachi minute puberulente, ramis 3-5 pedunculi patentibus oppositis 3-8 mm. longis minute puberulentibus, cymoso-paniculata 2-2.8 cm. longa 2-2.5 cm. lata multiflora; floribus ad apices ramorum capitato-congestis; pedunculo ipso basi 2 bracteis lanceolatis 6 mm. longis 1.5 mm. latis ad apicem rami glabri 2-10 mm. longi articulado; bracteis minutis ovatis acuminatis ca. 1 mm. longis; hypanthio late turbinato basi rotundato 1.2 mm. longo 1.5 mm. lato extus glabro; calyce late campanulato truncato 1.1-1.3 mm. longo 2.3 mm. lato glabro; corolla cremeo-albida in alabastro apice rotundato 2.5 mm. longo, tubo campanulato 0.8-1 mm. longo extus glabro intus in fauce et ad 1/2 longitudinis villosulo aliter glabro, lobis 5 ovato-oblongis 2 mm. longis 1 mm. latis intus apice inflexis incrassatis papilloso-puberulentibus; staminibus 5; fructu ignoto.

Type in herb. Chi. Nat. Hist. Mus., collected in wooded quebrada, Gran Sabana, between waterfall at Rué-merú (tributary of Río Kuke-nán) and Divina Pastora on Río Kuke-nán north of Santa Elena, south of Mount Roraima, state of Bolívar, alt. 1065 m., October 3, 1944, *Julian A. Steyermark* 59227, "shrub 5-8 feet tall; leaves firmly membranaceous, deep green above, dull green below; flowers creamy white."

This is related to *P. boliviana* Standl. of Bolivia, from which it differs in the more congested inflorescence with only 3-5 branches, the 4-setose apices of the stipules, and 9 instead of 11-12 pairs of lateral nerves of the leaves.

***Psychotria patria* Standl. & Steyermark, sp. nov.**

Herba vel interdum frutex plerumque 0.3-1.3(-3.1)-metralis, caulibus simplicibus basi decumbentibus plerumque glabris superne interdum parce pruinoso-puberulentibus; internodiis elongatis 4.5-13 cm. longis; stipulis persistentibus in vaginam 2-3 mm. longam glabram connatis apice truncatis integris; foliis oppositis petiolatis, petiolis 2-4 mm. longis glabris vel parce pruinoso-puberulentibus; laminis firme membranaceis vel subcoriaceis supra atroviridibus

lucidis subtus plerumque pallido- vel argenteo-viridibus, elliptico-oblongis vel oblongo-obovatis apice acuminatis basi obtusis vel acutis sensim attenuatis 13-22 cm. longis 5.5-10 cm. latis utrinque glabris vel subtus praesertim ad nervos et costam mediam moderatim pruinoso-puberulentibus ceterum glabris vel paullo pruinoso-puberulentibus, nervis lateralibus utroque latere 12-17 divaricate arcuato-patentibus prope marginem conjunctis subtus eis et costa media prominentibus; inflorescentia axillari et terminali 2.5-4 cm. longe pedunculata trichotoma cymoso-paniculata plus minusve dense vel parce pruinoso-puberulentibus, floribus dense aggregatis 2-5 cm. longis 2.5-5 cm. latis, ramis basilaribus patentibus 5-20 mm. longis, floribus sessilibus ad apices ramulorum glomeratis; bracteis primariis ovato-lanceolatis acuminatis 5 mm. longis 3 mm. latis extus pruinoso-puberulentibus, bracteolis lanceolatis 4-5 mm. longis 1-1.75 mm. latis; hypanthio turbinato 1.5 mm. longo glabro; calyce profunde 4-fido, lobis inaequalibus ovato- vel oblongo-lanceolatis obtusiusculis vel acutis vel acuminatis 1.25-2.5 mm. longis 1 mm. latis extus et marginibus puberulentibus; corolla alba vel lobis pallido-rosaceis tubulosa basin versus dilatata 6.5-8 mm. longa, tubo 5 mm. longo 2-2.5 mm. lato extus glabro intus dimidia parte superiore puberulo-hirtello, lobis 4 ovatis acutis vel abrupte longe acuminatis apice inflexo-cucullatis 2-3 mm. longis 1.5 mm. latis; staminibus 4 parte superiore tubi affixis, antheris lineari-oblongis 1.4-1.5 mm. longis, filamentis 2-2.1 mm. longis glabris; stylo 5.75 mm. longo; fructu rubro oblongo-ovoideo 8 mm. longo 6.5 mm. lato sulcato.

Type in herb. Chi. Nat. Hist. Mus., collected in moist rich forest, Quebrada de Los Salichales, tributary of Río Canaguá, southwest of Canaguá, state of Mérida, alt. 1950-2135 m., May 9, 1944, *Julian A. Steyermark 56411*, "common ground plant, herbaceous, 3-4 feet tall; stem decumbent at base; fruit fleshy, oblong-ovoid, dull red; corolla white."

Other collections in herb. Chi. Nat. Hist. Mus. from Venezuela which are conspecific are: MERIDA: rich damp forest along northwest- and west-facing slopes of Quebrada de Montaña, in La Montaña de Los Torritos, tributary to Río Canaguá, above Finca La Montaña, 8 kms. southwest of Canaguá, alt. 1925-2075 m., May 8, 1944, *Steyermark 56374*, "common dominant herb 1-3 feet tall; leaves subcoriaceous, deep green above, dull pale green below; calyx and bracts pale green; corolla lobes and tube white, lobes acuminate-attenuate; styles white;" woods above Las Cuadras, along Quebrada Molino, north of Torondoy, alt. 1820-2285 m., March 27, 1944, *Steyermark 55796*, "shrub 5-10 feet tall; leaves subcoriaceous, dark green above, silvery green below; corolla white; calyx and rachis pale green;" rich forest above Hacienda Agua Blanca, above La Azulita, alt. 1375-1920 m., April 25, 1944, *Steyermark 56111*, "herbaceous, 3 feet tall; leaves dark green and shining above, silvery below, firmly membranaceous; corolla white; peduncle and bracts pale green; tip of bracts with lavender." DISTRICTO FEDERAL: rich woods, east of El Junquito, alt. 1980-2130 m., June 25, 1944, *Steyermark 57004*, "herbaceous, 2-3 feet tall; leaves membranaceous, dark green

and shining above, pale green below; rachis green; calyx pale green; corolla white, the lobes pale rose."

This species is related to *P. macrophylla* R. & P. and *P. uliginosa* Sw. Like them *P. patria* has herbaceous stems and axillary inflorescences. In the red fruits it most closely approaches *P. uliginosa*, but differs from it and *P. macrophylla* in tetramerous instead of pentamerous flowers with a deeply lobed calyx and in the puberulent prominent acuminate bracts and bracteoles.

***Psychotria paupertina* Standl. & Steyerl., sp. nov.**

Frutex 3.3-4-metralis, ramulis novellis minute puberulentibus, vetustioribus glabris, internodiis elongatis; stipulis basi breviter connatis late triangulari-vel suborbiculari-ovatis abrupte 1-1.5 mm. cuspidatis 4.5-6 mm. longis 2.5-6 mm. latis marginibus et intus dense breviter adpresso-pubescentibus; foliis oppositis breviter petiolatis, petiolis 1-4 mm. longis adpresso-puberulentibus supra sulcatis; laminis firme membranaceis ovato-ellipticis vel ellipticis apice plerumque abrupte longe acuminatis, acumine 1.3-2.4 cm. longo obtusiusculo vel acutiusculo, basi abrupte cuneatim angustatis acutis vel acuminatis et breviter decurrentibus 10.5-19.5 cm. longis 4-9 cm. latis utrinque glabris, nervis lateralibus utroque latere 8-10 arcuato-ascendentibus 3-6 mm. ante marginem anastomosantibus subtus eis et nervulis laxe reticulatis prominentibus, costa media subtus prominente; inflorescentia terminali 5-12 mm. longe pedunculata, pedunculis minute puberulentibus, umbellulato-cymosa ca. 1 cm. longa 1.5-2.5 cm. lata, ramis inflorescentiae 3-4 mm. longis glabris vel vix puberulentibus; floribus sessilibus dense aggregatis; bracteis minutis ovatis 0.3-0.5 mm. longis; hypanthio et calyce stramineo-cremeo infundibuliformi vel late obconico-urceolato basi rotundato vel obtuso 3.5 mm. longo supra medium 2.5 mm. lato, hypanthio ipso ca. 1.5 mm. longo calyce 2 mm. longo, extus minute papillato-puberulente, inaequaliter 5-7-lobo, lobis late suborbiculari-vel triangulari-ovatis apice subrotundatis vel abrupte obtuseque apiculatis 0.5-1 mm. longis 1-1.5 mm. latis; corolla cremeo-alba late cylindrica, tubo 3.5 mm. longo extus glabro intus fauce et supra medium dense villosulo, lobis reflexis 5-6 oblongis rotundatis intus sub apicem 0.2-0.5 mm. acuminate cornutis 2.5 mm. longis 1 mm. latis intus papillatis; staminibus 5-6 oblongis 1.3 mm. longis glabris ad 4/5 altitudinis tubi affixis; stylo 5-6 mm. longo papilloso; fructu ignoto.

Type in herb. Chi. Nat. Hist. Mus., collected in forest near Base River (Caño Negro), at southeastern base of Cerro Duida, Territorio Federal Amazonas, alt. 215 m., August 23, 1944, *Julian A. Steyerl.* 57919, "shrub 10-12 feet tall; leaves firmly membranaceous, deep green above, dull green below; corolla creamy-white, lobes reflexed; peduncles pale green; calyx buff-creamy."

This species somewhat approaches *P. astrellantha* Wernh. of British and Dutch Guiana, but has longer, more prominently lobed calyces, longer corollas, and larger leaves with more numerous lateral nerves.

***Psychotria phaneroloma* Standl. & Steyerl., sp. nov.**

Frutex 1.8-2-metralis, ramulis teretibus glabris, internodiis elongatis 5-8.5 cm. longis; stipulis persistentibus basi in vaginam 2 mm. longam glabram connatis ad medium bifidis, lobis semiovatis acutis glabris 2 mm. longis; foliis oppositis petiolatis, petiolis crassis 4-6 mm. longis glabris supra sulcatis; laminis chartaceis vel firme membranaceis ellipticis vel lanceolato-ellipticis 5-11 cm. longis 1.5-3.8 cm. latis apice acutis vel acutiusculis basi acutis sensim attenuatis in petiolum decurrentibus utrinque glaberrimis, marginibus valde incrassatis revolutis pallidis, nervis lateralibus utroque latere 10-11 patentoadscendentibus marginem attingentibus subtus eis et costa media prominentibus; inflorescentia terminali 3.5-6 cm. longe pedunculata densa e capitulis 6-12 composita 1.5-1.7 cm. longa 1-1.2 cm. lata, capitulis subhemisphericis 6-8 mm. diam. disse multifloris; pedunculo glabro subrecto; bracteis extimis in sicco cyaneo-purpureis suborbiculari-ovatis rotundatis 4-5 mm. longis 3-3.25 mm. latis minute ciliolatis; bracteis interioribus in sicco cyaneo-purpureis ovato-oblongis vel oblongo-obovatis vel spatulato-oblongis apice rotundatis 2.5-4 mm. longis 1.1-1.3 mm. latis minute ciliolatis; floribus sessilibus; hypanthio late turbinato 0.5-0.75 mm. longo; calyce profunde 5-fido, laciniis paullo inaequalibus triangulari-vel ovato-lanceolatis acuminatis 0.75-1 mm. longis 0.6-0.8 mm. latis extus marginibusque puberulis; fructu atrocyaneo subgloboso-ovoideo 3.5 mm. longo ca. 3 mm. lato.

Type in herb. Chi. Nat. Hist. Mus., collected in Gran Sabana, along wooded portion of quebrada tributary to Río Kukenán, south of Mount Roraima, state of Bolívar, alt. 1005-1065 m., October 2, 1944, *Julian A. Steyerl.* 58117, "shrub 5-6 feet tall; leaves chartaceous-firmly membranaceous, dark green above, dull below; fruit dark blue."

Cotype in herb. Chi. Nat. Hist. Mus., collected in vicinity of "Misia Kathy Camp," on mesa between Ptari-tepuí and Sororopán-tepuí, state of Bolívar, alt. 1615 m., November 15-17, 1944, *Steyerl.* 60226a.

This well-marked species partakes of characteristics found both in *Cephaelis* and *Psychotria*, but is intermediate between the two genera, and illustrates the difficulty of maintaining *Cephaelis* for convenience alone.

***Psychotria ptariensis* Standl. & Steyerl., sp. nov.**

Planta herbacea 0.8-1-metralis omnino glabra, ramulis gracillimis teretibus viridibus, vetustioribus ochraceis, internodiis 4-9 cm. longis; stipulis persistentibus in vaginam ca. 1.5 mm. longam induratum connatis, vagina in lacinias 4 lanceolato-subulatas acuminatas 1.5 mm. longas desinente; foliis oppositis breviter petiolatis, petiolis 1-2 mm. longis; laminis firme membranaceis supra atroviridibus subtus pallidioribus anguste lanceolatis vel lineari-lanceolatis longissime anguste acuminato-attenuatis basi rotundatis 6.3-9 cm. longis 0.7-1.5 cm. latis, nervis lateralibus principalibus utroque latere 12-14 supra obsolete subtus paullo prominulis arcuato-

adscendentibus juxta marginem nervum collectivum efformantibus, nervulis secundariis prominulis laxè reticulatis, costa media supra elevata prominente subtus paullo prominula; inflorescentia terminali cernua vinaceo-purpurea gracillime 1.5-3 mm. longe pedunculata cymoso-paniculata laxè pauciflora 1-2 cm. longa 1-2 cm. lata, ramis patentibus infimis alternis gracillimis 4-10 mm. longis, floribus omnibus pedicellatis in cymulas vel umbellulas ca. trifloras dispositis, pedicellis gracillimis 1-4.5 mm. longis; bracteis minutis subulatis acutis 0.5-0.7 mm. longis; hypanthio urceolato-ovoideo 0.5-0.7 mm. longo; calyce persistente hypanthio paullo breviorè 4-denticulato, dentibus late triangulari-ovatis mucronatis intus ante sinus adpresso-glanduligeris; fructibus ovoideis 3.5-4.5 mm. longis 2.5-3 mm. latis.

Type in herb. Chi. Nat. Hist. Mus., collected on Ptari-tepuí, south-facing densely forested slopes between Río Karuai and ridge below "Misia Kathy Camp," state of Bolívar, alt. 1250-1520 m., October 27, 1944, Julian A. Steyermark 59440, "herbaceous stems 2-3 feet tall; leaves firmly membranaceous, dark green above, dull pale green below; stem and nodding peduncle dull wine-lavender."

This is a member of the group *Pedicellatae* of Mueller's subgenus *Eupsychotria*, section *Brachythyræ*. It is related to *P. Robertii* Standl., but is distinguished by its very narrow linear-lanceolate, shortly petiolate leaves broadly rounded at the base, by the numerous primary and secondary lateral nerves, and by the 4-denticulate calyx. The leaves somewhat resemble those of *P. Duckei* Standl., but are broadly rounded at the base and the inflorescence is quite different.

Psychotria sororopanensis Standl. & Steyer., sp. nov.

Frutex 3.3-5-metralis ut videtur valde ramosis, ramis gracillimis teretibus glaberrimis, internodiis brevibus; stipulis persistentibus in vaginam 2-2.5 mm. longam strigillosam apice 4-aristatis, laciniis setosis 2-2.5 mm. longis; foliis oppositis petiolatis, petiolis gracillimis 2-4 mm. longis glabris vel supra adpresso-pilosulis supra sulcatis; laminis chartaceis supra atroviridibus anguste lanceolatis vel anguste elliptico-lanceolatis longissime acuminato-attenuatis basi acutis 3.5-8 cm. longis 0.6-1.4 cm. latis supra secus costam media paullo pilosula subtus utrinque pilis patentibus instructis dense ciliolatis ceterum utrinque glabris, nervis lateralibus principalibus utroque latere creberrime 30-50 fere horizontaliter penninerviis cum minoribus et aliis brevibus subparallelis alternantibus; inflorescentia axillari et terminali 7-11 mm. longe pedunculata capitata ca. 3 mm. longa, pedunculo declinato subcompresso secus lineas hirtello-puberulenti, floribus ad apices pedunculorum sessilibus paucibus; bracteis florum et bracteolis evolutis, bracteis exterioribus basi liberis non vaginatim confluentibus lanceolatis vel triangulari-lanceolatis acutis 1.5 mm. longis praesertim margines minute hirtellis, bracteolis saepius ovatis; hypanthio et calyce in alabastro ad 1.5 mm. longo, calyce 5-dentato, dentibus inaequalibus late breviterque triangulari-ovatis acutis marginibus minute hirtello-ciliatis; corolla alba in alabastro 1.5-2 mm. longo; stigmatibus linearibus; fructibus globoso-ovoideis 4-4.5 mm. longis 3-3.5 mm. latis sulcatis.

Type in herb. Chi. Nat. Hist. Mus., collected on densely wooded slopes of narrow ridge between quebrada and summit, Sororopán-tepuí, state of Bolívar, alt. 2130-2250 m., November 15, 1944, *Julian A. Steyermark 60175*, "one of dominant shrubs, 10-15 feet tall; leaves in vegetative state in two planes, chartaceous, dark green above, dull green below; corolla white."

This is a member of the section *Paniculastreae* of Mueller's subgenus *Cephaelis*. It is most closely related to the Brazilian species *P. hancorniaefolia* Benth., especially var. *angustifolia* M. Arg., *P. interjecta* M. Arg., and *P. sessilis* Vell. (= *P. Velloziana* Benth.). From the latter it differs in its smaller narrower leaves, mostly glabrous stems, glabrous lower leaf surfaces, and the peduncles with shorter pubescence occurring in lines. From *P. interjecta* it differs in the sessile fewer flowers on mostly shorter, less pubescent peduncles, more prominently lobed calyx, and shorter outer bracts. From *P. hancorniaefolia* var. *angustifolia* and var. *longifolia* it differs in the sessile fewer flowers, shorter outer bracts, and mostly glabrous stems.

***Psychotria speluncae* Standl. & Steyer., sp. nov.**

Herba suffruticosa 0.8-2.8-metralis dense ramosa, ramulis gracilibus viridescens glabris, internodiis brevibus vel elongatis versus apicem congestis; stipulis persistentibus 4-7 mm. longis in vaginam 3-6 mm. longam glabram ad medium profunde bifidis, lobis linearilanceolatis vel lanceolato-subulatis aristatis 2-4.5 mm. longis glabris erectis; foliis oppositis breviter petiolatis, petiolis 2-4 mm. longis glabris; laminis firme membranaceis vel subcoriaceis supra lucidis subtus pallido-viridibus lanceolatis vel elliptico-lanceolatis acute acuminatis basi acutis 3-6 cm. longis 0.9-1.7 cm. latis supra glabris subtus ad costam sparse pilosulis ceterum glabris, nervis lateralibus utroque latere numerosis crebris gracilibus divaricate patentibus juxta marginem conjunctis 25-36 subtus prominulis, costa media subtus valde prominente; inflorescentia axillari vel terminali 1.3-2.7 cm. longe pedunculata basi saepe trichotoma 1-1.2 cm. longa, ramis primariis 3-6.5 mm. longis eis pedunculoque glabris, floribus paucibus sessilibus ad apices ramorum; bracteis linearilanceolatis aristatis 5-6 mm. longis glabris; calyce 3.5-4 mm. longo glabro profunde 5-fido, laciniis lanceolato-subulatis attenuatis 2-2.1 mm. longis 0.3 mm. latis glabris; corolla alba tubulosa 10 mm. longa, tubo 6.5 mm. longo 2 mm. lato extus glabro intus fauce et supra medium villosa, lobis 4 angustate vel lanceolato-oblongis cornutis intus infra apicem cucullato-inflexis 4 mm. longis 1.2-1.8 mm. latis; staminibus 4 medio tubi corollae insertis, antheris 1.5 mm. longis, filamentis 1.5 mm. longis infra medium villosis; stylo 14 mm. longo papillato-puberulente; fructibus lucidis purpureis subglobosis 6-6.5 mm. longis 6.5-7 mm. latis sulcatis, costis acutis.

Type in herb. Chi. Nat. Hist. Mus., collected on Ptari-tepuí, on forested south-facing slopes overlying sandstone, on "Cave Rock" above "Cave Camp," state of Bolívar, alt. 1810 m., October 29, 1944, *Julian A. Steyermark 59521*, "shrubby or branching suffruticose

herb 5-8 feet tall; corolla white; leaves firmly membranaceous, rich green and shining above, pale green below; fruit shining, purple."

This species somewhat resembles *P. Hazenii* of Colombia. It is easily distinguished from that species by the smaller, narrower, shortly petiolate, nearly glabrous leaves and petioles, more numerous and closer lateral nerves of the leaf blades, glabrous stems, axillary as well as terminal, fewer-flowered inflorescences, and narrower bracts and calyx lobes.

***Psychotria Standleyana* Steyermark, sp. nov.**

Planta herbacea 1.3-1.8-metralis, caule simplice crassiusculo usque ad 2 cm. diam. glabro, internodiis inferioribus elongatis; stipulis in vaginam connatis apice truncatis; foliis oppositis petiolatis, petiolis 2-2.5 cm. longis pruinoso-puberulis vel glabrescentibus; laminis firme membranaceis supra atroviridibus subtus pallidoviridibus oblongo-ellipticis apice abrupte acutis vel apiculatis basi abrupte angustatis et breviter decurrentibus 16-24 cm. longis 8.5-11.5 cm. latis, supra minutissime scabridulo-puberulentibus subtus ad costam mediam et nervos laterales densiuscule tomentellis aliter remote puberulentibus vel glabrescentibus, nervis lateralibus utroque latere 16-18 ascendentibus 1.5-3 mm. ante marginem anastomosantibus supra impressis subtus elevatis prominulis; inflorescentiis axillaribus capitatis crasse 1.5-3.2 cm. longe pedunculatis, e capitulis 2-3 umbellatis compositis, basi bracteis 2 vel pluribus stramineo-albis extimis late ovatis abrupte acutis vel mucronatis 1-1.4 cm. longis 0.8-1 cm. latis glabris fulcratis, interioribus compressis carinatis obovato-spatulatis vel oblanceolatis rotundatis vel mucronatis 8-11 mm. longis flores amplectentibus, pedunculis glabris, ramis 5-12 mm. longis, capitulis dense multifloris 1.2-1.5 cm. longis 1.2-1.3 cm. diam., floribus sessilibus dense congestis; hypanthio turbinato ca. 2 mm. longo glabro; calyce irregulariter 4-lobo, lobis ovato-oblongis vel lanceolatis acutis vel subtruncatis 1.5-2.5 mm. longis marginibus irregulariter eroso-denticulatis; corolla alba tubulosa 7 mm. longa, tubo intus villosa; staminibus medio insertis; antheris 1.3-1.5 mm. longis; fructibus maturis non visis.

Type in herb. Chi. Nat. Hist. Mus., collected in Montaña de San Jacinto, on north side of Río Chama, opposite Mérida, state of Mérida, alt. 1675-2195 m., May 19, 1944, *Julian A. Steyermark 56681*, "herb 4-5 feet tall; stem thick-fleshy, 2 cm. diam.; leaves firmly membranaceous, dark green with impressed nerves above, pale green below with raised nerves; peduncle pale green; bracts buff-white, keeled in center; corolla white."

This is closely related to *P. uberta* Standl. & Steyermark described below. It differs from that species in the branched inflorescences, color of outer bracts, and 4-lobed calyx with irregularly erose-denticulate margin. Like *P. uberta* it may be considered equally suitable for consideration as congeneric with *Cephaelis*.

***Psychotria tamaensis* Standl. & Steyermark, sp. nov.**

Suffrutex ad 30 cm. altus, caule simplice subglabrescente, internodiis 1-3 cm. longis; stipulis persistentibus in vaginam 7-8 mm.

longam parce hirsutulam connatis, vagina in lobos 4 lanceolatos vel ovatos acuminatos 11-14 mm. longos 3-7 mm. latos desinente, lobis densiuscule setuloso-ciliatis extus parce strigillosis; foliis oppositis petiolatis, petiolis vinaceo-lavendulis 1.7-4.5 cm. longis strigillosis; laminis firme membranaceis supra atroviridibus subtus purpureis oblongo-ellipticis vel late lanceolatis apice sensim acutis vel acuminatis basi abrupte acutis vel subobtusis 8-12.5 cm. longis 3-5 cm. latis, supra asperulo-strigiosis subtus ad costam mediam et nervos hispidulis aliter parce puberulis nervis lateralibus utroque latere 18-19 fere angulo recto divaricate patentibus juxta marginem conjunctis supra sulcatis subtus prominentibus; inflorescentiis axillaribus et terminalibus densifloris, pedunculis et ramis pedunculorum hispidulis; bracteis vinaceo-purpureis lanceolatis acuminatis 1-1.5 cm. longis 2.5-3 mm. latis plerumque glabris; floribus non visis; pedicellis fructiferis ad 4 mm. longis; fructibus ovoideo-ellipsoideis 8-9 mm. longis 4-5.5 mm. latis valde sulcatis.

Type in herb. Chi. Nat. Hist. Mus., collected in rich moist woods at base of Páramo de Tamá, 4-10 kms. above Betania, state of Táchira, alt. 2500-2895 m., July 15, 1944, *Julian A. Steyermark 57309*, "one foot tall; leaves firmly membranaceous, dark green above with sulcate nerves, deep lavender on either surface; petioles wine-lavender; bracts wine-purple."

This species is noteworthy for the purple bracts and purple lower surfaces of the leaves. It approaches some species of *Cephaelis* as well as *Psychotria* in appearance.

***Psychotria uberta* Standl. & Steyer., sp. nov.**

Planta herbacea 1-1.3-metralis, caule simplice crassiusculo glabro, internodiis superioribus 3-4 cm. longis; stipulis in vaginam connatis apice truncatis; foliis oppositis petiolatis, petiolis 3-3.2 cm. longis subglabris; laminis subcoriaceis supra atroviridibus subtus pallidoviridibus elliptico-oblongis apice abrupte acutis vel apiculatis basi abrupte angustatis et breviter decurrentibus 24-25 cm. longis 12-13 cm. latis, supra minutissime scabridulo-puberulentibus subtus ad costam mediam et nervos laterales densiuscule puberulis aliter remote et inconspicue puberulis vel glabrescentibus, nervis lateralibus utroque latere 16-18 adscendentibus juxta marginem nervum collectivum efformantibus supra profunde sulcatis subtus elevatis prominentibus; inflorescentiis axillaribus capitatis crasse ad 1.7-2 cm. longe pedunculatis demum patentibus, e capitulis multifloris 1.5-2 cm. longis 3-3.3 cm. diam., basi bracteis 6 vel pluribus aurantiacis vel aurantiaco-luteis extimis late ovatis acutis vel rotundatis 11-15 mm. longis 6-11 mm. latis glabris fulcratis, interioribus compressis carinatis oblanceolato-spatulatis acutis 13-15 mm. longis supra medium ad 5 mm. latis flores amplectentibus, intimis oblanceolatis acutis 9-10 mm. longis supra medium ad 3 mm. latis; floribus sessilibus dense congestis; hypanthio obconico 2-3.5 mm. longo glabro; calyce fere ad basin 5-fido, laciniis inaequalibus lanceolatis acutis vel acuminatis 2.5-3.6 mm. longis marginibus parce setuloso-ciliatis inter sinus glanduligeris vel dentibus subulatis 0.5 mm. longis;

corolla cremeo-alba tubulosa 5-fida, tubo ca. 6 mm. longo 2 mm. lato extus glabro intus medio et infra medium villosa, lobis erectis oblongo-ovatis obtusis ca. 2 mm. longis; staminibus medio insertis, antheris 3 mm. longis, filamentis 1 mm. longis; stylo 3 mm. longo; fructibus ovoideis 7 mm. longis 5 mm. latis glabris leviter 2-sulcatis.

Type in herb. Chi. Nat. Hist. Mus., collected in rich woods near and bordering Quebrada de Palmar, at foot of Páramo de Tamá, 2 kms. above Betania and 7 kms. above Villapaez, state of Táchira, alt. 2500 m., July 14, 1944, *Julian A. Steyermark 57255*, "single-stemmed herb 3-4 feet tall; leaves subcoriaceous, dark green above with deeply sulcate nerves, pale green below with raised pale green nerves; peduncle dull green; bracts pale orange or orange-yellow; corolla creamy-white."

Like a number of other species which are intermediate between *Psychotria* and *Cephaelis*, this one is difficult to place generically. It simulates *Cephaelis pebasensis* Standl. of Peru, but the axillary compact inflorescences with simple peduncles and details of floral differences immediately distinguish it. The orange or orange-yellow outer bracts are noteworthy.

Psychotria ventuariana Standl. & Steyer., sp. nov.

Arbor 8-10-metralis, ramulis glabris; stipulis persistentibus basi induratis in vaginam 3 mm. longam glabram apice rotundatam connatis; foliis oppositis petiolatis, petiolis 6-10 mm. longis glabris; laminis subcoriaceis ovato-ellipticis vel ovato-lanceolatis apice abrupte longe acuminatis, acumine 1-2 cm. longo apice ipso obtusiusculo, basi abrupte angustatis subacutis vel acutis 11-16.5 cm. longis 3-7 cm. latis, utrinque glaberrimis, nervis lateralibus utroque latere 8-9 arcuato-adscedentibus juxta marginem conjunctis subtus prominentibus utrinque nervulis laxe reticulatis; inflorescentia terminali 3 cm. longe pedunculata thyrsoido-paniculata multiflora 4-5.5 cm. longa 3-3.5 cm. lata, pedunculo glabro ramis pedunculi minutissime puberulentibus infimis saepe trichotomis 9-13 mm. longis; bracteis ovatis acutis 0.5-0.8 mm. longis; hypanthio campanulato 1 mm. longo glabro; calyce 0.3-0.4 mm. longo apice subtruncato minute 5-repando-apiculato glabro; corolla in alabastro 2.7-3 mm. longa extus glabra vel minute parce papilloso-puberulente infra medium villosula; staminibus 5; fructibus non visis.

Type in herb. Chi. Nat. Hist. Mus., collected en selva tupida de rebalsa, raudal Trapichote, Delta del Ventuari, Territorio Federal Amazonas, alt. 124 m., April 20, 1942, *Llewelyn Williams 14983*, "árbol de tamaño mediano, de 8 a 10 cm., con flores pequeñas, blancas y fruto globoso, pequeño; la corona extendida y el tronco 15 cm. de diámetro, algo redondo y torcido, sin ramas por 2 o 3 m.; la corteza es grisacea, algo lisa y delgada; la madera de color claro."

This is probably related to *P. vasivensis* (M. Arg.) Standl., but differs from this and related species in the fewer lateral nerves of the more reticulate leaf blades, the smaller subtruncate minutely repand-apiculate calyx, and the small ovate bracts of the inflorescence.

Remijia stenopetala Standl. & Steyerl., sp. nov.

Frutex 3.3-6.8-metralis, truncis pluribus gracilibus 2.5-5 cm. diam., ramis novellis villosis striatis vetustioribus subteretibus glabris; internodiis 2-5 cm. longis; stipulis ovatis vel ovato-oblongis subacutis 13-22 mm. longis 6-7.5 mm. latis extus adpresso-pilosis vel strigosis; foliis oppositis petiolatis, petiolis rubellis 7-11 mm. longis crassis glabris supra canaliculatis; foliis planis coriaceis vel subcoriaceis subtus pallido-viridibus anguste elliptico-oblongis vel lanceolato-oblongis apice subito acutis vel acuminatis, acumine usque 13 mm. longo, basi acutis sensim attenuatis in petiolum decurrentibus 7-18 cm. longis 2-5.2 cm. latis, supra glaberrimis subtus minute strigillosis vel adpresso-pilosulis vel fere glabrescentibus costa media subtus rubella prominente, nervis lateralibus utroque latere 13-15 divaricate patentibus prope marginem obscure conjunctis supra subprominulis subtus obscuris; inflorescentiis axillaribus foliis brevioribus vel ea superantibus cymoso-corymbosis 5-15 cm. longe pedunculatis 2.5-5 cm. latis, cymis trichotomis dense congestis primo congestis multifloris, pedunculis dense strigosis; bracteis rubellis anguste lanceolatis vel lineari-lanceolatis longe acuminatis 8-19 mm. longis 1-2 mm. latis strigosis vel adpresso-pilosis; hypanthio anguste oblongo vel cylindrico 2-3 mm. longo extus dense sericeo, calyce profunde lobato, laciniis inaequalibus lineari-lanceolatis vel lanceolato-subulatis longe acuminatis in anthesi 3-5 mm. longis 0.5-1 mm. latis in fructu ad 8 mm. longis extus strigillosis; corollis (immaturis) albidis, tubo anguste cylindrico immaturo 8 mm. longo extus dense strigilloso intus glabro, lobis lanceolatis acutis immaturis 4-4.5 mm. longis 1 mm. latis extus dense strigillosis intus densissime papillato-villosulis; staminibus infra medium tubum affixis, antheris lineari-oblongis utrinque rotundatis 3 mm. longis, filamentis 1 mm. longis; capsulis anguste elliptico- vel lineari-oblongis deorsum dehiscentibus 15-16 mm. longis 4-4.5 mm. latis extus dense strigosis vel adpresso-pilosis; seminibus lineari-fusiformibus 7.5 mm. longis, parte centrali 3 mm. longa 1.5 mm. lata (Fig. 134).

Type in herb. Chi. Nat. Hist. Mus., collected in upper drier portion of forest below mesa, wooded slopes of Quebrada O-paru-má, between Santa Teresita de Kavanayén and Río Pacairao (tributary of Río Mouak), state of Bolívar, alt. 1065-1220 m., November 20-21, 1944, Julian A. Steyerl. 60359, "shrub with several branches and slender stems, 1-2 inches in diameter; leaves coriaceous, deep green above, pale green below; corolla white, fragrant, some of petioles and lower midrib dull rose as are bracts; calyx pale greenish-white."

Cotypes in herb. Chi. Nat. Hist. Mus., collected in low scrubby growth on flat portion of south-facing shoulder, vicinity of "Misia Kathy Camp," Ptari-tepuí, state of Bolívar, alt. 1585 m., October 28, 1944, Steyerl. 59476, "very common shrub with several stems, 10-20 feet tall; leaves subcoriaceous, plane, not folded as in *R. laevifolia*; Calyx pale greenish-white; peduncle slender, erect, dull brick; leaves deep green above, pale green below; petiole and upper midrib at base dull red"; scrubby forest on rocky

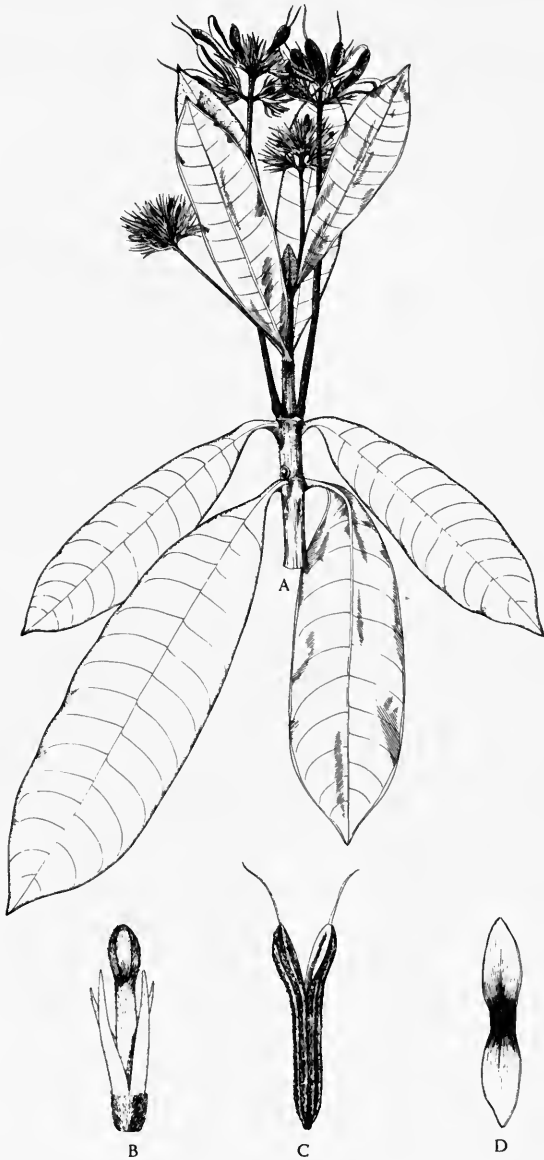


FIGURE 134

Remijia stenosepala

A, Habit of flowering branch (X 0.4); B, Immature flower bud (X 2);
 C, Mature fruit, opening (X 1.5); D, Seed (X 4).

open portion of plateau on southeast-facing slopes, Ptari-tepuí, state of Bolívar, alt. 1600 m., November 1, 1944, Steyermark 59639, "common."

This species is well-marked by its plane, not folded, narrow, elongate leaves which are glabrous above and minutely strigillose below, elongated, narrow calyx lobes and slender, narrow capsules. From *R. laevifolia* Standl. of Mount Duida it differs in the shape of the leaves, the divaricately spreading, more numerous lateral nerves of the leaves, the plane rather than folded leaves minutely strigillose below, and the much longer calyx lobes.

Remijia Steyermarkii Standley, sp. nov.

Arbor ad 8-metralis, trunco 7.5 cm. diam., cortice exfoliato 2 mm. crasso amaro; ramis novellis subteretibus brunneo- vel subferrugineo-strigiosis vel subsericeis, vetustioribus glabrescentibus; internodiis 2.5-11 cm. longis; stipulis lineari-lanceolatis vel lanceolatis obtusis vel acutis 10-28 mm. longis 3-5 mm. latis extus leviter vel valde sericeis caducis; foliis oppositis brevipetiolatis, petiolis 1.5-3 mm. longis sericeis, laminis firme chartaceis vel subcoriaceis subtus pallide viridibus late oblongis apice subito acuminatis, acumine 4-12 mm. longo, basi rotundatis vel subcordatis, 6.5-18.5 cm. longis 3-9.5 cm. latis, supra tantum ad costam mediam strigillosis ceterum glabris, subtus pagina minute parce pilosula vel glabrescenti costa media atque nervis lateralibus dense strigiosis vel molliter hirtellis, nervis lateralibus utroque latere 9-13 ascendentibus eis et costa media valde sulcatis subtus prominente elevatis; inflorescentiis axillaribus folia aequantibus vel superantibus cymoso-corymbosis 6-17 cm. longe pedunculatis ca. 4.5 cm. latis, cymis trichotomis congestis, pedunculis dense fulvo-strigiosis vel adpresse fulvo-pilosis; bracteis ovato-oblongis obtusis 4-5 mm. longis extus dense adpresso-pilosulis; pedicellis ad 3 mm. longis eis rhachique dense fulvo-hirtellis vel adpresse fulvo-pilosis; hypanthio turbinato-oblongo 3-7 mm. longo 2.5-3 mm. lato extus dense sordide fulvo- vel ochraceo-sericeis vel adpresso-hirtellis, calyce 1.5-2 mm. longo 3-3.5 mm. lato apice truncato vel subtruncato dentibus obsoletis extus dense sericeo intus glabro; corollis 24 mm. longis, tubo anguste cylindrico extus dense adpresse piloso intus parte inferiore pilosulo parte superiore glabro griseo-lavendulo 20 mm. longo, lobis intus albidis anguste lanceolatis acutiusculis 6 mm. longis 1.5-1.6 mm. latis extus dense adpresse pilosis intus papillatis; staminibus inclusis infra medium tubum affixis; antheris lineari-oblongis apiculatis 4.5 mm. longis; filamentis 3-3.5 mm. longis; capsulis anguste oblongo-pyriformibus sursum dehiscentibus, valvis apice cohaerentibus ca. 20 mm. longis 6-8 mm. latis extus fulvo adpresso-pilosis vel strigiosis; seminibus 5.5-6 mm. longis ca. 2 mm. latis (Fig. 135).

Type in herb. Chi. Nat. Hist. Mus., collected on steep slopes bordering precipice in mixed forest between Agüita and summit of Cerro Duida, Territorio Federal Amazonas, alt. 1165 m., September 5, 1944, Julian A. Steyermark 58392, "tree 25 feet tall, trunk 3 in. in diameter, bark peeling off, bark 2 mm. thick, bitter; leaves firmly chartaceous to subcoriaceous, dull green above, paler green below,

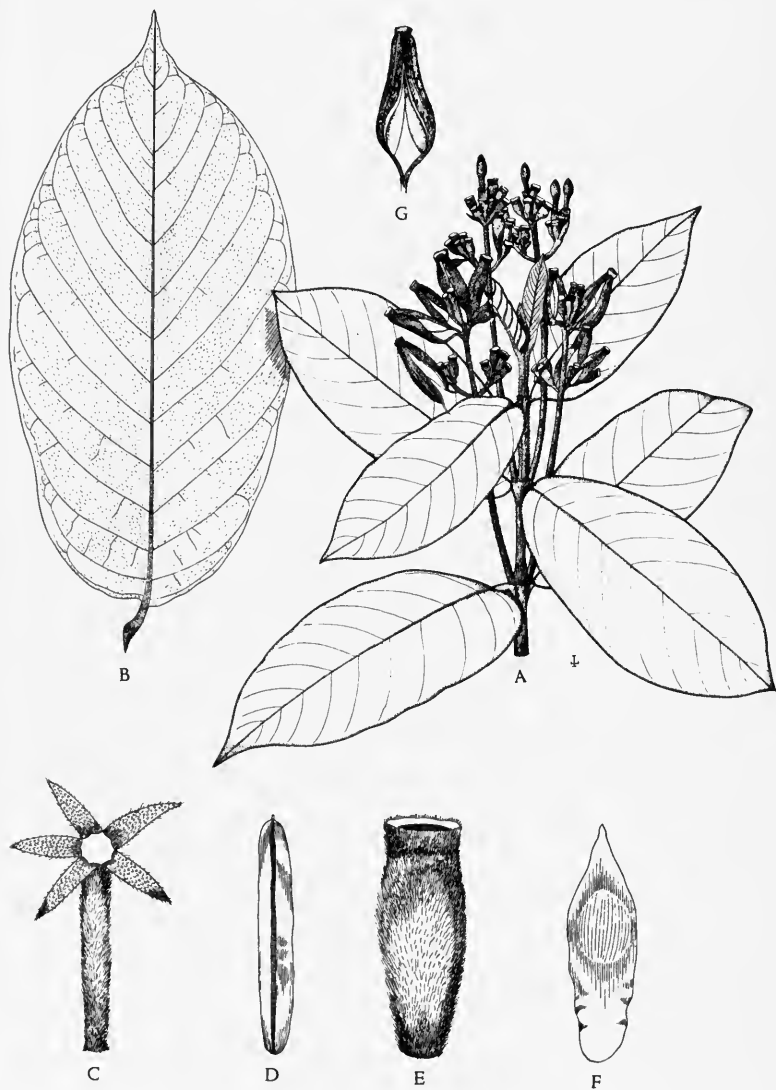


FIGURE 135

Remijia Steyermarkii

A, Habit of flowering branch (X 0.4); B, Leaf, lower side (X 0.4); C, Corolla (X 1.3); D, Anther (X 6.5); E, Hypanthium opening (X 0.8); F, Seed (X 4.5); G, Mature fruit, opening (X 0.9).

deeply sulcate above, upraised nerves below; corolla with dull gray-lavender on tube without, whitish on lobes within."

This species is distinguished by the very shortly petiolate leaves, the broadly rounded or subcordate leaf base, the numerous close nerves of the leaf blades, truncate calyx with obsolete lobes, densely sericeous or appressed-pilose pubescence of peduncles, pedicels, corolla tube, and strigose midrib and nerves of the lower leaf surface. It resembles *Cinchona* in the manner of dehiscence of its capsules, i.e., from below upward, but in its axillary, elongated peduncles, type of inflorescence, and narrow corolla tube and lobes, it possesses characters shared by other species of *Remijia*.

***Rudgea carolina* Standl. & Steyerl., sp. nov.**

Arbor 10-12-metralis, trunco 1.5 dm. diam., ramis novellis minute tomentulosis, vetustioribus glabris; stipulis magnis ambitu obovatis vel late ovatis 11-23 mm. longis 10-12 mm. latis ultra medium flabel-latim subulato-fissis dorso longitrorsum multisulcatis dense tomentulosis; foliis magnis oppositis petiolatis, petiolis crassis 9-10 mm. longis 4-6 mm. latis supra canaliculatis undique dense tomentulosis; laminis coriaceis vel subcoriaceis supra atroviridibus subtus fusco-viridibus late ovatis apice subito acuminatis, acumine obtuso vel acuto, basi obtusis vel rotundatis 20-23 cm. longis 10-15 cm. latis supra glabris subtus densiuscule fusco-tomentulosis vel puberulis, costa media supra sulcata subtus valde elevata, nervis lateralibus utroque latere 9-10 supra paullo prominulis subtus prominentibus prope marginem anastomosantibus cum venis transversis laxae arcte reticulatis; inflorescentiis terminalibus 2.5-3.5 cm. longe pedunculatis trichotomis dense multifloris 1.5 cm. longis atque latis, ramis primariis crassis 1-1.3 cm. longis eis pedunculisque dense fusco-tomentulosis, floribus sessilibus ad apices ramorum dense congestis; bracteis late ovatis acuminatis 5-6 cm. longis 4-6 mm. latis dense tomentulosis; hypanthio late oblongo-obturbinato 5 mm. longo 4-4.5 mm. lato dense hirtellis; calyce campanulato 3 mm. longo extus dense hirtellis intus glabro, calycis lobis 4-5 ovato-triangularibus subacutis 1.5 mm. longis 2 mm. latis; corollis albido-virescentibus 8-8.5 mm. longis, tubo cylindrico 4.5 mm. longo 4-4.5 mm. lato extus dense hirtello intus glabro, lobis 5 lanceolatis acutiusculis infra apicem cucullato-inflexis 4.5-5 mm. longis 1.5 mm. latis extus et apice inflexa dense hirtellis; staminibus 5 anguste oblongis 3.2-3.3 mm. longis; stylo incluso 4 mm. longo glabro, stigmatibus 1.5 mm. longis; fructibus luteis ovoideis 20-22 mm. longis 12-17 mm. latis utrinque subrotundatis.

Type in herb. Chi. Nat. Hist. Mus., collected en la margen de la selva en tierra firme, San Carlos de Río Negro, Territorio Federal Amazonas, alt. 100 m., July 3, 1942, *Llewelyn Williams 14674*, "árbol delgado de 10 a 12 cm. con copa abierta, algo pequeña, tronco derecho, redondo, 15 cm. de diám., sin ramas por las 3/4 de alt., la corteza algo lisa, morenisca; el liber verde pálido; la madera dura, de color castaño; el fruto amarillo quemado, ovoideo, solitario terminal; las flores blanquecinas con tono medio verde."

This is closely related to *R. fissistipula* M. Arg., the type of which (Spruce 3683) was collected from the same general locality as the present new species. *Rudgea carolina* differs from *R. fissistipula* in the much shorter flowers, which are densely hirtellous on the outside of the hypanthium, calyx, and corolla, and in the densely tomentulose-puberulous lower surface of the leaves.

Rudgea hospes Standl. & Steyerl., sp. nov.

Frutex 5-6.5-metralis, ramis gracilibus subteretibus glabris vel subglabris; stipulis 1.5-2 mm. longis apice aculeolis subulatis brevibus onustis, aculeolis deciduis, parte persistente indurata subtruncata vel late rotundata; foliis oppositis breviter petiolatis, petiolis 4-5 mm. longis supra canaliculatis undique minute adpresso-puberulentibus vel subglabrescentibus; laminis firme chartaceis supra sublucidis late ellipticis vel elliptico-oblongis apice obtusis basi subacutis, 4-6 cm. longis 1.5-3.6 cm. latis, supra glabris subtus tantum costa media et nervis principalibus minute adpresso-strigillosis ceterum glabris, nervis lateralibus utroque latere 7-9 subarcuato-adscendentibus prope marginem 2-4 mm. anastomosantibus supra prominulis subtus prominentibus, nervulis prominulis utrinque graciliter reticulatis; inflorescentiis parvis terminalibus foliis multo brevioribus 15-17 mm. longe pedunculatis trichotomis 2-2.5 cm. longis 1.5 cm. latis, ramo centrali trifloro, ramis lateralibus vulgo unifloris, floribus 1-2.5 mm. longe pedicellatis vel subsessilibus, pedunculis pedicellisque dense minutissime adpresso-strigillosis, bracteis late ovato-triangularibus subito cuspidatis 2.5-4 mm. longis extus dense adpresso-strigillosis, bracteolis lanceolatis acuminatis 2-2.5 mm. longis; hypanthio campanulato ca. 2 mm. longo 2.5-3 mm. lato extus dense adpresso-puberulo vel strigilloso; calyce campanulato 2 mm. longo 4 mm. lato, lobis late ovato-triangularibus acutis 1 mm. longis 1.5 mm. latis, extus dense minutissime strigillosis; corollis sordido-albidis 13 mm. longis, tubo cylindrico 7 mm. longo 4.5 mm. lato extus dense strigilloso, lobis 5 late lanceolatis acutis 5.5 mm. longis extus dense strigillosis; staminibus 5 ad medium tubum affixis, antheris lineari-oblongis 5 mm. longis; filamentis 2.8-3 mm. longis; stylo 5 mm. longo minute strigilloso, stigmatibus 2 mm. longis; fructibus late ovoideis vel suborbiculari-ovoideis apice rotundatis basi anguste attenuatis 8 mm. longis (immaturis) 7.5 mm. latis extus minute puberulentibus vel substrigillosis vel subglabrescentibus.

Type in herb. Chi. Nat. Hist. Mus., collected between Buenos Aires to Canyon of El Callado, above Humocaró Alto, state of Lara, alt. 2285-2740 m., February 12, 1944, Julian A. Steyerl. 55509, "shrub 15-20 feet tall with arching tips; leaves firmly chartaceous, dark green above, dull green below; calyx dull pale green; corolla creamy."

Only a few species of *Rudgea* have been collected in the Venezuelan Andes. This one is quite distinct from any of the species described thus far in the genus. It is perhaps most closely related to *R. Karstenii* Standl. of Venezuela, from which it at once may be separated by the pubescent peduncles, pedicels, hypanthium, and

calyx, fruit narrowed and attenuate at the base, and more conspicuously nerved and differently shaped leaves.

Rudgea lucentifolia Standl. & Steyerl., sp. nov.

Frutex scandens, ramulis glabris; stipulis 2-2.5 mm. longis apice aculeolis subulatis brevibus onustis, aculeolis deciduis, parte persistente indurata subtruncata vel late rotundata; foliis oppositis petiolatis, petiolis 5-7 mm. longis glabris supra leviter sulcatis; laminis chartaceo-subcoriaceis supra atroviridibus lucidis subtus pallidioribus elliptico-oblongis apice subobtusis vel subacutis basi obtusis, 5-12 cm. longis 2-6 cm. latis, marginibus paullo revolutis, supra glaberrimis subtus praecipue ad costam mediam atque nervos laterales minutissime strigillosis ceterum remote minutissime strigilloso-puberulentibus vel subglabrescentibus, nervis lateralibus utroque latere ca. 8 patento-adscendentibus supra obsolete subtus prominulis ante marginem 2-4 mm. conjunctis, nervulis subtus laxe subreticulatis; inflorescentiis terminalibus foliis multo brevioribus 12-15 mm. longe pedunculatis trichotomis 2.2-3 cm. longis 1.2-1.5 cm. latis, ramis trifloris, floribus sessilibus, pedunculis et ramis pedunculorum minutissime puberulentibus sulcatis, ramis 3.5-8 mm. longis; bracteis late ovatis acuminatis 3.5-4 mm. longis; hypanthio campanulato 1.5-2 mm. longo 1.5-2 mm. lato glabro; calyce campanulato 1.5 mm. longo 3-3.5 mm. lato extus minutissime puberulenti apice ciliolato, apice 5-dentato, dentibus mucronatis vel subulatis 0.5 mm. longis; corollis non visis.

Type in herb. Chi. Nat. Hist. Mus., collected in rich forest between Mesa del Trapiche and El Molino, state of Mérida, alt. 2530-2590 m., May 14, 1944, Julian A. Steyerl. 56502, "lignous vine; leaves chartaceous-subcoriaceous, dark green and shining above, dull paler green below."

This species is especially distinguished by the markedly lustrous, glabrous upper leaf surfaces and the minutely strigillose, rather prominent nerves of the lower surface.

Rustia venezuelensis Standl. & Steyerl., sp. nov.

Arbor 10-12-metralis, omnino glabra, internodiis superioribus abbreviatis; stipulis caducis, non visis; foliis magnis petiolatis, petiolis 2-3.5 cm. longis basi incrassatis; laminis subcoriaceis subtus pallido-viridibus late obovatis apice subito obtusis vel obtuse acutatis, acumine 5-7 mm. longo 5-5.5 mm. lato apice ipso rotundato, ad basin sensim cuneato-angustatis, 20-34 cm. longis 7.5-14.5 cm. latis, nervis lateralibus utroque latere ca. 14 adscendentibus prope marginem arcuato-conjunctis, costa media atque nervis lateralibus subtus prominentibus, venulis undique transversis laxe reticulatis paullo prominulis; inflorescentia terminali trichotoma cymosopaniculata 7 cm. longe pedunculata, paniculis ipsis 12-13-floris 5 cm. longis 3-3.5 cm. latis, ramis primariis 2.5-4.5 cm. longis; pedicellis in fructu crassiusculis 10-14 mm. longis; corollis non visis; capsulis subgloboso-obovoideis vel late obovoideis 6-9 mm. longis 6-6.5 mm. latis; seminibus pallido-brunneis 1-2 mm. longis rugoso-areolatis.

Type in herb. Chi. Nat. Hist. Mus., collected along dry canyon slopes below El Bao, between Mucuchachí and Canaguá, state of Mérida, alt. 1065-1820 m., May 6, 1944, *Julian A. Steyermark 56333*, "tree 30-35 feet tall; leaves subcoriaceous, olive rich green above, pale green below."

This is the first representative of the genus *Rustia* to be recorded from Venezuela. It differs from *R. occidentalis* (Benth.) Hemsl. in the obtuse or rounded tips of the leaf blades, leaves less prominently reticulate beneath, smaller capsules, smaller seeds, and longer peduncles with more contracted fruiting inflorescences on longer branches.

***Tocoyena orinocensis* Standl. & Steyer., sp. nov.**

Frutex 1-1.8-metralis, ramulis subteretibus glabris; stipulis caducis; foliis oppositis breviter petiolatis, petiolis 2-8 mm. longis glabris; laminis firme membranaceis in sicco fere nigris late obovatis apice subito acuminatis, acumine acuto, basin versus cuneatim angustatis, basi ipsa subacuta, 8-13 cm. longis 3-8 cm. latis, nervis lateralibus utroque latere 9-11 adscendentibus prope marginem conjunctis, supra glabris subtus praeter axillas barbatae glabris, costa media et nervis lateralibus subtus prominulis supra paullo prominulis; inflorescentia terminali subcapitata ca. 6-flora, floribus sessilibus; hypanthio anguste turbinato 8.5 mm. longo 3.5 mm. lato glabro; calyce apice subtruncato breviter 5-dentato, dentibus triangulari-subulatis 0.5 mm. longis glabris; corolla sordido-albida infundibuliformi 11 cm. longa, extus glabra, tubo 9 cm. longo medio 3 mm. lato apicem versus in faucem abrupte dilatato ore 1.1 cm. lato, fauce intus minute densiterque papillato-puberulenti, lobis late ovatis acutis, 23 mm. longis 12 mm. latis, alabastro acuto; staminibus ad faucem insertis, antheris lineari-oblongis 6.5-7 mm. longis; stigmatibus 7 mm. longis; stylo 8.5 cm. longo.

Type in herb. Chi. Nat. Hist. Mus., collected among rock outcrops below mouth of Río Sanariapo, along Orinoco River, Territorio Federal Amazonas, alt. 100 m., September 8, 1944, *Julian A. Steyermark 58442*, "shrub 3-5 feet tall; corolla creamy white; leaves firmly membranaceous, rich green above, dull green below; flowers fragrant."

Another collection, originally labeled *T. Sellowiana* in herb. Paris, apparently is the same species. It was collected on the banks of the Orinoco, in Venezuela, *Chaffanjon 184*, (fragment in herb. Chi. Nat. Hist. Mus.).

This species is distinguished by its combination of ovate, acute, or acuminate corolla lobes, mostly glabrous corolla, glabrous ovary and hypanthium, and glabrous leaves except for the minute pubescence in the lower axils of the leaves. In its acute to acuminate corolla buds it apparently is most closely related to *T. guianensis* Poepp. & Endl. From *T. Sellowiana* (Ch. & Schl.) Schum. it differs in the acute to acuminate corolla lobes, details of corolla measurements, and differently shaped leaf blades.

CAPRIFOLIACEAE

A comparative study of material collected by the present author from Mount Roraima and Mount Ptari-tepui referable to *Viburnum roraimense* Killip & Smith, and of several collections made in the Venezuelan Andes and Cordillera de la Costa referable to *V. tinoides* f. *venezuelense* Killip & Smith, reveals that the characters employed by them to maintain those entities break down and are better considered as geographical variants. Size of corolla, acuteness or obtuseness of the leaf apex, and relative glabry or pubescence of the peduncles and rays—the characters relied upon to separate *V. tinoides* from *V. roraimense*—were considered carefully in a critical study of the entities and found to vary considerably.

So far as size of corolla is concerned, *V. roraimense* was found to have corollas measuring as much as 4 mm. or more wide when expanded, so that this character cannot be used in separating *V. tinoides* from *V. roraimense*. Although typical *V. tinoides* L.f., of Colombia and extreme western Venezuela in the state of Táchira (*Steiermark* 57225), has the peduncles and rays sparingly pubescent and thickish obtuse to obtusely acuminate leaves, a thinner and shorter-leaved form (f. *venezuelense*) was described from Venezuela. It has the peduncles and rays only sparingly pubescent. *Viburnum roraimense*, described from Mount Roraima, is supposed to have caudate-acuminate leaves with an acumen at least 1 cm. long and the peduncles and rays glabrous. However, topotypic material of *V. roraimense* (*Steiermark* 58663 and 58711) shows many leaves only obtusely acuminate as in f. *venezuelense* and with an acumen varying from 3-7 mm. long. Some of the rays in *Steiermark* 58663 and 59544 (from Ptari-tepui) exhibit a sparse type of pubescence, such as to be found in a number of Venezuelan specimens referred to *V. tinoides* f. *venezuelense*, such as *Gehriger* 333, *Williams* 10018, and others. There is a complete gradation series between almost glabrous peduncles and rays in *V. roraimense* to various degrees of sparse pubescence in *V. tinoides* f. *venezuelense*, the more pubescent extremes being found in *V. tinoides*. A collection of *V. roraimense* from the type locality by Pinkus (no. 138) shows sparingly pubescent rays and peduncles. This collection likewise shows variation in degree of acuteness of the leaf apex and in the length of the acumen.

A collection from Cerro Turumiquire (*Steiermark* 62691) has most of the leaves long-acuminate or subcaudate-acuminate as in *V. roraimense*, but the leaves average much smaller than those of the Roraima or Ptari-tepui specimens. Likewise, a collection from the Andean Cordillera of the state of Mérida (*Steiermark* 55978), has leaves much broader than in forma *venezuelense*. These extremes may be recognized as distinct forms.

Viburnum roraimense appears, therefore, to be a variation of *V. tinoides* characterized by mostly acutely acuminate or caudate-acuminate leaves and often glabrate or sparingly pubescent rays and peduncles. As such, but not as a distinct species, it may be treated as a geographical variety as follows:

Viburnum tinoides L.f., var. *roraimense* (Killip & Smith) Steyermark, comb. nov.

Viburnum roraimense Killip & Smith, Bull. Torr. Bot. Club 56: 406. 1929.

A collection from Cerro Turumiquire (*Steyermark 62691*) has most of the leaves long-acuminate as in *V. tinoides* var. *roraimense*, but the leaves average much smaller and narrower than those of the Roraima or Ptari-tepuí specimens. This may be called:

Viburnum tinoides var. *roraimense*, f. *turumiquirensis* Steyermark, f. nov.

A var. *roraimense* differt foliis parvioribus et angustioribus 2.5-6 cm. longis 7-20 mm. latis, apice longe acuminatis, acumine 4-9 mm. longo; fructibus maturis 8 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected on Cerro Turumiquire, between La Trinidad and headwaters of Río de Amana, state of Sucre, alt. 1300-1800 m., May 10, 1945, *Julian A. Steyermark 62691*, "shrub 10-20 feet tall; leaves firmly membranaceous, rich green above, dull paler green below; flowers white; fruit black-blue."

Most of the Venezuelan material with thinner shorter obtuse to obtusely acuminate and sparingly pubescent rays and peduncles may be considered as a geographical variant instead of as a form:

Viburnum tinoides var. *venezuelense* (Killip & Smith) Steyermark, comb. nov.

Viburnum leptophyllum f. *venezuelense* Killip & Smith, Bull. Torr. Bot. Club 56: 271. 1929; *V. tinoides* f. *venezuelense* Killip & Smith, Bull. Torr. Bot. Club 57: 254. 1930.

A collection from the Andean Cordillera of the state of Mérida (*Steyermark 55978*) with very broad leaves up to 7.5 cm. wide represents an extreme form of var. *tinoides*, but is approached by intergradations in width of leaves found in several other collections.

A key to the varieties and forms of *V. tinoides* as here understood is presented as follows:

- A. Leaves usually obtuse or obtusely acuminate at apex
 - B. Leaves rather firm, mostly obtuse at apex; peduncles and rays obviously and rather densely pubescent
 - *V. tinoides*, var. *tinoides*
 - BB. Leaves thinner, mostly obtusely acuminate at apex; peduncles and rays sparingly to slightly pubescent
 - *V. tinoides*, var. *venezuelense*
- AA. Leaves acutely acuminate to caudate-acuminate at apex
 - C. Leaves 1.5-4 cm. wide, 4-12 cm. long
 - *V. tinoides*, var. *roraimense*
 - CC. Leaves 0.7-2 cm. wide, 2.5-6 cm. long
 - *V. tinoides*, var. *roraimense*, f. *turumiquirensis*

CUCURBITACEAE

Anguria simplicifolia Steyermark, sp. nov.

Herbacea scandens, caulibus profunde sulcatis dense villosopilosis, internodiis elongatis; foliis omnibus simplicibus, petiolis 2-3 cm. longis dense longi-villosis; laminis membranaceis subtus pallido-viridibus oblongo-lanceolatis vel late lanceolatis apice cuspidato-acuminatis basi late truncatis vel subtruncatis 11-13 cm. longis 3.5-5 cm. latis repando-denticulatis, dentibus utrinque 10-11, 0.75-1.5 mm. longis, basi palmatim trinerviis utrinque valde laxe areolato-venosis, utrinque pilis laxis albidis sparse villosis dense ciliatis; cirrhis gracilibus leviter pubescentibus; pedunculo commune masculo 6 cm. longo pubescente, apice subcapitato-14-flora; floribus subsessilibus vel sessilibus; calyce cinnabario 7.5-8 mm. longo, tubo tubuloso 3.5-4 mm. longo extus pilis brevibus densiuscule puberulis, sepalis lanceolatis acuminatis 3.5-4 mm. longis 0.6-0.75 mm. latis extus pubescentibus; petalis lineari-oblongis apice cucullato-obtusis 1.25-1.5 mm. longis 0.4-0.5 mm. latis extus pilis erecto-adscendentibus dense hirtellis; antheris muticis oblongis rectis 2.5-3 mm. longis glabris; floribus foemineis et fructibus ignotis (Fig. 136).

Type in herb. Chi. Nat. Hist. Mus., collected on densely wooded slopes of narrow ridge between quebrada and summit, Sororopán-tepuí, state of Bolívar, alt. 2130-2250 m., November 15, 1944, *Julian A. Steyermark 60161*, "perianth vermilion; leaves membranaceous, dark green above, paler green below."

This species is a very distinct one in its simple oblong-lanceolate or broadly lanceolate pubescent leaves with subtruncate to truncate base, pubescent stems, petioles, and peduncles, short lanceolate sepals which are much longer than the minute petals, and short oblong muticous anthers. The relationship of this species is with *Gurania Martiana* Cogn., but the shape of the leaves is quite different from the cordate ovate-oblong ones of that species.

I agree with Macbride's concept of combining the genus *Gurania* with *Anguria* (See Field Mus. Nat. Hist. Bot. Publ. 13, part 6, number 2, p. 341. 1937). The present described species would, because of the color of the calyx tube, fall into *Gurania*, but this does not seem to be a substantial character for separating the two genera.

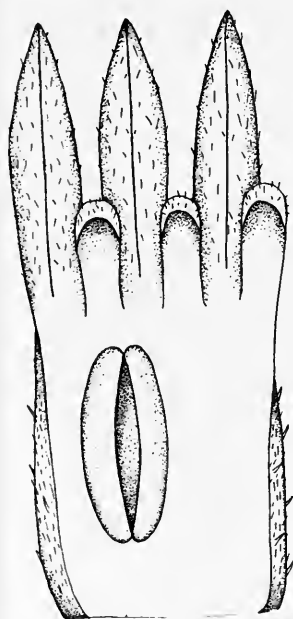
COMPOSITAE

Baccharis erectifolia Steyermark, sp. nov.

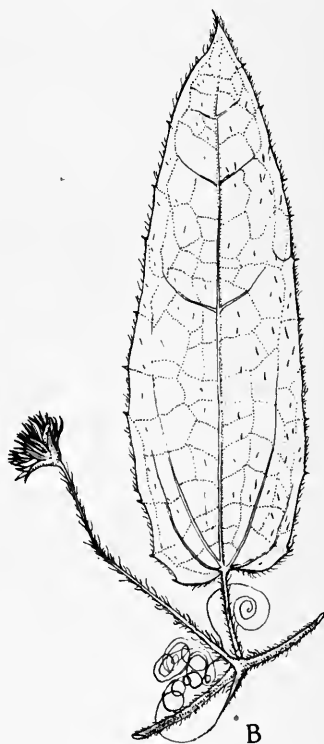
Frutex 1-3.3-metralis, ramosis; ramulis glaberrimis angulatis apicem versus dense foliatis; foliis confertis erectis breviter petiolatis, petiolis 2-4 mm. longis; laminis subcoriaceis subtus pallido-viridibus oblanceolatis vel obovato-spatulatis apice plerumque obtusis vel rotundatis vel obtusiusculis basi cuneatim angustatis in petiolum subito decurrentibus 1.4-2.7 cm. longis 0.6-1.8 cm. latis utrinque glabris supra resinosis subtus valde punctatis integerrimis, penninerviis costa media subtus prominente, nervis lateralibus utroque 6-7 subtus prominulis patento-adscendentibus ante marginem

1-2 mm. anastomosantibus; inflorescentiis foemineis late corymbosis, pedunculis glabris; pedicellis 2.75-5 mm. longis glabris; capitulis foemineis dense confertis 21-26-floris campanulato-hemisphericis 8-10 mm. altis 4-7 mm. latis; involucri foeminei squamis 3-4-seriatis ca. 19, exterioribus ovatis obtusis 2.8-3.2 mm. longis 1.5 mm. latis fimbriato-ciliatis dorso plerumque glabris, medianis ovato-vel oblongo-lanceolatis obtusis vel obtusiusculis 4.5-5.2 mm. longis 1.5-1.6 mm. latis fimbriato-ciliatis dorso glabris, intimis lanceolatis vel lineari-lanceolatis acutiusculis 5.5-5.8 mm. longis 0.8-1.2 mm. latis fimbriato-ciliatis dorso plerumque glabris; corollis tubuloso-capillaribus ca. 4 mm. longis, laciniis erectis 0.4 mm. longis; pappi setis 5.5-6.5 mm. longis bubalino-albidis remote serrulatis; achaeniis fulvis vel ochraceis 1.8-2 mm. longis glabris; planta mascula ignota.

Type in herb. Chi. Nat. Hist. Mus., collected on north-facing steep sandstone slopes, Cerro Turumiquire, from beginning of sandstone to summit of cerro, state of Sucre, alt. 2360-2500 m., May 6, 1945,



A



B

FIGURE 136

Anguria simplicifolia

A, Flower, from within (X 11); B, Portion of stem with leaf and inflorescence (X 0.6).

Julian A. Steyermark 62583, "shrub 3-4 feet tall; leaves erect, subcoriaceous, dull green above, gray green below; involucre pale green with purple-brown tips."

Cotype in herb. Chi. Nat. Hist. Mus., collected on south-facing steep slopes, on rocky exposed shrubby portion of knife-edge ridge above tree zone, Cerro Peonía (Cerro Los Pajaritos), above Santa Cruz, headwaters of Río Manantiales, east of Bergantín, state of Anzoátegui, alt. 1800-2000 m., March 20, 1945, *Steyermark 61630*, "shrub 10 feet tall; leaves erect, crowded, subcoriaceous, dull green above, pale green below; involucre lavender; pappus buff-whitish."

This species strongly resembles *B. loxensis* Benth. of Ecuador. It differs from that species in having relatively narrower oblanceolate or spatulate-obovate leaf blades which are more gradually narrowed and apiculate at apex while longer petiolate at base, and in the 6-7, instead of 3-5, pairs of lateral nerves on the lower leaf surface. The nerves of the lower leaf surface are apparently more prominent than in *B. loxensis*. Furthermore, the middle and inner involucral bracts of the pistillate heads in *B. erectifolia* are narrower, more attenuate at apex, and lanceolate to linear-lanceolate, and its outer bracts are narrower and less rounded at the apex.

***Baccharis meridensis* Steyermark, sp. nov.**

Frutex 1-1.3-metralis; ramis glaberrimis; foliis alternis ad apices ramorum dense confertis sessilibus coriaceis supra atroviridibus nitidis subtus pallidioribus spatulato-obovatis vel oblanceolatis apice rotundatis vel acutiusculis apiculatis basi cuneatim angustatis 2.5-4.5 cm. longis 1-2 cm. latis paullo subrevolutis utrinque glabris subtus punctulatis integerrimis, penninerviis costa media subtus prominente, nervis lateralibus utroque 5-6 adscendentibus subtus paullo perspicuis; inflorescentiis apice ramulorum corymbosis, capitulis pedunculatis, pedunculis parce puberulis vel glabrescentibus; inflorescentiis masculis late corymbosis multifloris 6-7 cm. longis 7-11 cm. latis; capitulis masculis 61-66-floris subhemisphaericis, 4-5 mm. altis 5-9 mm. latis; pedunculis 2-6 cm. longis; pedicellis 2-7 mm. longis densiuscule puberulis; bracteis pedunculorum lanceolatis 2-3.5 mm. longis puberulis; involucri masculi squamis 3-seriatis ca. 20, exterioribus triangulari-ovatis vel ovato-oblongis vel rotundatis 2-3 mm. longis 1-1.8 mm. latis fimbriato-ciliolatis dorso puberulis, interioribus oblongis obtusis vel obtusiusculis 3-3.3 mm. longis 1.2-1.5 mm. latis fimbriato-ciliolatis dorso pilosulis intimis oblanceolatis acutis 3-3.3 mm. longis 1 mm. latis; corollis masculis 3 mm. longis, tubo cylindrico 1.75 mm. longo dimidia parte superiori puberulis pilis multicellularibus praeditis, lobis oblongo-lanceolatis obtusis 1.5 mm. longis 0.3-0.4 mm. latis; pappi setis 2.75-3 mm. longis valde setulosis; inflorescentiis foemineis conferte corymbosis 6 cm. altis 7.5 cm. latis; capitulis foemineis confertis 31-floris subhemisphaericis 4-6 mm. altis 3-5 mm. latis; pedunculis foemineis 3-4 cm. longis glabrescentibus; pedicellis foemineis 3-4 mm. longis glabrescentibus vel parce pilosis; involucri foeminei squamis 3-seriatis ca. 31, exterioribus ovatis vel ovato-oblongis obtusis 1.8-2.2 mm. longis 1.1-1.3 mm. latis paullo fimbriato-ciliolatis dorso

puberulis, medianis oblongis vel oblongo-lanceolatis obtusis vel obtusiusculis 3.2-3.5 mm. longis 1-1.1 mm. latis fimbriato-erosis ciliolatis dorso puberulis, intimis lanceolatis vel oblanceolatis acutis vel acuminatis 4.2-4.3 mm. longis 0.7-0.8 mm. latis supra medium eroso-fimbriatis; corollis foemineis anguste cylindricis 2.1-2.5 mm. longis superne parce puberulis; pappi setis 3-3.5 mm. longis setulosis; achaeniis anguste lineari-oblongis 1.75 mm. longis glabris.

Type in herb. Chi. Nat. Hist. Mus., collected on Páramo de Los Colorados, between El Molino and San Isidro Alto, state of Mérida, alt. 2745-2955 m., May 14, 1944, *Julian A. Steyermark 56537*, "shrub 3-4 feet tall; leaves coriaceous, dark green and shining above, paler green below; involucre green tinged lavender; flowers white with lavender in center."

Cotype in herb. Chi. Nat. Hist. Mus., collected in dwarf woods below Páramo above San Isidro Alto, state of Mérida, alt. 1820 m., May 14, 1944, *Steyermark 56556*, "shrub 3 feet tall; leaves coriaceous, dark green above, dull green below; flowers white; involucre green as is rachis."

This species is related to *B. venulosa* DC., from which it differs in the shorter more crowded differently shaped leaves, which are rounded or acutish at apex and crowded to the base of the inflorescence, more congested contracted inflorescences which are not as elongated as those of *B. venulosa*, but stand out prominently above the uppermost leaves, the smaller heads, and subobtusely outer and middle involucral bracts.

***Baccharis ptariensis* Steyermark, sp. nov.**

Frutex 0.8-2.8-metralis ramosis; ramulis teretibus ferrugineo-vel fusco-pubescentibus; foliis alternis subsessilibus subcoriaceis vel firme membranaceis supra atroviridibus oblanceolatis vel spatulatis apice rotundatis vel obtusis mucronatis basi cuneatim angustatis 2.5-6.5 cm. longis 0.8-1.6 cm. latis, subrevolutis supra nitidis subtus atropunctulatis glabris vel parce puberulis praesertim ad costam mediam pilis ferrugineis praeditis integerrimis penninerviis, costa media subtus paullo prominulo, nervis lateralibus utroque 3-4 supra vix perspicuis subtus prominentibus atque inter nervos reticulato-venosis; inflorescentiis apice ramulorum corymbosis, capitulis pedunculatis; pedunculis dense ferrugineo-hirsutulibus; inflorescentiis masculis late corymbosis multifloris 4.5-9 cm. longis 7.5-12.5 cm. latis; capitulis masculis 18-23-floris subhemisphaericis 5 mm. altis 6 mm. latis, pedunculis 2-7 cm. longis; involucri masculi squamis 2-3-seriatis ca. 10, exterioribus ovatis vel ovato-oblongis obtusis 2-2.5 mm. longis 1.2-1.3 latis supra medium marginibus fimbriato-erosis pilosulis dorso pilosulis, interioribus oblanceolato-oblongis acutiusculis vel obtusiusculis 3.5 mm. longis 1.2 mm. latis, scario-sis, supra medium marginibus erosis ciliolatis superne rosaceis; corollis masculis 2.5-2.75 mm. longis, tubo anguste cylindrico 1.5-1.6 mm. longo 0.4 mm. lato superne puberulis, lobis oblongo-lanceolatis acutis recurvatis 1 mm. longis 0.3-0.4 mm. latis; antheris 0.6

mm. longis; pappi setis 2.2-2.3 mm. longis; inflorescentiis foemineis conferte corymbosis 4 cm. longis 5-6 cm. latis; capitulis foemineis dense aggregatis subsessilibus 12-17-floris subhemisphaericis 5-6.5 mm. altis 3.5 mm. latis; pedunculis 1.5-2.5 cm. longis; pedicellis 1-3 mm. longis dense brunneo-pilosis; involucri foeminei squamis 2-3-seriatis ca. 20, exterioribus ovatis obtusis 3 mm. longis 1.5 mm. latis scariosis marginibus fimbriato-ciliolatis dorso carinatis pilosulis, interioribus oblanceolatis acutis 4.5 mm. longis 0.7-0.8 mm. latis marginibus fimbriato-erosis ciliolatis dorso puberulis; corollis foemineis anguste linearis-cylindricis 2.5-2.75 mm. longis 0.9-1 mm. latis; pappi setis albidis 3-3.5 mm. longis; achaeniis anguste oblongo-linearibus basin versus angustatis 2 mm. longis 0.5 mm. latis, praesertim superne parce puberulis (Fig. 137).

Type (pistillate plant) in herb. Chi. Nat. Hist. Mus., collected along base of east-facing high sandstone bluffs, Ptari-tepuí, state of Bolívar, alt. 2410-2450 m., November 7, 1944, *Julian A. Steyermark* 59928, "shrub 3 feet tall; leaves subcoriaceous, dark green above, dull paler green below with dull green nerves; bracts pale green; pappus and pistillate flowers white; pubescence on stem dull ferruginous."

Cotype (staminate plant) in herb. Chi. Nat. Hist. Mus., collected on face of exposed bluff, at base of and on main south-facing sandstone bluffs, Ptari-tepuí, alt. 2400-2410 m., October 30, 1944, *Steyermark* 59609, "shrubby 2-3 feet tall; flowers white; leaves firmly membranaceous, dark green above, dull paler green below."

Also collected by wooded streamlet, Sororopán-tepuí, crest of cerro between east and west end, state of Bolívar, alt. 2255 m., November 14, 1944, *Steyermark* 60123, "shrub 8 feet tall; flowers whitish; leaves dark green above, dull green below."

This species is closely related to *B. Vitis-Idaea* Oliver of Mount Roraima, but differs from that species in the densely ferruginous twigs, branches of the inflorescence and pedicels, more congested pistillate inflorescences on subsessile heads with pedicels only 1-3 mm. long, oblanceolate inner involucre bracts of the pistillate heads, narrower inner bracts of the staminate heads, achenes with more numerous hairs, stouter and longer peduncles of the staminate inflorescences, and larger and less congested staminate inflorescences.

***Baccharis venulosa* DC., var. *cuspidibracteata* Steyermark, var. nov.**

A typo differt pedunculis pedicellisque dense hirtellis pilis fulvis subrigidis patentibus et involucri foeminei bracteis intimis anguste linearibus vel subulatis apice filiformi-attenuatis cuspidatis 0.2-0.3 mm. latis, exterioribus et medianis lanceolatis vel anguste lanceolatis apice longe acuminatis vel cuspidatis 0.7-1 mm. latis, omnibus valde scariosis apice brunneo-lavendulis.

Type in herb. Chi. Nat. Hist. Mus., collected in rich moist woods at base of Páramo de Tamá, 4-10 kms. above Betania, state of Táchira, alt. 2500-2895 m., July 15, 1944, *Julian A. Steyermark*

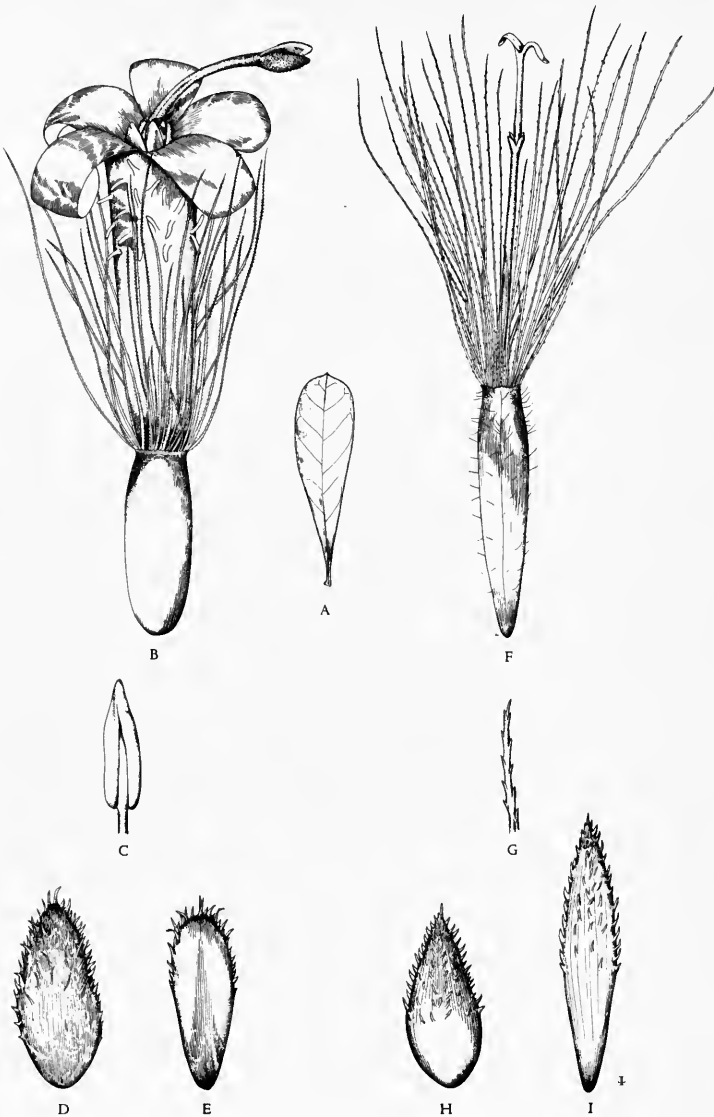


FIGURE 137

Baccharis pteriensis

A, Leaf, from above (X 0.7); B, Staminate flower (X 25); C, Portion of stamen (X 28); D and E, Inner involucral bracts from staminate head (X 7); F, Pistillate flower (X 12); G, Portion of pappus awn (highly magnified); H, Outer involucral bract from pistillate head (X 8); I, Inner involucral bract from pistillate head (X 8).

57298, "shrub 10 feet tall; leaves subcoriaceous-firmly membranaceous, deep green above, dull paler green below; bracts buff with brown-lavender tips; flowers creamy white."

Typical *B. venulosa* DC., under which may be included as a synonym *B. oblanceolata* Rusby (Mem. Torr. Bot. Club 6: 61. 1896), has the branches of the inflorescence and the pedicels varying from glabrate or sparsely puberulous to densely brown-purplish pubescent. In the latter condition the multicellular hairs are variously curving, appressed, descending, ascending, or half-spreading, and crinkly. They are not definitely horizontally spreading or stiffish, as in var. *cuspidibracteata*. Furthermore, in typical *B. venulosa* (including *B. oblanceolata*) the innermost involucre bracts of the pistillate heads are mainly broader and shorter-tipped, varying from oblong-lanceolate to lanceolate with acute to acuminate tips and from 0.5-1.2 mm. broad. The outer and middle involucre bracts of the pistillate heads are also broader, varying from ovate to oblong-lanceolate, acutish to acuminate at apex, and from 0.8-1.5 mm. wide. The bracts in var. *cuspidibracteata* are more conspicuously pale-margined scarious than in typical *B. venulosa*.

There is considerable variation within *B. venulosa* DC. Described originally as having a loosely branched inflorescence, a photograph of the type, deposited in the Chi. Nat. Hist. Mus. herb., preserved in the Berlin Bot. Mus. and in the De Candolle herb. of the Conserv. Bot. of Geneva, shows elongated loosely branched axes of the inflorescence. Other collections from Peru, Colombia, and Venezuela, which can be referred to *B. venulosa*, show inflorescences ranging from loosely branched and more or less elongated to more densely corymbose types with crowded heads on shortened branches or axes of the inflorescence.

Although *B. oblanceolata* Rusby (originally collected at Mapiri, Bolivia) was described as having a "puberulent inflorescence," and this is proved by examination of the isotype (*Rusby 1490*) preserved in the Chi. Nat. Hist. Mus. herb., nevertheless gradation occurs between sparsely puberulous branches of the inflorescence (such as *Rusby 1490*, *Woytkowski 34065*, *Klug 3144*, *Llewelyn Williams 7317* and *7662*) to densely ferruginous or brown-purple pubescent types, exemplified by *Lawrance 138* from Colombia, *Macbride 4515*, *4905*, and *5186* from Peru, *Cuatrecasas & Jaramillo 12031* and *Cuatrecasas 11592* from Colombia, and *Gehriger 461* and *Steyermark 55746* from Venezuela.

Baccharis venulosa was described by De Candolle as possessing 15-20 florets in the staminate heads. In the type collection (*Rusby 1490*) of *B. lanceolata* Rusby the staminate heads were found to possess 26 and 28 flowers. A count taken from staminate heads of the other collections which I would refer to *B. venulosa* reveal the following variation in number. Venezuela: 24 in *Pittier 12790*, 28 in *Steyermark 55746*, 23 and 26 in *Gehriger 461*; Colombia: 31 in *Cuatrecasas & Jaramillo 12031*; Peru: 33 in *Llewelyn Williams 7662*. Thus, variation in staminate heads was found to vary in number of florets from 23-33.

Examination of pistillate heads from collections ranging from Peru to Venezuela revealed variation in number from 15 to 26. Leaf variation ranged from narrowly oblanceolate to broadly oblanceolate, from 9-33 mm. wide, and from glabrous on the lower surface to sparsely appressed-pubescent or rather densely puberulous. The branches are densely foliose with short close internodes or they are less foliose with longer internodes. In the var. *cuspidibracteata* the internodes are short, the leaves narrowly oblanceolate and closely crowded, and glabrate on the lower surface.

***Calea clematidifolia* Steyermark, sp. nov.**

Scandens, caulibus junioribus manifeste hirsutulo-villosis vetustioribus parce villosis glabrescentibus; foliis oppositis petiolatis, petiolis 4-11 mm. longis hirsuto-villosis, laminis ovatis rugosis apice acuminatis basi truncatis vel paullo subcordatis 3.5-6 cm. longis 1.5-3.2 cm. latis, subtus pallido-viridibus chartaceis plerumque 3-plinerviis utroque 5-7 crenato-dentatis supra scabris pilis tuberculato-hispidis praeditis, subtus villosis praecipue ad nervos venasque glandulis sessilibus obtectis, junioribus valde villosis; umbellis simplicibus terminalibus et axillaribus 6-10-capitulibus; capitulis discoideis subsessilibus vel brevipedicellatis; pedicellis 0.5-7 mm. longis hirsutulo-villosis; involucri squamis valde 4-5-seriatis, extimis ovatis obtusis 2.3-2.5 mm. longis 1.4-1.5 mm. latis, interioribus ligulato-oblongis vel lineari-oblongis obtusis vel rotundatis 5.5-6.5 mm. longis 1.5-1.7 mm. latis supra medium ciliolatis extus parce puberulis; receptaculo subconico; squamis complicatis ovato-lanceolatis acuminatis vel obtusis apice productis scariosis 5-6 mm. longis 2-2.2 mm. latis, marginibus ad et infra medium irregulariter eroso-serratis glabris; floribus omnibus hermaphroditis tubulosis circiter 10, flavis glabris 4.5-5 mm. longis, infundibuliformibus, tubo 2.3-2.5 mm. longo superne ampliato quinquefido; laciniis lineari-lanceolatis 1.8-1.9 mm. longis 0.4-0.5 mm. latis; pappi paleis lineari-subulatis longiacuminatis 19-22 subaequalibus corolla paullo brevioribus 4.5 mm. longis serrulatis; achaeniis nigris 2-2.1 mm. longis ad apicem et supra medium parce hirtellis pilis adscendentibus praeditis.

Type in herb. Chi. Nat. Hist. Mus., collected along stream in Gran Sabana, between Kún and Uadua-parú, in valley of Río Kuke-nán, south of Mount Roraima, state of Bolívar, alt. 1065-1220 m., October 1, 1944, *Julian A. Steyermark* 59072, "vining or sprawling; involucre stramineous; corolla dull yellow; leaves rugose, dull green above, paler below."

This species somewhat resembles *C. Berteriana* DC. and *C. prunifolia* H.B.K. From *C. Berteriana* it differs in the climbing habit, narrower more manifestly graduated involucre, hairs of the lower leaf surface longer and sparser, and hairs of the upper leaf surface longer. From *C. prunifolia* it may be distinguished by the non-punctate lower surface of the leaf-blades, which are more truncate or subcordate at base, shorter pedicels, and fewer heads.

Calea lucidivenia Gleason & Blake, forma ***lanceolata*** Steyermark, f. nov.

A typo differt foliis angustioribus, lanceolatis vel elliptico-lanceolatis petiolatis, petiolis 3-4 mm. longis, laminis 1.7-4 cm. longis 0.4-1.2 cm. latis plerumque 3-plinerviis utrinque glaberrimis; capitulis (radiis exclusis) 7-9 mm. altis 9-13 mm. latis.

Type in herb. Chi. Nat. Hist. Mus., collected on grassy banks along streamlet, Gran Sabana, bordering forest near Río Karuai, northwest of Mission of Santa Teresita de Kavanayén, state of Bolívar, alt. 1220 m., October 26, 1944, *Julian A. Steyermark 59408*, "rays yellow; leaves deep green both sides, subcoriaceous,"

This form may be distinguished by the narrower lanceolate or elliptic-lanceolate triplinerved glabrous leaf blades, but grades by degrees of variation into typical *Calea lucidivenia*. In *Steyermark 60299*, collected from the same area approximately as was the type collection of the new form, some of the leaves on a few branches are markedly narrower and mostly triplinerved, while those on other stems are broader, ovate, and mostly 5-plinerved. With the narrowing of the leaf blade, the marginal pair of nerves disappear.

The original description of the species (*Brittonia* 3, part 2: 195-196. 1939) refers to the plant as "probably a shrub...; stems.... usually simple." In the collections of *Steyermark 60299* from the base of Ptari-tepuí and *Steyermark 59307* from south of Mount Roraima, both referable to *Calea lucidivenia*, the plants are noted as "shrubby, 6-8 feet tall" (*Steyermark 59307*) and as "herb, erect with several stems, 3 feet tall" (*Steyermark 60299*). Moreover, the leaf blades in these collections vary from 1.7-5.2 cm. long and 0.6-2.5 cm. wide. They are erect or suberect. The pappus consists of 15-18 pales which are 4.5-5.5 mm. long. The original description may be emended thus: "herbacea vel suffruticosa, caulibus pluribus 1-2.2 m. altis; foliis 1.7-5.2 cm. longis 0.6-2.5 cm. latis, erectis vel suberectis; pappi paleis 15-18, 4.5-5.5 mm. longis." In *Steyermark 60299*, some of the leaves vary from narrowly lanceolate and triplinerved (forma *lanceolata*) to ovate and elliptic-ovate and 5-plinerved (typical *C. lucidivenia*). The minute sparsely strigillose pubescence, viewed only under high magnification in typical *C. lucidivenia* is not even apparent in the type of forma *lanceolata*, but, on the other hand, some of the leaves in typical *C. lucidivenia* are practically glabrous, some are glabrescent, and some are sparsely and more or less strigillose.

Calea Oliverii Robinson & Greenman, var. ***taeniotricha*** Steyermark, f. nov.

A typo differt pilis caulium petiolorumque foliorumque et pedicellorum longioribus elongatis multicellularibus.

Type in herb. Chi. Nat. Hist. Mus., collected in savanna, border of woods, bordering forest near Río Karuai, northwest of Mission of Santa Teresita de Kavanayén, state of Bolívar, alt. 1220 m., October 26, 1944, *Julian A. Steyermark 59403*, "rays yellow; leaves dull green."

Typical *Calea Oliverii*, originally collected from the region at the base of Mount Roraima ("Arapoo River"), and subsequently collected in the vicinity of Arabupu (Mount Roraima district) by Pinkus (no. 76), and on the forested southwest-facing slopes of Mount Roraima by Steyermark (no. 58651), has short scabrous pubescence on the stems and petioles, and scabrous scattered pubescence on the foliage, especially on the midrib and nerves of the lower leaf surface. In variety *taeniotricha* the hairs, especially in the upper part of the stem, on the pedicels, and on the midrib and nerves of the lower leaf surface are quite evident, due to their more elongated and several-celled condition.

Although *C. Oliverii* was described originally as having the leaves occurring in 3's, they may be opposite in pairs, or even in 4's (Steyermark 58560, in part on one branch).

Clibadium surinamense L., var. *macrophyllum* Steyermark, var. nov.

Folia magna, petiolata, petiolis 2.4-4.2 cm. longis dense puberohirsutulis, laminis elliptico-ovatis vel late ovatis apice acuminatis basi cuneatis vel acutis 15-20 cm. longis 4.5-12 cm. latis supra scabridis subtus molliter cano-pubescentibus crebre serrulatis; inflorescentiis corymbosis trichotome ramosis 13-15 cm. latis; involucri squamis late ovatis vel suborbiculari-ovatis acutis vel mucronatis superne parce hirtellis inferne glabrescentibus marginibus hirsutulis; floribus exterioribus foemineis 4-6; floribus interioribus sterilibus plerumque 8.

Type in herb. Chi. Nat. Hist. Mus., collected on Cerro Turumiquire, north-facing slopes between La Trinidad and Quebrada El Boquerón, southwest of Cocollar, state of Sucre, alt. 1700-1840 m., May 3, 1945, Julian A. Steyermark 62437, "shrub 6-8 feet tall; leaves membranaceous, dull green above, gray green below; flowers white; anthers blackish."

This variety differs from most of the material of *Clibadium surinamense* in the much larger, longer, and broader leaves, and more sparsely pubescent and generally narrower involucral bracts.

Erigeron venezuelensis Steyermark, nom. nov.

Erigeron affinis Badillo, Bol. Soc. Venez. Cienc. Nat. 10: 308. 1946, not *Erigeron affinis* DC. Prodr. 5: 289. 1836.

The mature achenes in this species are glabrous, 3 mm. long, and costate. The margins of the leaf-blades are ciliate-glandular. The bracts of the scape, the scape itself, and the bracts of the involucre all are glandular-puberulent.

Eupatorium crassicaule Steyermark, sp. nov.

Perenne herbaceum superne ramosum, caulibus glaberrimis crassiusculis viridibus ramis oppositis; internodiis 2-2.5 cm. longis; foliis oppositis petiolatis, petiolis 2.7-4 cm. longis; laminis membranaceis subcrassiusculis pallido viridibus elliptico-ovatis apice subacutis basi subito cuneatim acutis 6-10.5 cm. longis 2.7-4.5 cm. latis, marginibus argute dentatis, dentibus utroque 26-30 acute callosopendiculatis, utrinque glabris, penninerviis, nervis lateralibus

utroque 4-5; corymbis ramos terminantibus laxifloris; inflorescentiae ramis elongatis plerumque trichotomis 6-11 cm. longis subnudis inferne glabris vel glabriusculis superne puberulentibus, folia excedentibus; pedicellis 2-5 mm. longis dense puberulis pilis incurvis praeditis; capitulis 22-26-floris 4.5-5.5 mm. longis; involucri squamis valde inaequalibus ca. 4-seriatim imbricatis ca. 27 pallido viridibus, extimis brevissimis suborbicularibus vel late ovatis rotundatis vel obtusis 1.5-1.6 mm. longis 1.1-1.3 mm. latis, intermediis late oblongis rotundatis 2.5-3 mm. longis 1.1-1.2 mm. latis, intimis ligulato-oblongis vel oblanceolato-oblongis obtusis vel subobtusis 3.6-4.2 mm. longis 0.7-0.8 mm. latis plerumque valde 1-nervatis, exterioribus et intermediis 3-nervatis, dorso puberulis apicem versus ciliolatis; corollis albis 2.7-2.8 mm. longis, tubo cylindrico glabro, lobis dorso villosis; achaeniis nigris 1.3-1.4 mm. longis angulis scabratis; pappi setis 22-23 delicatulis albis 2.8-3 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected on Esmeralda Ridge, between Esmeralda and base of Cerro Duida, Territorio Federal Amazonas, alt. 150 m., August 21, 1944, *Julian A. Steyermark 57749*, "herb with somewhat succulent stem, forking or branching above from the main stem into slender green stems; leaves subfleshy-membranaceous, pale rich green above and below; flowers white; bracts pale green."

This species belongs to the section *Subimbricata* as treated by Robinson, and is closely related to *E. cerasifolium* (Sch. Bip.) Baker of the Upper Amazon region in Brazil. It differs from that species mainly in the scabrous achenes, the rounded or obtuse puberulent involucre bracts, the longer and pubescent pedicels, and more laxly-flowered inflorescence.

Eupatorium duidense Badillo

The affinities of this species are indicated by Badillo to be with *E. Tatei* Rob. of Mount Duida. However, a critical study of *E. duidense* indicates that it is much more closely related to *E. fuscum* and *E. kavanayense* than to *E. Tatei*. The bracts of the involucre of *E. duidense* are narrowly linear-oblong and acutish as in *E. fuscum* and *E. kavanayense*, whereas in *E. Tatei* they are broadly oblong and mostly obtuse or rounded. The shape and pubescence of the leaves, moreover, in *E. duidense* is much more like that existing in *E. fuscum* and *E. kavanayense*, but the apex of the leaves in *E. duidense* is acute to acuminate, whereas that of *E. fuscum* and *E. kavanayense* is obtuse to rounded. The leaves of *E. duidense* are more densely pubescent on both sides than in *E. fuscum* and closely approach the condition found in *E. kavanayense*. However, in *E. duidense*, the leaves are 3-nerved from the base itself, whereas in *E. fuscum* and *E. kavanayense* the leaves are 3-5-plinerved above the base.

The differences may be summarized in the following key:

Leaves obovate or elliptic, broadest at or above the middle, cuneate or narrowed toward the base; leaves glabrous on both surfaces; middle and inner involucre bracts broadly

oblong, rounded or obtuse at apex *E. Tatei*
 Leaves broadly ovate, broadest at the base; leaves pubescent on one or both surfaces; middle and inner involucre bracts narrowly linear-oblong, acute or acutish.

Leaves acute to acuminate, 3-nerved at the base

..... *E. duidense*
 Leaves obtuse or rounded, 3-5-plinerved above the base.

Involucre bracts 5-7 mm. long; heads 8-9 mm. long, 11-19-flowered; achenes sparsely puberulous; upper leaf surface remotely puberulent except along tomentulose nerves; lower leaf surface tomentulose but the tomentum not hiding the dark punctations

..... *E. fuscum*
 Involucre bracts 3.5-4 mm. long; heads 6-7 mm. long, 6-9-flowered; achenes densely puberulous; upper leaf surface prominently puberulous; lower leaf surface densely tomentulose, masking the punctations

..... *E. kavanayense*

Eupatorium ibaguense Sch. Bip.

E. articulatum Sch. Bip. Engl. Bot. Jahrb. 40: 385. 1908; *E. ptaretepuense* Badillo, Bol. Soc. Venez. Cienc. Nat. 68: 291-292. 1946.

The type of *E. ptaretepuense* (*Steyermark 59916*) was described by Badillo as having glabrous corollas. However, an examination of the type collection by the present author reveals the corollas to be definitely villous. The villous character of the corolla is shared with *E. ibaguense* and *E. articulatum*. The description for *E. ptaretepuense* should be emended thus: "corollis villosis."

A study of these three species does not disclose any differences by which they can be separated from one another. There is great variability in the abundance of pubescence of the stem, leaves, and involucre bracts. The differences in the number of teeth on the leaf-margins, a character Robinson uses to separate *E. ibaguense* and *E. articulatum*, breaks down. For example, *Steyermark 61830*, from the state of Monagas, has 7-12 teeth on each margin. The upper leaf surface may be glandular or glabrescent, while the corollas vary in color from white to lilac. While the tips of the involucre bracts are mostly acute in all three species, they are often more erose at the summit in specimens labelled *E. ibaguense* by Robinson. In other respects, I can find no constant differences for separating these entities from one another.

Eupatorium kavanayense Badillo

In his description of this species, the heads are stated by Badillo to be "6-7-flora." A dissection of several heads of the type collection reveals a variation from 6-9 flowers in different heads. Although no mention was made by Badillo at the time of the description as to the nearest affinity of this new species, it may be stated, after careful study, that it is closely related to *E. fuscum* N. E. Brown of Mount Roraima. It differs from the Roraima species principally

in the smaller fewer-flowered heads, shorter involucre bracts, more densely glandular-puberulous achenes, and leaves more abundantly puberulous on upper surface. Both species have in common a similar type of leaf-nervation, in which 3-5 main nerves arise above, rather than at the base, are obtuse or rounded at the apex, and on the lower surface are prominently reticulate with upraised nerves and secondary veins.

Eupatorium pharcidodes Robinson, var. **sororopanensis** Steyermark, var. nov.

Perenne herbaceum ramosum 1-1.3-metralis; ramis teretibus dense breviterque vinaceo-brunneo-tomentellis, internodis 4-7.5 cm. longis; foliis oppositis petiolatis, petiolis 6-15 mm. longis vinaceo-brunneo-tomentellis; laminis firme membranaceis ovatis vel elliptico-ovatis apice acutis basi cuneatis 4-10.5 cm. longis 1.5-4 cm. latis supra scabridulo-puberulis ad costam mediam et nervos dense tomentellis rugosis, subtus fulvo-virescentibus breviter velutinis, punctatis, supra basin 3-5-nervis aliter penninerviis, nervis lateralibus utroque 4-7 subtus praesertim valde prominulis anastomosantibus cum rete venularum marginibus crenato-dentatis, dentibus 0.5-1 mm. altis utroque 9-27; paniculis terminalibus; capitulis cylindricis 6-9-floris 9-10 mm. longis breviter pedicellatis in glomerulos subsphaericos aggregatis, pedicellis 2-3 mm. longis dense puberulis; involucri bracteis 6-7-seriatim imbricatis arcte adpressis apice rotundatis dense ciliatis dorso pallido-viridibus tenuiter 3-5-nervatis glabris vel glabriusculis; achaeniis brunneis 3-3.2 mm. longis angulis scabridis; pappi setis plerumque 30-35 albidis.

Type in herb. Chi. Nat. Hist. Mus., collected on rocky hematite exposures at west end, on summit, Sororopán-tepuí, state of Bolívar, alt. 2225-2255 m., November 13, 1944, *Julian A. Steyermark 60090*, "herb 3-4 feet tall; flowers white; bracts pale green."

Cotype in herb. Chi. Nat. Hist. Mus., collected along base of south-facing high sandstone bluffs, Ptari-tepuí, state of Bolívar, alt. 2410 m., November 6, 1944, *Steyermark 59868*, "branched herb; leaves rugose, membranaceous, dull green above, duller paler green below."

This differs from *E. pharcidodes* Rob. of Mount Roraima in the larger leaf blades with larger, more numerous, and more conspicuous teeth, longer petioles, and lower surface of leaf blades more conspicuously punctate due to the less abundant pubescence. From *E. pharcidodes* var. *pentantha* Blake of Mount Auyan-tepuí it differs in the 6-9- instead of 5-flowered heads. From *E. Tyleri* Rob. of Mount Duida this differs in the harsher more conspicuously rugose leaves much less narrowed toward the base, the margins more prominently and more acutely toothed, and the lower surface of the leaf blades less pubescent and, therefore, more obviously punctate.

This is treated as a variety of *E. pharcidodes*, as it appears to differ from that species mainly in relative vegetative differences of leaf tomentum, size, and margin.

Eupatorium pycnocephalum Less.

Eupatorium monagasense Badillo, Bol. Soc. Venez. Cienc. Nat. 68: 293-294. 1946.

In describing *E. monagasense*, Badillo assigns the species to the section *Eximbricata*. However, an examination of the type collection (*Steyermark* 61839) and of the other collections cited by Badillo (*Steyermark* 61834 and 62476) shows an involucre distinctly graduated into a series of at least 3 successively shorter bracts, the outermost being much shorter than the innermost, and intermediate ones shorter than the innermost and longer than the outermost series. The species described by Badillo is obviously a member of section *Subimbricata*. Moreover, the characters of obtuse to rounded intermediate and innermost involucral bracts, the number of florets in a head (14-22), the herbaceous perennial habit, color of florets, arrangement of heads in the inflorescence, shape and venation of leaves, and pubescence all merge in conspecific characters with those of *E. pycnocephalum* Less. This species varies in pubescence of stems and leaves, and in color of involucral bracts, but *E. monagasense* in no sense can be differentiated from it. Although the achenes in *E. monagasense* are glabrous, those in *E. pycnocephalum* vary from glabrous to minutely scabridulous on the angles.

Eupatorium roraimense N. E. Brown

This species differs from *E. ibaguense* (including *E. ptaretepuinense* and *E. articulatum*) chiefly in the glabrous corollas. The involucral bracts are also mainly glabrous.

Originally described from Mount Roraima, it was characterized as having a rose-purplish pappus. The color of the pappus is variable, however, as recent collections from the type locality show. *Steyermark* 58781, collected just below the summit of the southwest-facing portion of the sandstone ledge, at nearly 2620 meters elevation, shows the pappus with a rose-red color, and it was so noted in the field.

Steyermark 58692, collected near Rondón Camp, lower down on the same mountain, at an elevation of 2040-2130 meters, has a white pappus, but in all other respects is the same. This latter form may be designated **Eupatorium roraimense** N. E. Brown, forma **albisetum** *Steyermark*, f. nov.

A typo differt pappi setis albidis.

Type in herb. Chi. Nat. Hist. Mus., collected on forested southwest-facing quebrada near Rondón Camp, Mount Roraima, state of Bolívar, alt. 2040-2130 m., September 26, 1944, *Julian A. Steyermark* 58692, "branching herb 2-3 feet tall; leaves membranaceous, dull green with sulcate nerves above, paler green below; flowers white; involucre dull pale green."

Eupatorium roupalifolium Robinson, forma **latifolium** *Steyermark*, f. nov.

A typo differt laminis latioribus 12-16 cm. longis 5-7 cm. latis grosse serratis, dentibus 1.5-2.5 mm. altis; corymbi ramulis dense

pilosis pilis multicellularibus patentibus instructis.

Type in herb. Chi. Nat. Hist. Mus., collected on Ptari-tepuí, on forested south-facing slopes overlying sandstone, on "Cave Rock" above "Cave Camp," state of Bolívar, alt. 1810 m., October 28, 1944, *Julian A. Steyermark 59505*.

Typical *E. roupalifolium* Rob. is known from Mount Roraima, where it was originally collected by Im Thurn and again in 1884 by Jenman. In typical *E. roupalifolium* the leaf blades are much narrower with smaller teeth and the branches of the inflorescence and pedicels are shortly or inconspicuously appressed-pubescent or pilosulous, whereas in *f. latifolium* the pubescence is longer, more spreading, and conspicuous.

When Dr. Robinson described *E. roupalifolium* (Proc. Am. Acad. 55: 30. 1919), he stated that the species was "very different from any species known" and "has somewhat the habit of a *Symphypappus*, but the pappus-bristles are capillary and distinct to the base, showing no tendency to become firm or to be connate into a ring. It may here be mentioned that recent examination of *Symphypappus* leads to the belief that it is an exceedingly weak genus of very doubtful distinctness and little taxonomic value. Its distinctions from *Eupatorium*, both technical and habitual, break down completely."

It is to be noted that the specimens used by Dr. Robinson in drawing up his description of this species were in poor condition, where insect damage to immature achenes had taken place. Apparently, the damage suffered by the achenes had been so destructive that they were in no condition to describe, as no mention of them appears in the specific description. It is unfortunate that these achenes were immature and damaged, as Dr. Robinson could not, therefore, form a fair opinion as to the true nature of the pappus-bristles.

A recent collection of a topotype specimen of this species from Mount Roraima by the present author (*Steyermark 58724*) has mature achenes and pappus, and the specimen is in good flowering and fruiting condition. This collection shows that most of the heads are 6-flowered instead of 5-flowered, as was stated by Dr. Robinson in his original description. Contrary to Dr. Robinson's statement, this topotype shows the bristles of the pappus to be firm and definitely connate into a ring at the base, as is the condition in *Symphypappus*. As a matter of fact, it closely simulates in habit a species of *Symphypappus*, *S. reticulatus* Baker, of Brazil, which shows a similar type of pappus having the bristles firm and connate at the base. In other words, the technical characters of the pappus place the plant of Roraima in *Symphypappus*, and it should be so considered generically, if that genus is maintained. However, Dr. Robinson, on several different occasions, expressed lack of confidence in this genus as being distinct from *Eupatorium*, and contended that the differences separating it from *Eupatorium* broke down and failed to hold. Nevertheless, he maintained *Symphypappus* as

a distinct genus up to the time of his death in 1935, the last species published, *S. Casarettoi* Rob. and *S. tetrastichus* Rob., appearing in 1934.

The present author believes, in view of Dr. Robinson's long experience with the genus *Eupatorium* and his own contentions that the genus *Symphypappus* is a weak one and cannot be well separated from *Eupatorium* on the basis of the connate firm base of the pappus bristles, that the two genera should be united under *Eupatorium*, the older generic name. Numerous species of *Eupatorium*, such as *E. acuminatum* H.B.K., exhibit a similar type of pappus condition as is encountered in *Symphypappus*. Moreover, species, such as *E. roupalisolium* and *E. acuminatum*, have either the habitual or technical characters or both of *Symphypappus*, and break down the differences separating the two genera.

It is proposed, therefore, that the genus *Symphypappus* be merged with *Eupatorium*, with the following recognized species:

***Eupatorium Benjamin-Lincolnii* Steyermark, nom. nov.**

Symphypappus reticulatus Baker, in Mart. Fl. Bras. 6, pt. 2: 367. 1876.

***Eupatorium Benjamin-Lincolnii*, var. *itacaluminense* (Sch. Bip. ex Baker) Steyermark, comb. nov.**

Symphypappus reticulatus var. *itacaluminensis* Sch. Bip. ex Baker in Mart., Fl. Bras. 6, pt. 2: 368. 1876.

***Eupatorium Benjamin-Lincolnii*, var. *vernicosum* (Baker) Steyermark, comb. nov.**

Symphypappus reticulatus var. *vernicosus* Baker, in Mart. Fl. Bras. 6, pt. 2: 368. 1876.

***Eupatorium Casarettoi* (Rob.) Steyermark, comb. nov.**

Symphypappus Casarettoi Rob., Candollea 5: 170. 1934.

***Eupatorium compressum* Gardn. in Hook. Lond. Jour. Bot. 5: 473. 1846.**

Symphypappus compressus (Gardn.) Rob. Contrib. Gray Herb. 80: 12. 1928; *Symphypappus polystachyus* Baker, in Mart. Fl. Bras. 6, pt. 2: 368. 1876, as to plant described and figured, not as to name-bringing synonym.

***Eupatorium crenulatum* Spreng.**

Eupatorium polystachyum DC. Prodr. 5: 149. 1836; *Eupatorium dendroides* Spreng.

***Eupatorium cuneatum* DC. Prodr. 5: 149. 1836.**

Symphypappus cuneatus Sch. Bip. ex Baker, in Mart. Fl. Bras. 6, pt. 2: 367. 1876.

***Eupatorium cuneatum*, forma *intermedium* (Dusén) Steyermark, comb. nov.**

Symphypappus cuneatus f. *intermedius* Dusén ex Malme Kgl. Sv. Vet. Akad. Handl. ser. 3, 12, no. 2: 31. 1933.

Eupatorium harvardianum Steyermark, nom. nov.

Symphypappus viscosus Sch. Bip. ex Baker in Mart. Fl. Bras. 6, pt. 2: 366. 1876, not Sch. Bip. in herb.; *Mikania viscosa* Spreng. Neue Entdeck. 1: 277. 1820.

Eupatorium leptophlebium (Rob.) Steyermark, comb. nov.

Symphypappus leptophlebius Rob. Contrib. Gray Herb. 96: 18. 1931.

Eupatorium LymanSmithii (Rob.) Steyermark, comb. nov.

Symphypappus LymanSmithii Rob. Contrib. Gray Herb. 96: 19. 1931.

Eupatorium myricifolium (Rob.) Steyermark, comb. nov.

Symphypappus myricifolius Rob. Contrib. Gray Herb. n. s. 68: 6. 1923.

Eupatorium pennivenium (Rob.) Steyermark, comb. nov.

Symphypappus pennivenius Rob. Contrib. Gray Herb. n. s. 68: 7. 1923.

Eupatorium Symphyopappus Steyermark, nom. nov.

Symphypappus decussatus Turcz. in Bull. Soc. Nat. Mosc. 21, 1: 584. 1848.

Eupatorium Symphyopappus, var. **Pohlianum** (Baker) Steyermark, comb. nov.

Symphypappus decussatus var. *Pohlianus* Baker, in Mart. Fl. Bras. 6, pt. 2: 367. 1876.

Eupatorium tetrastichum (Baker) Steyermark, comb. nov.

Symphypappus tetrastichus Rob. Contrib. Gray Herb. 104: 8. 1934.

Eupatorium roupalifolium Rob., var. **subintegrifolium** Steyermark, var. nov.

A typo differt internodiis elongatis 3-9.5 cm. longis et foliis oppositis vel ternatis, laminis elliptico-lanceolatis apice subacutis vel obtuse acutis basi cuneatis 6-9.5 cm. longis 1.3-2.5 cm. latis subintegrifoliis vel parce et remote denticulatis, dentibus utroque 5-8, 0.5 mm. longis 0.5 mm. latis; floribus purpureis; involucri bracteis apicem versus minute ciliolatis dorso plerumque glabris; achaeniis glabris 1.7-1.8 mm. longis; pappi setis 2.8-3 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected on Pтари-tepuí, at base of steep forested slopes of first line of sandstone bluffs, on south-facing part, east of "Cave Rock," state of Bolívar, alt. 2130 m., November 4, 1944, Julian A. Steyermark 59865, "stems elongated; leaves subentire and narrower than typical form; flowers lavender."

This unusual variation may be a response to more shade and moisture, where it was growing in the protection afforded by its habitat at the base of the bluffs. This is indicated by the more elongated stems. The occasional occurrence of leaves in 3's also differs from the usual opposite condition, although leaves occurring in pairs were

also collected. The variety is placed under *E. roupalifolium* because of the fewer 5-6-flowered lavender heads, whereas in *E. tepuianum*, described below, the heads are 6-8-flowered and the flowers are white. The glabrous achenes of var. *subintegrifolium* are more characteristic, however, of *E. tepuianum*.

***Eupatorium stevioides* Steyermark, sp. nov.**

Frutex 1.8-metralis; caulibus novellis teretibus 4-6 mm. diam. fusco-atropurpureis subglabris junioribus apicem versus vernicosis, internodiis 1-3 cm. longis; foliis oppositis breviter petiolatis, petiolis 4-6 mm. longis 2-4 mm. latis basi paullo dilatatis supra canaliculatis, laminis subcoriaceis supra atroviridibus vemicosis, oblongo-ovatis vel subelliptico-ovatis apice acutis vel subobtusis basi subito cuneatim angustatis, caulinis superioribus principalibus 5-10.8 cm. longis 3-6 cm. latis, penninerviis, nervis lateralibus principalibus utroque latere 9-11 patenti-adscendentibus venis ante marginem 3-7 mm. anastomosantibus utrinque tenuissime reticulatis supra glabris subtus glabris vel glabrescentibus, marginibus crebre crenato-dentatis, dentibus 0.5 mm. altis 2-5 mm. latis; corymbis terminalibus sessilibus trichotomis multicapitulatis planiusculis 9.5-12 cm. diam.; capitulis 5-floris 7-8 mm. altis 3-4 mm. diam.; involucri squamis 9 inaequalibus 3-seriatim imbricatis viscidis extimis oblongo-lanceolatis obtusis 2.5-3 mm. longis ceteris oblongo-oblanco-latis obtusis 4.5-5.5 mm. longis 1.25-1.75 mm. latis; corollis 4-4.8 mm. longis, tubo 1.8-2 mm. longo, lobis ca. 1 mm. longis ovato-lanceolatis acutis; achaeniis nigris 2.2-2.5 mm. longis ad atque inter costas glandulis sessilibus dense obtectis; pappi setis inaequalibus 33-35 albidis.

Type in herb. Chi. Nat. Hist. Mus., collected along narrow quebrada where wooded with dwarf shrubs, Páramo de la Negra, between Bailadores and La Grita, state of Tachira, alt. 2745-3045 m., July 7, 1944, *Julian A. Steyermark 57084*, "shrub 5 feet tall; leaves subcoriaceous, dark green above, dull green below, glutinous."

This is distinguished from *E. Jahonii* Rob., the type of which I have examined, by the glabrous or glabrescent crenate-dentate leaves abruptly narrowed at the base with lower more rounded crenations, smaller heads of flowers with each head consisting of only 5 disk florets of much smaller size than in *E. Jahonii*, only 9 involucre bracts, and the achenes densely glandular with sessile glands on and between the angles. Although Robinson described the achenes in *E. Jahonii* as "in costis sursum hispidulis" and fails to mention the occurrence of glands on the achenes, an examination of the type specimen (*Jahn 80*) shows numerous such glands scattered along the angles of the achenes and fewer between the angles. In *E. stevioides* the glands are much more conspicuous and numerous, but the hairs present on the angles of the achenes of *E. Jahonii* are not evident. A fungus hyphal growth on the flowers of the type specimen of *E. stevioides* creates the impression of the occurrence of pubescence, but is, of course, an extraneous growth.

***Eupatorium tepuiantum* Steyermark, sp. nov.**

Perenne herbaceum vel fruticosum 1-1.3-metralis; caulibus subteretibus crassiusculis glaberrimis, internodiis 1.5-2 cm. longis; foliis oppositis petiolatis, petiolis 4-13 mm. longis; laminis subcoriaceis lucidulis elliptico-lanceolatis vel oblongo-ellipticis utroque angustatis apice obtuse acutis basi cuneatis in petiolum decurrentibus 5-11.5 cm. longis 1.2-5 cm. latis, penninerviis, nervis lateralibus principalibus utroque 4-6 valde adscendentibus venis secundariis numerosis longitudinaliter adscendentibus anastomosantibus subparallelibus subtus prominulis, glabris, grosse serratis basi integris exceptis, dentibus utroque 6-18, 1-2.5 mm. longis; corymbis terminalibus trichotomis aggregatis dense multicapitulatis pedunculis pilosis vel inferne glabrescentibus; capitulis 6-8-floris subsessilibus 5-7 mm. longis 2.5-3.5 mm. crassis; involucrio graduatim 3-seriatis 5-6 mm. longis, bracteis oblongis late obtusis vel rotundatis superne purpureis ad apicem prominenter ciliatis pilis multicellularibus purpureis praeditis dorso papillois vel glabrescentibus; corollis albidis 3.1-3.5 mm. longis, tubo glabris, lobis extus et ad apicem pilis glandularibus obtectis; achaeniis brunneis vel nigrescentibus 1.8-2 mm. longis plerumque omnino glabris vel angulis hirtellis; pappi setis basi distincte connatis plerumque 24-27 albidis barbellatis corolla paulo brevioribus vel corollam subaequantibus 2.8-3 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected on Ptari-tepuí, on forested south-facing slopes overlying sandstone, on "Cave Rock" above "Cave Camp," state of Bolívar, alt. 1810 m., October 29, 1944, *Julian A. Steyermark 59504*, "herb or suffruticose plant with several stems 3-4 feet tall; leaves subcoriaceous, rich green above, dull grass green below; rachis pale green; stem in upper part dull lavender; bracts greenish below, lavender above; corolla and styles whitish."

This species has the base of the pappus bristles firm and connate into a ring, and, like *E. roupalifolium* Rob., could truly be placed in the genus *Symphypappus*. But, like *E. roupalifolium* (see discussion above under that species), it is believed that the genus *Symphypappus* is better treated congenerically with *Eupatorium*.

This is very similar to *E. roupalifolium*, and was thought at first to represent that species, but differs in the white instead of lavender flowers of 6-8-flowered, instead of 5-6-flowered heads, generally glabrous instead of pubescent-angled achenes, and in the more prominently ciliate tips of the involucrial bracts, while from the recently described *E. yaviensis* Lasser & Maguire (*E. angulicaulis* Lasser & Maguire) *E. tepuiantum* differs in the 6-8- instead of 8-10-flowered heads, much more strongly ciliate-tipped involucrial bracts with longer hairs, pubescent instead of glabrous pedicels, shorter pappus and corolla, and petiolate leaves with differently shaped blades with more numerous and larger teeth and more prominent secondary veins on the lower surface.

Eupatorium tovarense Robinson

E. cuadrasense Badillo, Bol. Soc. Venez. Cienc. Nat. 10, no. 68: 288-289. 1946.

Steyermark 55800, the type of *E. cuadrasense*, is conspecific with *E. tovarense* Rob., as definitely shown by a study of the type of the latter borrowed from the Gray Herbarium.

Eupatorium venezuelense Badillo

E. pinnangense Badillo, Bol. Soc. Venez. Cienc. Nat. 10, no. 68: 290. 1946.

Eupatorium pinnangense agrees in all respects with *E. venezuelense* Badillo, and must be considered conspecific with that species. In the Catalogo de la Flora Venezolana, vol. 2: 488. 1947, Badillo has taken the same viewpoint, since he cites *Steyermark 56514* (cotype of *E. pinnangense*) under *E. venezuelense*. The heads in the *Steyermark* collection examined by the writer are 9-11-flowered.

Gnaphalium caeruleocanum Steyermark, sp. nov.

Herba; caulibus erectis vel adscendentibus dichotome ramosis dense foliatis densissime caeruleo-griseo-argenteo-lanatis 3.5-4.5 dm. altis; foliis alternis sessilibus confertis internodiis multo longioribus integerrimis, omnibus utrinque densissime caeruleo-griseo-argenteo-lanatis, juvenilibus ad apices ramulorum foliosorum oblanceolatis vel ellipticis utrinque acutis triplinerviis, caulinis et vetustioribus oblanceolatis vel superioribus lanceolatis apice acutis basin versus angustatis vel superioribus subamplexicaulibus, principalibus 3-4 cm. longis 6-15 mm. latis, novellis usque ad 8 cm. longis et 18 mm. latis; inflorescentiis subcorymbosis terminalibus; ramulis inflorescentiae alternis robustis 0.5-4 cm. longis; capitulis apice ramulorum capitato-conglomeratis; involucriis campanulatis ca. 5 mm. longis; squamis 18-21 imbricatis scariosis argenteo-bubalinis, exterioribus late ovatis ca. 3 mm. longis 2.5 mm. latis obtusis vel subacutis medianis oblongo-spathulatis intimis linearibus vel oblanceolato-spathulatis obtusis 5-5.5 mm. longis 1 mm. latis, omnibus parte inferiore dimidia brunneis; floribus ca. 56; hermaphroditis disci ca. 8, corollis 3.6-3.7 mm. longis quinquefidis, lobis 0.4-0.5 mm. longis; floribus foemineis ca. 48, corollis 3.5 mm. longis; pappi setis tenuibus albidis 3.7-3.8 mm. longis remote barbellatis; achaeniis fulvis oblongis 0.7-0.8 mm. longis glabris.

Type in herb. Chi. Nat. Hist. Mus., collected on Cerro Turumiquire, north-facing slopes near summit of eastern peak, state of Sucre, alt. 2200-2500 m., May 6, 1945, *Julian A. Steyermark 62573*, "herb; leaves and stems blue-silvery-gray."

Cotype in herb. Chi. Nat. Hist. Mus., collected among ledges and rocky exposures, Cerro Negro, above La Sabana de las Piedras, northwest of Caripe, state of Monagas, alt. 1500-2180 m., April 15, 1945, *Steyermark 62099*, "leaves gray-silvery-blue as are stems; peduncles silvery-gray; involucre silvery buff; flowers yellowish."

This species is remarkable for the thick, dense, blue-silvery gray tomentum of the leaves and stems, and the very crowded thickish

leaves which overlap one another. The leaves are somewhat reminiscent of *Achyrocline crassipes* Blake of Colombia, a species with few-flowered heads, while the corymbose inflorescence with stout ascending branches suggests that encountered in *Gnaphalium elegans* H.B.K.

Since the two collections were obtained in the Venezuelan Oriente not far from the type locality of *Gnaphalium dichotomum* Willd., an attempt was made to identify the present material with that species. However, in that species the description reads (Willd. ex Sprengel Syst. Veg. 3: 473. 1826) "foliis lanceolatis utrinque attenuatis sessilibus subtrus ramisque albo-lanatis," whereas in our collections both sides of the leaves are densely "albo-lanatis" and only the upper leaves are lanceolate. There does not, in fact, appear to be any described species which matches the present material.

Gongylolepis Martiana (Baker) Steyermark & Cuatrecasas, comb. nov.

Stiffia Martiana Baker, in Mart. Fl. Bras. 6, part 3: 354. 1884; *Gongylolepis maroana* Badillo, Bol. Soc. Venez. Cienc. Nat. 8: 237, fig. 1943.

From an examination of the photograph of the type of *Stiffia Martiana* Baker, and a fragment of the type collection, both preserved in the herb. Chi. Nat. Hist. Mus., it is at once evident that this species is congeneric with *Gongylolepis maroana* Badillo. The type of the latter (*Llewelyn Williams 14394*) was collected from Maroa, Río Guainía, in Venezuela, which is near the type locality (Prov. Alto Amazonas, in montis Aracoara, 500 pedes supra fluvius Japurá) in Brazil where Martius collected *Stiffia Martiana*.

Hieracium Avilae H.B.K.

H. towarensense Fries, Epicris. Hierac. 152. n. 34. 1862; *Pilosella towarensis* Sch. Bip. in Flora 45: 437. 1862.

Although the involucre bracts are described by Humboldt, Bonpland and Kunth as glabrous, an examination of a fragment of the type, together with a photograph of same, preserved in the Chicago Natural History Museum Herbarium reveals the outer involucre bracts, at least, as being definitely pubescent. Other specimens which agree with the pubescence described for the stems and leaves of *H. Avilae* and whose involucre bracts match in details of pubescence those of the fragment of the type preserved are *Steyermark 61692* from the state of Anzoátegui, *Steyermark 62565* from the state of Sucre, and *Vogl 528* collected near the type locality.

It is apparent that the original description of Humboldt, Bonpland, and Kunth should have stated the bracts as being pubescent instead of glabrous.

An examination of the photograph of the type of *Hieracium towarensense* Fries shows that it cannot be separated from *H. Avilae*. By Zahn the involucre is described as "vix vel disperse minutissime glandulosa vix vel sparsim breviter pilosa basi subfloccosa" (Pflanzenreich IV. 280, Abt. 1: 1102. 1921). Although Zahn cites the distribution of *H. Avilae* as from Venezuela and Colombia, he

assigns it to section *Intybiformia*, which he has reserved in his key (loc. cit. p. 1077) for species from Central America. Similarly, one gets a geographical jolt by attempting to follow Zahn's assignment of such South American species as *H. tovarense* Fries of Venezuela and *H. leucanthum* Wedd. of Colombia to the section *Pulmonareiformia*, a section he has reserved in his key (Ibid. p. 1077) for species from boreal America. The involucre bracts in *H. tovarense* are pubescent as they are in *H. Avilae*, and I cannot find any other characters by which it can be separated from *H. Avilae*.

***Hieracium frigidum* Wedd., forma *tamaense* Steyermark, f. nov.**

A typo differt caulibus pilis remote usque ad 6 mm. longis parce praeditis; foliis subtus purpureis remote pilosis pilis elongatis parce praeditis; capitulis 2-3; involucre 11-12 mm. longo, bracteis glandulosis atque sparsim brevipilosis.

Type in herb. Chi. Nat. Hist. Mus., collected in swampy meadow in Paramito between Quebrada de Palmar and Quebrada de Paramito, at base of Páramo de Tamá, 2 kms. above Betania and 7 kms. above Villapaez, state of Táchira, alt. 2500 m., July 14, 1944, *Julian A. Steyermark* 57215, "flowers yellow; leaves with dull lavender below on midrib and surface."

Except for its paucity of pubescence and shorter hairs of the stems, leaves, and involucre, this agrees in most other respects with *H. frigidum* Wedd.

***Hymenostephium viride* Steyermark, sp. nov.**

Herba suffruticosa, caulibus basi lignosis ramosis, ramis inferne tenuiter cinereo-strigillosis supra parce canescentibus, 4-4.5 dm. altis; foliis plerumque oppositis infra inflorescentiam exceptis, petiolatis, petiolis 5-25 mm. longis parce canescentibus; laminis firme chartaceo-membranaceis ovato-vel lanceolato-ellipticis vel lanceolatis, utrinque angustatis, apice acutis vel subacutis basi cuneatis, 5-8.5 cm. longis 0.5-3 cm. latis, triplinerviis, utrinque viridibus parce tenuiter strigilloso-hispidulis, supra densiusculis tuberculato-hispidulis, marginibus remote denticulatis; corymbis longe pedunculatis trichotome dispositis foliis 2-3-plo longioribus parce strigillosis; capitulis 2-5 in quoque ramo paniculae; bracteis subulatis 3-5 mm. longis dense canescentibus; involucri bracteis 2-seriatis 2.8-3 mm. altis, exterioribus ovato-deltaeideis vel late ovatis acutis 2 mm. longis 1 mm. latis extus minute strigilloso-pubescentibus, interioribus oblongo-lanceolatis vel ovato-oblongis acutis 2.8-3 mm. longis 1.1-1.2 mm. latis, extus minute strigilloso-pubescentibus; radiis luteis 5-7, laminis late elliptico-oblongis apice obtusis vel rotundatis 5.5-6 mm. longis 2.8-3.1 mm. latis; disco 6-7 mm. alto 6-8 mm. lato, disci floribus 36, corollis luteis extus minute puberulentibus 3.5-4 mm. longis, lobis ovatis subobtusis 0.6-0.7 mm. longis, limbo cylindrico 2.5 mm. longo, tubo brevissimo 0.5 mm. longo; paleis complicatis flores disci amplectentibus ovato-oblongis apice rotundatis 5.5 mm. longis 2 mm. latis extus praesertim per partem mediam puberulis; achaeniis radii neutris, disci fertilibus nigris obovato-oblongis basi cuneatim angustatis

2.5 mm. longis dense strigillosis pilis erectis obsitis; disci pappi squamellis 4 inaequalibus ovatis vel late oblongis 1-1.3 mm. longis 0.4-0.5 mm. latis supra medium inaequaliter fimbriatis (Fig. 138).

Type in herb. Chi. Nat. Hist. Mus., collected on rocky slopes above Tovar, state of Mérida, alt. 2975 m., July 7, 1944, *Julian A. Steyermark 57063*, "rays and disk yellow."

This species is closely related to *H. angustifolium* Benth. of the Venezuelan Andes. Like that species it possesses pappose achenes, thereby differentiating it from two other Venezuelan species, *H. meridense* Blake and *H. Goebelii* (Klatt) Blake. Future extensive collections may reveal the new species to be no more than varietally distinct from *H. angustifolium*, but for the present it is obviously separated by the broader ovate- or lance-elliptic green instead of gray-green leaves, less densely pubescent on each side, and by the larger achenes more cuneately narrowed at the base. In *H. angustifolium* the achenes are only 1.8-2 mm. long and more rounded at the base.

***Jungia reticulata* Steyermark, sp. nov.**

Frutex scandens; caulibus hirsutis pilis usque ad 3 mm. longis praeditis; foliis alternis petiolatis, petiolis 3-4.5 cm. longis dense hirsutis pilis patentibus usque ad 3 mm. longis praeditis; laminis firme membranaceo-subchartaceis subtus pallide viridibus ambitu rotundato-cordatis cordato-5-7-lobatis vel paullo angulatis, 6.5-9.5 cm. longis 7.5-9.5 cm. latis, lobis late deltoideis apice obtusis vel rotundatis subintegerrimis, terminali maximo usque ad 3 cm. longo 5 cm. lato, marginibus ceterum subintegerrimis, supra hirsutulis pilis usque ad 2 mm. longis praeditis, subtus conspicue reticulatis reticulato albedo impresso praeditis hirsutis praesertim ad nervos principales pilis usque ad 3 mm. longis praeditis, quintupli-vel septupli-nerviis; floribus fructibusque non visis (Fig. 139).

Type in herb. Chi. Nat. Hist. Mus., collected in rich moist woods at base of Páramo de Tamá, 4-10 kms. above Betania, state of Táchira, alt. 2500-2895 m., July 15, 1944, *Julian A. Steyermark 57310*, "leaves firmly membranaceous-subchartaceous, deep green above, pale green below."

Unfortunately, the type collection is sterile. However, the vegetative appearance differs so much from all other known species of *Jungia* that it is obvious that the new entity is a most distinct one. It is well characterized vegetatively by the relatively long spreading hairs of the stems, petioles, and leaf-blades, the shallowly lobed subentire leaf margins, and the prominently whitish reticulum of the lower surface of the leaf blade. In its shallowly lobed leaf-blades it somewhat resembles *J. coarctata* Hier. of Ecuador, but that species has the leaves densely pubescent on the lower surface, the stems densely velutinous-tomentose, and the leaf-margins minutely denticulate.

***Lucilia radians* (Benth.) Steyermark, comb. nov.**

Gnaphalium radians Benth. Plant. Hartweg. p. 207. 1839; *G.*

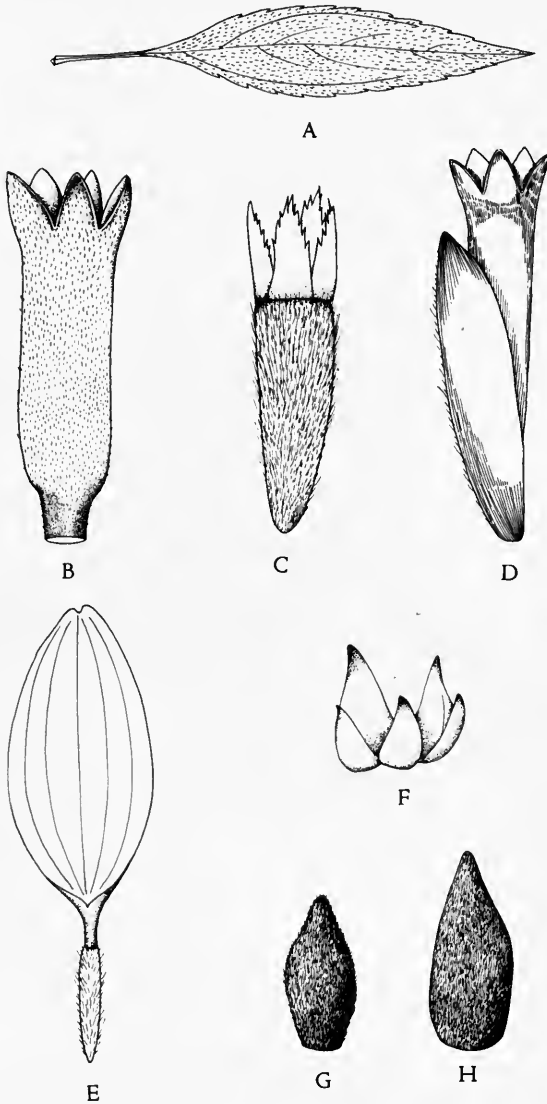


FIGURE 138

Hymenostephium viride

A, Leaf, from above (X 0.5); B, Disk corolla (X 15); C, Disk achene (X 13); D, Pale enveloping disk flower (X 16); E, Ray floret (X 7); F, Involucre (X 5); G, Outer involucrel bract (X 11); H, Inner involucrel bract (X 9).

evacoides Sch. Bip. Bonplandia 4: 54. 1856.

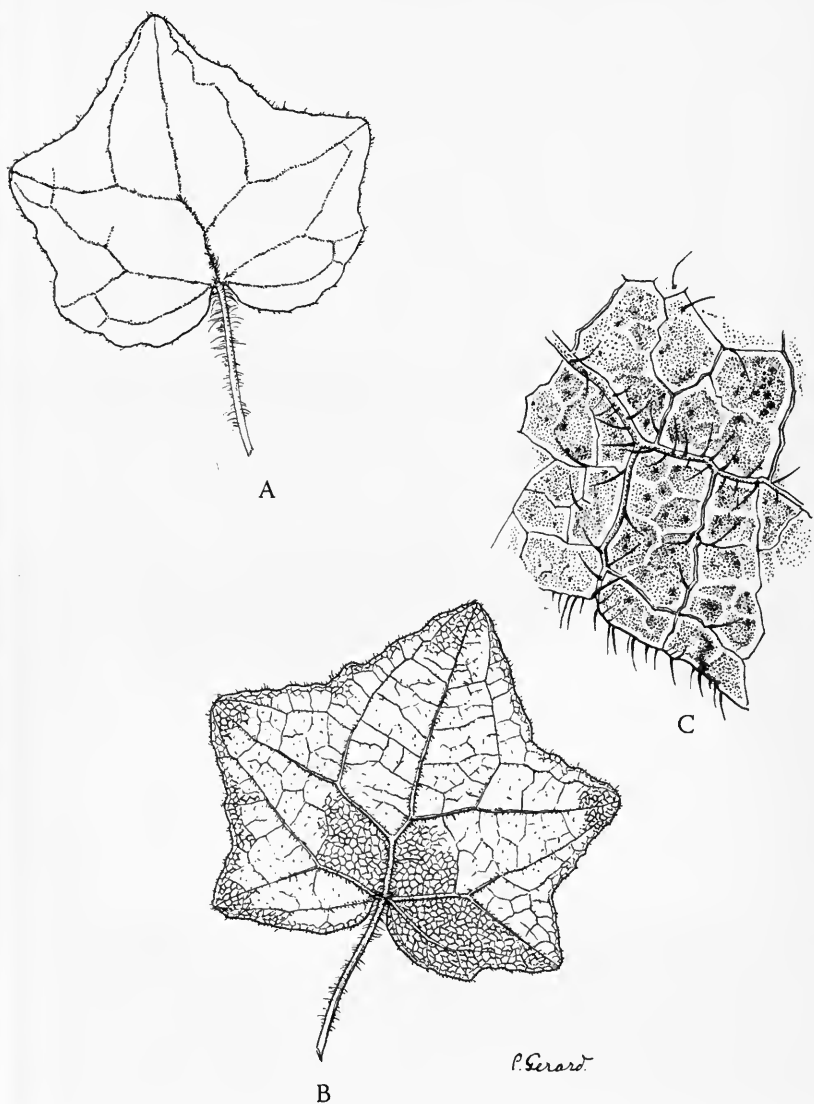
This species, described originally in the genus *Gnaphalium* by Bentham from a plant collected by Hartweg (no. 1146) "prope Laguna de Guanacas, Prov. Popayan," Colombia, has been confused with the very distinct *Lucilia pusilla* (H.B.K.) Hier. The latter, based upon a plant collected in Ecuador, was described originally by Humboldt, Bonpland, and Kunth as a species of the genus *Conyza*. De Candolle in 1836 renamed the plant of Ecuador *Conyza Kunthiana*, as there already was an earlier *Conyza pusilla* Houtt. Weddell in 1855 (Chlor. And. 1: 161) misinterpreted the plant of Colombia described by Bentham (his *Gnaphalium radiatum*) and that of Ecuador described by Humboldt, Bonpland, and Kunth (their *Conyza pusilla*), combining them under the one name, *Merope Kunthiana* (DC.) Wedd., based upon De Candolle's *Conyza Kunthiana*. This same fallacy was perpetrated by Hieronymus in Engl. Bot. Jahrb. 29: 29. 1900, who combines all these under one name, *Lucilia pusilla*.

Sch. Bip. created the new name in 1856 (Bonplandia 4: 54 of *Gnaphalium evacoides*, based upon a plant collected from the Páramo de Mucuchies in Venezuela by Moritz (no. 1407). The latter was treated as a *nomen nudum* and therefore has no nomenclatorial status. However, an examination of a photograph of the type of *Gnaphalium evacoides* and study of material (*Steyermark 55870*) collected near the type locality, together with a comparative study of the photograph of the type of *Gnaphalium radians* Benth., shows that *Gnaphalium radians* Benth. and *G. evacoides* are conspecific.

That *Gnaphalium radians* Benth. (= *Lucilia radians*) and *Conyza pusilla* H.B.K., not Houtt. (= *Lucilia pusilla*) are entirely different species is at once recognized upon a comparative study of them. The achenes of *Gnaphalium radians* are glabrous, those of *Conyza pusilla* densely pubescent, the leaves of *Gnaphalium radians* are obovate or oblong and 3-4 mm. wide, those of *Conyza pusilla* narrowly linear or linear-spatulate and at most 2 mm. wide, and finally, whereas the involucrel bracts of *Gnaphalium radians* are linear or narrowly oblong and obtuse to (the innermost) acute or acutish, those of *Conyza pusilla* are much broader and of a different shape and are all obtuse to rounded. Although the glabrous achenes are at variance with the densely pubescent ones usually associated with *Lucilia*, the possession of other characters, namely, the connate base of the pappus bristles and the dwarf caespitose matted habit with solitary sessile heads, would indicate that the species should be placed in the genus *Lucilia*, if that genus can be maintained as distinct from *Gnaphalium*.

***Lucilia venezuelensis* Steyermark, sp. nov.**

Herba perennis caespitosa, rhizomate sublignoso ramosissimo, caulibus valde abbreviatis densissime foliosis; foliis alternis valde approximatis sessilibus linearibus vel lineari-spatulatis obtusis basibus paulo dilatatis imbricatis 4-6.5 mm. longis 0.8-1.1 mm. latis novellis utrinque dense albido-tomentosis, vetustioribus persistentibus glabrescentibus; capitulis solitariis sessilibus late



P. Serard

FIGURE 139

Jungia reticulata

A, Upper surface of leaf with petiole (X 0.6); B, Lower surface of leaf with petiole (X 0.6); C, Detail of lower surface of leaf (highly magnified).

oblongo-cylindricis vel cylindraceo-campanulatis ca. 8 mm. longis; involucri squamis exterioribus oblongo-lanceolatis subacutis vel obtusis 4 mm. longis 1 mm. latis, mediis oblongo-lanceolatis obtusis 5.5 mm. longis 1 mm. latis interioribus lineari-lanceolatis vel lineari-oblongis apice angustatis obtusis vel subacutis 6-6.5 mm. longis 0.3-0.7 mm. latis scariosis plerumque glabris; floribus hermaphroditis 3-5, corollis tubulosis 5 mm. longis lobis ovato-oblongis obtusis 0.25 mm. longis, pappi setis albidis capillaceis basi connatis; floribus foemineis multis, corollis filiformibus 5.5 mm. longis, lobis subulato-attenuatis inter lobos laceratis, pappi setis albidis capillaceis parce longisetosis corollas excedentibus; achaeniis 1.1 mm. longis dense pilosis pilis erecto-adscendentibus (Fig. 140).

Type in herb. Chi. Nat. Hist. Mus., collected in dry páramo along upper headwaters of Río Tormero, below El Aguila and above Chachopo, state of Mérida, alt. 3650-3965 m., March 13, 1944, *Julian A. Steyermark 55657*, "in dense clumps."

If the characters usually judged to distinguish *Lucilia* from *Gnaphalium* are considered as sufficiently distinctive, namely, the connate base of the pappus-bristles, sericeous-pilose or villous achenes, cylindrical-campanulate heads, then this new species from the Venezuelan Andes must be placed within the limits of *Lucilia*. It is the



A

FIGURE 140-A
Lucilia venezuelensis
Habit of plant (X 15).

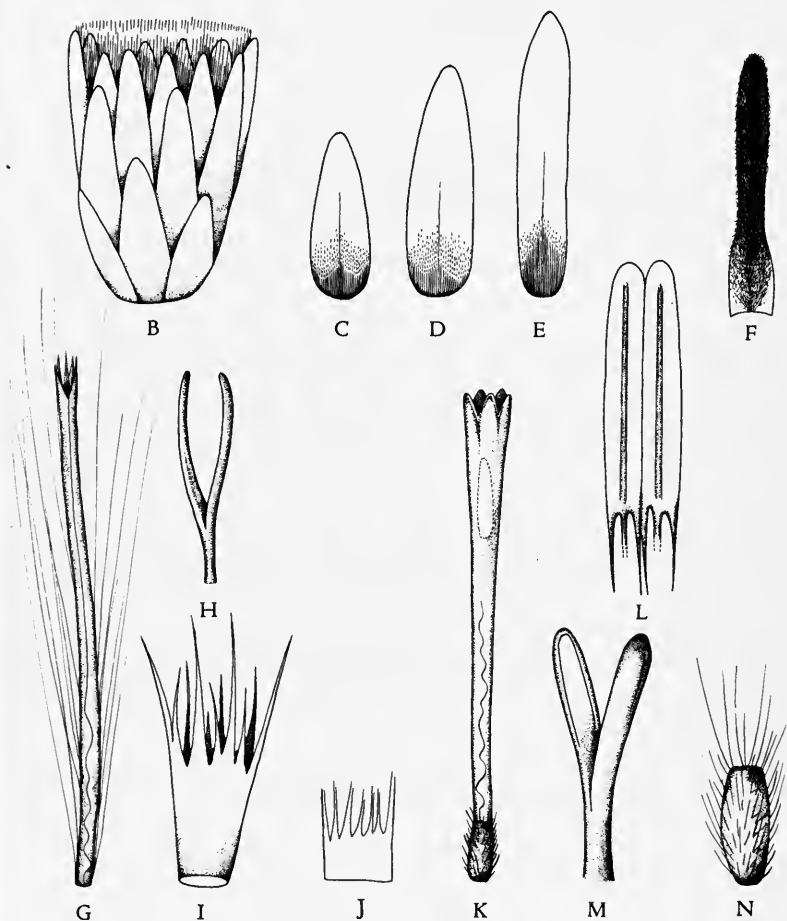


FIGURE 140—B, N

Lucilia venezuelensis

B, Involucre (X 5); C, Outermost involucre bract (X 19); D, Middle involucre bract (X 5); E, Inner involucre bract (X 6); F, Leaf (X 7); G, Pistillate flower (X 13); H, Style branches of pistillate flower (highly magnified); I, Apex of corolla of pistillate flower (highly magnified); J, Base of pappus of pistillate flower (highly magnified); K, Perfect tubular flower (X 11); L, Portion of anthers from perfect flower (highly magnified); M, Style branches and upper part of style of perfect flower (highly magnified); N, Achene (X 14).

first recorded collection of the genus from this country, most of the species in the genus occurring farther south in South America. It is most closely related to *Lucilia pusilla* (H.B.K.) Hier.* of Peru, Ecuador, and Colombia, but is distinguished from that species by the narrower involucral bracts, which are oblong- to linear-lanceolate and narrowed to an obtuse to subacute apex, the much shorter and narrower leaves, and the long subulate-acuminate or elongated tips of the corolla lobes of the pistillate flowers.

Mikania auyantepuensis, var. *brevipedicellata* Steyermark, var. nov.

A typo differt foliis elliptico-obovatis, petiolis 4-10 mm. longis, laminis 3.5-7 cm. longis 1.5-3.5 cm. latis; capitulis sessilibus vel subsessilibus, pedicellis usque ad 2 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected on summit of Cerro Duida, along valley forest between Central Camp and Brocchinia Hills, Territorio Federal Amazonas, alt. 1675 m., August 31, 1944, *Julian A. Steyermark 58125*, "climbing; flowers white; bracts pale green; leaves subcoriaceous, dull green above, paler below; stems lavender-dull purple."

Cotype in herb. Chi. Nat. Hist. Mus., collected on moist exposed cliff face with large bromeliads (*Brocchinia Tatei*) growing on vertical bluffs, Cerro Duida, southeastern-facing sandstone bluffs near Caño Negro (tributary of Caño Iguapo), alt. 1520 m., August 26, 1944, *Steyermark 58036*.

This differs from typical *M. auyantepuensis* of Mount Auyan-tepuí chiefly in having sessile or subsessile heads, the pedicels varying from none to at most 2 mm. long.

Mikania Banisteriae DC.

In an attempt to evaluate critically the various new species of *Mikania* published by Victor M. Badillo (Bol. Soc. Venez. Cienc. Nat. 9, no. 58: 132-135. 1944; loc. cit. 10, no. 68: 296-304. 1946), and based largely on the collections made in Venezuela by the present writer, I have found it necessary, after prolonged study, to reduce a considerable portion of that author's species to synonymy. In the present instance, while trying to decide upon the real status of *M. canaguensis* Badillo, *M. kavanayensis* Badillo, *M. molinensis* Badillo, *M. oniaensis* Badillo, *M. monagasensis* Badillo, *M. bergantinensis* Badillo, *M. meridana* Badillo, and *M. ptaretepuiensis* Badillo, it became increasingly obvious that the relationships of all the aforementioned species were involved in a

*A comparative study, based upon photographs of the types, of *Lucilia pusilla* (H.B.K.) Hier. and *L. Lehmannii* Hier., together with examination of topotype material of *L. Lehmannii* (*Steyermark 53211*) from the province of Azuay in southern Ecuador, would indicate that these two entities are conspecific, the older name being *L. pusilla*. In both species the outer involucral bracts are broad (ovate or obovate-rounded) and obtuse or rounded at the apex, and the shape and size of the leaves are the same. There do not appear to be any characters by which they can be separated.

much greater complex of species, represented by *Mikania Banisteriae* DC., *M. Ruiziana* Poepp., *M. lanuginosa* DC., *M. antioquiensis* Hieron., and *M. Almagroi* Cuatr.

Fortunately, the present writer has had access to the study, so far as most of the above mentioned species are concerned, of the type collections or fragments and photographs of the type collections. This study has led to the inescapable conclusion that we are dealing with a wide-ranging single species, *M. Banisteriae*, which varies considerably in tomentum of stems, petioles, rachis, and leaf shape.

In his admirable floristic treatments of *Mikania* in various South American countries, Dr. Robinson maintained *M. Ruiziana* Poepp. and *M. lanuginosa* DC. as distinct species (Contr. Gray Herb. N.S. 3, no. 64: 34-36, 56, 65, 80, 101. 1922), separating them in his key to the Colombian species (loc. cit. p. 32) as follows:

"e. Leaves 16-20 cm. long, scarcely half as wide, conspicuously caudate-acuminate, rufous-tomentose beneath 9. *M. Ruiziana*

"e. Leaves 8-12 cm. long, about two-thirds as wide, merely acute or shortly acuminate 10. *M. lanuginosa*"

and in his key to the Peruvian species (loc. cit. p. 78), thus:

"f. Pubescence whitish, dense, velvety, persistent; leaves about three-fourths as broad as long

..... 12. *M. lanuginosa*

"f. Pubescence dark or tawny, villous or tomentose, tending to be deciduous; leaves rarely more than half as wide" (under this category are included *M. Ruiziana* and *M. bullata*). At this time he included (loc. cit. p. 35) in the synonymy of *M. lanuginosa* the following species: *M. Banisteriae* Klatt, not DC., *M. antioquiensis* Hieron., and *M. Karsteniana* Kl.

Subsequently, in 1928 (Contr. Gray Herb. N.S. 4, no. 80: 33-34) he changed his mind about the inclusion of *M. antioquiensis* in *M. lanuginosa*, and decided that the two were distinct species. It is significant to quote the following from Dr. Robinson's publication (Ibid.): "When revising the *Mikania*s of Colombia some years ago, the author....reduced this species to the nearly related Brazilian *M. lanuginosa* DC., interpreting that species widely both as to range and variability. Material subsequently available and a re-examination of the type of *M. lanuginosa* make it seem probable* that the Cordilleran plant of Venezuela, Colombia, Peru and Bolivia, though in many respects similar, may be separated with fair definiteness from the Brazilian plant, which appears to have thinner more flexible and distinctly toothed leaves with more deeply cordate base and more rounded sinus. Its leaves are more strongly bicolorous and the pubescence is less closely matted than in the Cordilleran plant. The latter has thicker firmer subentire leaves less deeply cordate, with less developed basal lobes and closer pubescence. Unless

further collecting should disclose tendencies toward intergradation not evident at present, these plants would seem best treated as separate species. *M. antioquiensis* may be regarded as covering also the plant passing under the herbarium name *M. Karsteniana* Klotzsch, a nomen subnudum mentioned but without adequate diagnosis by Hieronymus, l. c. 581. The slight distinctions of petiole, pubescence and pappus, upon which Hieronymus relied in attempting a specific distinction between his *M. antioquiensis* and the undescribed *M. Karsteniana* do not hold satisfactorily....."

Robinson, therefore, showed his uncertainty regarding the disposition of maintaining *M. lanuginosa* and *M. antioquiensis* as distinct species, first by including one in the synonymy of the other, and then six years later separating them with the proviso that further collecting might disclose that they should not be kept apart.

In the meantime, since Robinson's last publications on this genus, much more material of *Mikania* has accumulated in herbaria. A study of the material identified as *M. Ruiziana*, *M. Ruiziana* var. *Lehmanniana*, *M. antioquiensis*, *M. antioquiensis* var. *subcuneata*, *M. Almagroi*, *M. lanuginosa*, and *M. Banisteriae*, makes it evident that all may be referred to the same variable species. In describing his *M. antioquiensis* var. *subcuneata*, Robinson writes (Contr. Gray Herb. N.S. 6, no. 104: 32. 1934), "The original material of this silky-stemmed Cordilleran liana had ovate leaves with cordate or rounded base. The following plant of recent collection seems certainly conspecific but has leaves sufficiently different in contour to justify recognition as a new variety." He based his description on a single specimen collected by Mexia (no. 6492) from Peru (between Iquitos and San Juan, alt. 105 m.).

Unfortunately, it has been found that this difference in leaf shape, or narrowing of the leaf-blade at its base, is not a constant one, and varies even on the same stem of the plant. The narrower-based leaves are often associated with the upper leaves or those collected from the upper part or terminal part of the stem bearing the terminal inflorescences, whereas the broader more cordate-based leaf is frequently taken from lower or middle portions of the stem in which axillary inflorescences arise at the base of the leaves.

To this cordate-leaved group with the pubescence of the stem more or less dense and closely felted or velvety belong *M. Karsteniana* Kl., *M. oniaensis* Badillo, and *M. canaguensis* Badillo, while to the group with a narrower leaf-base, which Robinson had treated as *M. antioquiensis* var. *subcuneata*, belongs *M. Almagroi* Cuatr., *M. moliensis* Badillo, *M. kavanayensis* Badillo, and *M. ptaretepuiensis* Badillo.

To complicate the problem, *M. Ruiziana*, described by Poeppig in 1845, enters the picture. I have before me an actual isotype of this species, as well as a photograph of the type, both preserved in the Chicago Natural History Museum Herbarium. They were collected by

*The italicized words in this quotation are those of the present author.

Poeppig from Cuchero, Peru, and show a terminal portion of a stem with its inflorescence and subtending leaves. The leaves are rounded but narrowed at the base as in *M. antioquiensis* var. *subcuneata*, but the pubescence of the stem consists of numerous tawny rather loose, but not closely matted hairs. At first, such a pubescence might appear distinct from the closely felted variety occurring in the type collection of *M. antioquiensis*. Most of the specimens in the Chicago Natural History Museum Herbarium, which, on the basis of their loose pubescence, can be referred to *M. Ruiziana*, including some so named by Robinson, which have leaves rounded or somewhat narrowed at the base, as in *M. antioquiensis* var. *subcuneata*, whereas others, such as *Lehmann* 5211 from Colombia, and identified by Robinson as *M. Ruiziana*, also have cordate-based leaves shaped as in *M. antioquiensis* but occurring on the same stem with narrower leaves. Moreover, the type of *M. lanuginosa* DC. has the looser type of pubescence, as in *M. Ruiziana*, rather than the closely felted matted type of *M. antioquiensis* and *M. Banisteriae* DC.

In 1894 Hieronymus (in Engl. Bot. Jahrb. 19: 45) described a variety of *M. Ruiziana*, which he called *Lehmanniana*, and by Robinson later was differentiated from typical *M. Ruiziana* by the less densely villous stems, more slender loosely hairy petioles, and bracteoles surpassing the involucre.

If these various assumed differences were constant and proved to have any real significance, the group of specimens identified as *M. Ruiziana* (= *M. lanuginosa* DC.) and var. *Lehmanniana* could be conceivably separated from the other group classified as *M. antioquiensis* and var. *subcuneata*. Unfortunately, all degrees of intergradation in pubescence and leaf shape often occur on the same stem or plant, and there do not appear to be any constant criteria present by which the various divergences of variations can be isolated. Some Bolivian collections made by Dr. Otto Buchtien illustrate the amount of variability in stem pubescence. His numbers 1586, 1587, and 1588 from the Mapiro region, San Carlos, at an elevation of 850 m., have densely lanate or closely felted pubescent stems which were identified as *M. antioquiensis*. However, from the same locality and same elevation come his numbers 1593 and 1594, showing a loose tawny villous type of pubescence and leaf shape characteristic of *M. Ruiziana* var. *Lehmanniana* and *M. ferruginea* Rusby, and identified as *M. ferruginea* Rusby, a species described from Bolivia, whereas his 1576 from the same region has practically glabrous leaves and glabrate stems and by Robinson was treated as the type of *M. ferruginea* var. *subglabra*.

That not only the leaf shape, but type of pubescence can vary on the same plant is shown by other examples. In *Persaud* 73, from British Guiana the pubescence of the lower part of the young stem is loose as in *M. Ruiziana*, but at the tip it is closely matted as in *M. antioquiensis*. In *Steyermark* 56459 from Venezuela the pubescence of the young flowering stem is tawny and somewhat spreading as in *M. Ruiziana*, whereas on most of the stem bearing the leaves the pubescence is of a pale buff velvety tomentum and the

leaf-blades are shaped as in *M. antioquiensis* var. *subcuneata*. In view of the extreme variability of pubescence, it is not at all certain whether forms can be maintained to differentiate between those with close-felted densely tomentose stems and those with tawny long villous pubescence. Certainly, there does not appear to be any geographic segregation of the entities.

The question concerning the earliest correct name to apply to the above complex is an intriguing one. An examination and critical study of the isotype of *M. Banisteriae* DC., preserved in the Chicago Natural History Museum Herbarium, has led me to identify it positively as conspecific in tomentum, leaf shape, and floral details with *M. antioquiensis* Hieron. The type collection of *M. Banisteriae* from Amazonian Brazil (Ega, Amazon, collected by Poeppig) shows the "ramis pube sericea molli canis, foliis.....ovatis basi obtusis.... integerrimis penninerviis, superne junioribus setosis, adultis nervis exceptis glabris, subtus dense sericeis, paniculae terminalis ramis sericeo-lanatis,....., invol. squamis et bracteola ovalibus obtusis glabris.....pappus rutilans" described by De Candolle. In fact, one of the leaves is cordate at the base as in *M. antioquiensis*, while the others have a leaf shape matched by *M. antioquiensis* var. *subcuneata*. The velvety or sericeous close tomentum of the stem is characteristic of the same type found in *M. antioquiensis*. In this isotype collection of *M. Banisteriae* the corolla tube is glabrate and the young achenes are densely long-pilose.

In a study of other material referred to *M. Ruiziana*, *M. lanuginosa*, *M. antioquiensis*, *M. Almagroi*, and in the several species of Badillo mentioned in the beginning, the corolla tube was found to vary from glabrous to sparsely or moderately pilose, and the achenes from glabrous or glabrate to sparsely pilose. The throat of the corolla is campanulate in all these species, as wide as high, and spreads abruptly from the summit of the slender tube. The involucrel bracts throughout the material referred to the above species are uniformly obtuse to obtusish or rounded at the tip, and are usually glabrous without, or at most dorsally villosulous near the apex. All these characters are evident, likewise, in *M. Banisteriae*. So far as the pappus being rufescent in *M. Banisteriae*, this character cannot be accepted as either trustworthy or real. The reddish or rufescent color of the pappus may be due to aging of the specimen or drying in a particular manner. Specimens collected by Klug (878 and 3427) from Peru and Williams (14746) from Venezuela show a rufescent pappus, even though the collectors only mention in their notes that the flowers are "white." If some reddish tinge had been present at the time of the collection, these collectors would surely have noted the color as significant, or recorded it as an obvious feature of the plant at the time of collection. The reddish color of the pappus cannot, therefore, be used as a distinguishing feature of *M. Banisteriae*, as it was by Baker (in Mart. Fl. Bras. 6, pt. 2: 230. 1876) in keying out this species. Rather it must be considered as a variable feature associated with the aging of the plant or in some way with the drying of the pappus, somewhat as in the manner of

some North American species of the genus *Vernonia*.

While *M. oniaensis* Badillo and *M. canaguensis* Badillo have the involucre bracts glabrate or sparsely pilose without towards the apex (although Badillo described the bracts in *M. oniaensis* as puberulous), and can be obviously matched by similar cordate-leaved specimens referred to *M. antioquiensis*, on the other hand *M. monagasensis*, *M. bergantinensis* Badillo, and *M. meridana* Badillo have markedly different involucre bracts which are definitely puberulous or pilosulous without and can thus be distinguished from the usual glabrous or glabrate type of bracts, which at most are only sparsely puberulous near or at the apex. It would seem best to treat these plants with pubescent bracts as distinct from the usual glabrate or sparsely puberulous type.

From the above discussion, it is apparent that the earliest name clearly applicable to this complex is *M. Banisteriae* DC., to which *M. antioquiensis* and var. *subcuneata* must be referred as direct synonyms, and from which *M. lanuginosa* DC., *M. Ruiziana*, and its variety *Lehmanniana*, may be distinguished only as forms differing in more spreading pubescence.

While the name *M. Banisteriae* DC. does have page priority (p. 193) over *M. lanuginosa* DC. (p. 201) and *M. hirsutissima* (p. 200), that is not the principal compelling reason for adopting it as the earliest one to be used in this case. The real reason is that the isotype available for study (*Poeppig* from Ega, Amazon) before me clearly shows the close felt-like sericeous tomentum of the stems and petioles along with the other features clearly described by De Candolle, and it is at once definite and clear cut. As the first author to unite the various elements discussed above and specified below, the present writer's selection of whichever name seems best to him is the course followed, and his choice must thereafter be followed (See Robinson's discussion in *Contr. Gray Herb. N.S. 6*, no. 104: 51. 1934, and Art. 56 of the International Rules of Botanical Nomenclature adopted and revised at Amsterdam in 1935, nor has this been changed since the Stockholm congress in 1950). It is admitted that such species as *M. rufa* Benth., *M. Lasiandrae* DC. (*M. strigosa* Gardn.), *M. trichophylla* DC., and *M. hirsutissima* DC. are uncomfortably close to the *M. Banisteriae* complex, and might possibly be referred to the large complex of *M. Banisteriae*-*M. antioquiensis*-*M. Ruiziana*-*M. lanuginosa*. However, these species, with the exception of *M. hirsutissima*, have the throat of the corolla turbinate or subcylindric instead of campanulate, and the throat is higher than wide and not sharply differentiated from the tube as in the *M. Banisteriae* group. Moreover, in *M. hirsutissima* the involucre bracts are usually decidedly acute or acuminate, or definitely narrowed at the apex, and this character alone would appear to justify separating it from the *M. Banisteriae* group in which the involucre bracts are mostly rounded or broadly obtuse to obtusish.

An analysis of the *M. Banisteriae* group may be summed up in the following key:

1. Involucral bracts densely pubescent on the outer surface 1 d. *M. Banisteriae* var. *monagasensis*
 1. Involucral bracts glabrous or glabrate, or at most sparsely puberulous at or near the apex.
 2. Stems glabrate 1 c. *M. Banisteriae* f. *subglabra*
 2. Stems more or less conspicuously pubescent.
 3. Pubescence of stems and petioles densely velvety or sericeous-tomentose; lower leaf surface closely sericeous-pubescent or canescent 1. *M. Banisteriae*
 3. Pubescence of stems and petioles loosely villous or lanate; lower leaf surface woolly pubescent or loosely villous.
 4. Stems and petioles abundantly villous 1 a. *M. Banisteriae* f. *lanuginosa*
 4. Stems and petioles sparingly villous with fewer hairs 1 b. *M. Banisteriae* f. *Lehmanniana*
1. *Mikania Banisteriae* DC. Prodr. 5: 193. 1836.

Mikania antioquiensis Hieron. in Engl. Bot. Jahrb. 28: 580. 1901; *M. Karsteniana* Klotzsch ex Hieron. loc. cit. 581, *nomen subnudum*; *M. antioquiensis* var. *subcuneata* Rob., Contr. Gray Herb. N.S. 6, no. 104: 32. 1934; *M. Almagroi* Cuatr., Anal. Univ. Madrid 4, fasc. 2: 233 (reprint 30). 1935; *M. molinensis* Badillo, Bol. Soc. Venez. Cienc. Nat. 10: 296. 1946; *M. ptaretepuiensis* Badillo, loc. cit. 302; *M. kavanayensis* Badillo, loc. cit. 300.

Stems mostly closely tomentose with dense felt-like pale to dark brown or buff tomentum; leaves broadly ovate to ovate-oblong, cordate or the upper often becoming more or less cuneately narrowed or rounded at base; involucral bracts glabrous to glabrate without or at most dorsally puberulous near or at apex; corolla tube glabrous or glabrate to sparsely puberulous (rarely more densely puberulous); achenes glabrate to sparsely puberulous or rarely more densely puberulous.

Specimens examined:

BRAZIL: Ega, Amazon, *Poeppig* (isotype of *M. Banisteriae* DC.); Para: South woods of I. A. N., Belém, February 8, 1943, *Archer* 8223; Belém, March-May, 1929, *Dahlgren & Sella* 467 and 721.

BRITISH GUIANA: Covenden, Demarara River, February 14, 1923, *Persaud* 73; upper Rupununi River, near Dadanawa, Lat. 2° 45' N., July 24-29, 1922, *De La Cruz* 1705; Barima River, Northwest District, Lat. 8° 20' N., Long. 59° 50' W., March 19-22, 1923, *De La Cruz* 3378 and 3386; Upper Mazaruni River, Long. about 60° 10' W., September 22-October 6, 1922, *De La Cruz* 2133 and 2206.

VENEZUELA: Territorio Federal Amazonas: Solano, Lower Casiquiare, alt. 102 m., November 3, 1942, *Williams* 14746; Distrito Federal: Caracas, January-April, 1842, *Linden* 212; Yaracuy: Puerto Cabello, *Karsten*; Mérida: cerca de El Molino, entre Canaguá y Sta. Cruz de Mora, alt. 1500 m., November 16, 1943, *Badillo* 610 (isotype of *M. molinensis* Badillo); Cuesta de Rincon and Cuesta del Barro, between Canaguá and La Quebrada, on road to El Molino, alt. 1925-

2175 m., May 10, 1944, *Steyermark* 56459; Bolívar: Ptari-tepuí, alt. 2410-2450 m., November 7, 1944, *Steyermark* 59936 (isotype of *M. ptaretepuiensis* Badillo); Gran Sabana, between Mission of Santa Teresita de Kavanayén northwest to Río Karuai, alt. 1220 m., October 26, 1944, *Steyermark* 59374 (isotype of *M. kavanayensis* Badillo); on summit at west end of Sororopán-tepuí, alt. 2225-2255 m., November 13, 1944, *Steyermark* 60071; Ptari-tepuí, between "Cave Rock" and base of high bluffs, alt. 2100-2285 m., October 30, 1944, *Steyermark* 59543; Ptari-tepuí, southeast-facing slopes, alt. 1585-1600 m., November 10-11, 1944, *Steyermark* 60018.

COLOMBIA: Comisaria del Caquetá: Cordillera Oriental, vertiente oriental, entre Sucre y La Portada, alt. 1200-1350 m., April 5, 1940, *Cuatrecasas* 9133; Cordillera occidental., versant oriental, alt. 1200 m., November 11, 1899, *Langlassé* 62; Antioquia: Amalfi, alt. 1500-2000 m., *Lehmann* 7971 (isotype and photo of type of *M. antioquiensis* Hieron.); Karsten (isotype and photo of type of *M. Karsteniana* Kl.); Santander: Mesa de los Santos, *Apolinar-María* 363; Dept. Valle: Cordillera Occidental, vertiente occidental: Hoya del Río Digua, Piedra de Moler, alt. 900-1180 m., August 19-28, 1943, *Cuatrecasas* 15108; Cordillera Occidental, vertiente occidental: Hoya del Río Anchicaya, El Prado, alt. 250-350 m., August 4, 1943, *Cuatrecasas* 14844; Cordillera Occidental, vertiente occidental: Hoya del Río Digua, lado izquierdo del Río San Juan en la región de Queremal, alt. 1540-1650 m., Quebradita del km. 51, February 25, 1947, *Cuatrecasas* 23714; Dept. Cauca: Quebrada de Bermejál, alt. 1600-1650 m., March 10, 1947, *Cuatrecasas* 23761.

ECUADOR: San José, June, 1865, *Isern* 368 (isotype of *M. Almagroi* Cuatr.).

PERU: Loreto: Distrito Iquitos, Iquitos; trail to San Juan, alt. 105 m., February 7, 1932, *Mexia* 6492 (isotype of *M. antioquiensis* var. *subcuneata* Rob.); Iquitos, alt. 120 m., March-April, 1930, *Williams* 8094; Iquitos, alt. 120 m., October, 1929, *Williams* 3632; Iquitos, alt. 100 m., August 3-11, 1929, *Killip & Smith* 27478; Mishu-yacu, near Iquitos, alt. 100 m., February-March, 1930, *Klug* 878; lower Río Nanay, May-June, 1929, *Williams* 438; San Martín: Alto Río Huallaga, alt. 360-900 m., December, 1929, *Williams* 6602; Zepe-lacio, near Moyobamba, alt. 1200-1600 m., December, 1933, *Klug* 3427; La Merced, alt. 700 m., August 10-24, 1923, *Macbride* 5512; Junín: Pichis trail, Eneñas, alt. 1600-1900 m., June 30-July 2, 1929, *Killip & Smith* 25626.

BOLIVIA: region of Mapiri: San Carlos, alt. 900 m., March 2, 1927, *Buchtien* 1586; same locality, alt. 850 m., January 12, 1927, *Buchtien* 1587; same locality, alt. 850 m., January 19, 1927, *Buchtien* 1588.

At first, the type of *M. ptaretepuiensis*, with the conspicuously scabrous upper leaf surface and thickish leaf blades, appears to be distinct from the rest of the *M. Banisteriae* group, but it intergrades in all respects with the narrow-leaved leaf type of *M. Banisteriae* (*M. antioquiensis* var. *subcuneata*).

Likewise, *M. kavanayensis* Badillo, based upon several collections obtained by the writer from the Gran Sabana, appears rather distinct in having a shorter sparser type of pubescence on the lower leaf surface and a short scabrous pubescence on the upper surface. It also has a rather more densely pubescent corolla tube and achene, and the corolla limb is slightly more elongated than in most of the material of *M. Banisteriae*. But these characters are likewise variable in degree. The corolla lobes vary from nearly half the length of the limb to only $\frac{3}{8}$ its length, while in most of *M. Banisteriae* the corolla lobes are usually equal to half the length of the limb. *Mikania kavanayensis*, thus, intergrades in too many respects to be maintained apart from *M. Banisteriae*.

1a. *M. Banisteriae* DC., forma *lanuginosa* (DC.) Steyermark, comb. nov.

M. lanuginosa DC. Prodr. 5: 201. 1836; Baker in Mart. Fl. Bras. 6, pt. 2: 261. 1876; *M. Ruiziana* Poepp. in Poepp. & Endl. Nov. Gen. & Sp. 3: 53. previous to July, 1845; Klatt in Engl. Bot. Jahrb. 3: 36. 1887; *M. caudata* Benth. Pl. Hartw. 201. October, 1845; *M. oniaensis* Badillo, Bol. Soc. Venez. Cienc. Nat. 10: 297-298. 1946; *M. canaguensis* Badillo, Bol. Soc. Venez. Cienc. Nat. 9: 132. 1944.

Stems with tawny or brownish villous pubescence of mostly loose or spreading hairs; upper leaves ovate-oblong, merely rounded at base, the lower cordate, or all the leaves prevailingly cordate; involucral bracts glabrous to glabrate without, or at most dorsally puberulous near or at apex.

Specimens examined:

BRAZIL: Paraná: Serra do Mar, Ypiranja, September, 1908, *Dusén* 6534; same locality, alt. 840 m., August 23, 1914, *Dusén* 15447; Río Grande do Sul, August, 1941, *Eugenio* 78.

VENEZUELA: Mérida: along Río Onia, near Bolero, north of Mesa Bolívar, alt. 545-915 m., May 23, 1944, *Steyermark* 56736 (type of *M. oniaensis* Badillo); Montañas de los alrededores de Canagua, alt. 1600 m., November 8, 1943, *Badillo* 562 (type of *M. canaguensis* Badillo).

COLOMBIA: Distr. Cauca, ad pag. El Tambo, 1930, *Elsa Hultén* 50; highlands of Popayán, alt. 1500-2000 m., March, 1886, *Lehmann B.T.* 604; forest of Buenos Aires in Upper Cauca, alt. 1000-1500 m., *Lehmann* 5211; Norte de Santander: region del Sarare, Hoya del Río Cubugón entre El Caraño y El Indio, alt. 470-600 m., November 12, 1941, *Cuatrecasas* 13016; Dept. Valle: Cordillera Occidental; filo de la Cordillera sobre Las Brisas, Monte El Tabor, alt. 1970-2100 m., October 19-22, 1946, *Cuatrecasas* 22310 (transitional to f. *Lehmanniana*); Cordillera Occidental: La Cumbre, February 24-26, 1945, *Cuatrecasas* 19553; Dept. Cauca: Popayán, en La Capilla, alt. 1760 m., July 13, 1939, *Cuatrecasas* 6063; La Capilla, 25 km. north of Popayán, alt. 1740 m., May 24, 1944, *Killip* 38438; Dept. Antioquia: cerca de Santa Helena, camino entre Medellín y Río Negro, alt. 2500 m., October 2, 1947, *Barkley, Gutierrez & Pueda* 2; cerca de Boqueroncito, camino entre Medellín y Palmitas, alt. 2800

m., October 30, 1947, *Gutierrez, Barkley & Fernández* 29; bosque de La Sierra, alt. 2800 m., September 18, 1947, *Alviar, Ramirez & Sanchez* 11.

PERU: Cuchero, 1829, *Poeppig* 1475 (isotype of *M. Ruiziana* Poepp.); prope Tarapoto, 1855-6, *Spruce* 4079; San Martin: San Roque, alt. 1350-1500 m., January-February, 1930, *Williams* 7497; Loreto: near Iquitos, July, 1929, *Williams* 1455.

BOLIVIA: region of Mapiri: San Carlos, alt. 850 m., May 12, 1927, *Buchtien* 1584.

1b. *M. Banisteriae* DC., forma *Lehmanniana* (Hieron.) Steyermark, comb. nov.

M. Ruiziana Poepp. var. *Lehmanniana* Hieron. in Engl. Bot. Jahrb. 19: 45. 1894; *Willoughbya ferruginea* Rusby, Mem. Torr. Bot. Club 6: 58. 1896; *Mikania ferruginea* Rusby ex Buchtien, Contrib. Fl. Boliv. 1: 190. 1910, where mentioned without char. or synonym. but intended to apply to the same plant as *Willoughbya ferruginea*; *Willoughbya hirsutissima* Rusby, l. c. and Bull. N.Y. Bot. Gard. 4: 381. 1907, not Ktze.

Stems with usually spreading tawny-villous to subsetose pubescence; leaves mostly narrowly ovate, acute to caudate-acuminate, entire to sometimes coarsely dentate or occasionally with a single angle or lobe on one or both sides, appressed tawny-villous or setulose-pubescent on both surfaces, or becoming glabrate above; involucre bracts glabrous or glabrate without, or at most dorsally puberulous near or at apex.

Specimens examined:

BRITISH GUIANA: north of Tinanur Fall, Cuyuni River, Esse-
quibo, March 10, 1931, *Martyn* 314.

COLOMBIA: Villavicencio, December, 1928, *Apolinar-María* 429; Ocana: Teorama, alt. 1300 m., October 1846-52, *Schlim* 229; Tolima: Dolores, alt. 1000-1800 m., *Lehmann* 7483 (isotype of *M. Ruiziana* var. *Lehmanniana*); Dept. Valle: Cordillera Occidental, vertiente occidental: monte La Guarida, filo de la cordillera sobre La Carbonera (entre Las Brisas y Albán), alt. 1950-2000 m., October 16-24, 1946, *Cuatrecasas* 22219 (transitional to f. *lanuginosa*); Dept. Villavicencio: Int. El Meta: Villavicencio, alt. 500 m., October 12, 1938, *Cuatrecasas* 3503.

PERU: Junín: San Ramón, alt. 900-1300 m., June 9-12, 1929, *Killip & Smith* 24894.

BOLIVIA: Guanai-Tipuani, April-June, 1892, *Bang* 1419 (isotype of *M. ferruginea* Rusby); Mapiri region: San Carlos, alt. 850 m., May 24, 1927, *Buchtien* 1594; same locality, alt. 900 m., May 4, 1927, *Buchtien* 1593; Calapampa, Yungas, July 3, 1894, *Bang* 2326.

1c. *M. Banisteriae* DC., forma *subglabra* (Rob.) Steyermark, comb. nov.

M. ferruginea Rusby var. *subglabra* Rob., Contr. Gray Herb. N.S. 6, 104: 36. 1934.

Stems and petioles glabrous or obsoletely hirtellous; leaf blades ovate-oblong, usually rounded at the base, mostly entire, nearly glabrous or glabrescent.

BOLIVIA: Mapiro Region: San Carlos, alt. 850 m., May 24, 1927, *Buchtien 1576* (isotype of *M. ferruginea* var. *subglabra* Rob.).

Id. *M. Banisteriae* DC., var. *monagasensis* (Badillo) Steyermark, comb. nov.

M. monagasensis Badillo, Bol. Soc. Venez. Cienc. Nat. 10: 300. 1946; *M. bergantinensis* Badillo, l. c. 303. 1946; *M. meridana* Badillo, l. c. 303. 1946.

Stems and petioles mostly loosely and densely villous; leaf blades broadly ovate, mostly cordate at base, or the leaves mostly rounded at base, usually both sides softly appressed-pubescent or villous; involucre bracts more or less conspicuously pubescent without.

Specimens examined:

VENEZUELA: Monagas: south-facing forested slopes above limestone bluffs, northeast of Guácharo, alt. 1300-1400 m., April 11, 1945, *Steyermark 61990* (isotype of *M. monagasensis*); Anzoátegui: headwaters of Quebrada La Tigra, Cerro San José, between Bergantín and Cerro Peonía (Cerro Los Pajaritos), cloud forest of Fila Grande, alt. 1800-1850 m., March 19, 1945, *Steyermark 61540* (isotype of *M. bergantinensis*); Mérida: above "La Isla," above Tabay, alt. 2285-2745 m., May 18, 1944, *Steyermark 56631*; rich woods between Azulita and La Carbonera, alt. 1280-2378 m., April 24, 1944, *Steyermark 56059*; Montaña de San Jacinto, on north side of Río Chama, opposite Mérida, alt. 2195-2375 m., May 19, 1944, *Steyermark 56667*.

Mikania Hookeriana DC., var. *crassicaulis* Steyermark, var. nov.

A typo differt foliorum laminis late ovatis vel suborbiculari-ovatis apice cuspidato-acuminatis vel acuminatis basi subrotundatis vel subtruncatis 5.5-15.5 cm. longis 4-12.5 cm. latis valde 5-nervatis, utrinque prominente reticulato-venulosis, subtus nervis principalibus valde prominentibus, subtus papilloso-resinosis vel pustulatis, supra glabris, integerrimis; caulibus lignescensibus prominente crassiusculis ad 12 mm. diam.; petiolis robustis crassiusculis 2-5 cm. longis 3-4 mm. diam. inter se annulo tumido connexis, supra prominente canaliculatis, granulis sessilibus conspersis; inflorescentiae rhachi valde crassiuscula 2-4 mm. crassa striato-sulcata crispo-puberulis atque glandulis sessilibus ornatis; inflorescentia valde elongata ad 4.5 dm. longa; capitulis ad apices ramorum paniculae dense spicatis; involucri squamis oblongis obtusis 4.5-5.5 mm. longis, dorso apicem versus puberulis; corollis ca. 4 mm. longis extus glandulis sessilibus parce conspersis; achaeniis ca. 2.5 mm. longis glandulis sessilibus paucibus conspersis.

Type in herb. Chi. Nat. Hist. Mus., collected on Ptari-tepui, steep wooded slopes just below dry ridge and shrubby growth, southeast-facing slopes, state of Bolívar, alt. 1585-1600 m., November 10-11, 1944, *Julian A. Steyermark 60015*, "vine with thickened fleshy

flowering axis; leaves coriaceous, deep green above, pale green below."

At first, it was believed that this collection represented an undescribed species. However, taking into consideration the amount of variability present in *M. Hookeriana* DC., as revealed by Dr. Robinson (Contrib. Gray Herb. 104: 49-53. 1934), it was thought best to treat the present collection as a variety of *M. Hookeriana*, apparently related to var. *platyphylla* (DC.) Rob.

This new variety resembles *M. Hookeriana* var. *platyphylla* in the shape of the leaf blades, but differs from it and other varieties of *M. Hookeriana* in having the lower leaf surface covered with numerous resinous glands or pustules, thicker, more coriaceous leaf blades, more prominently nerved on the lower surface, and on both surfaces more prominently reticulate-veined, strongly canaliculate upper surface of the petioles, which are covered with minute sessile glandular or papillose excrescences, and especially by the greatly thickened stems and flowering axes. The glands on the achenes and corollas found in var. *crassicaulis* are also encountered in various collections of *M. Hookeriana* var. *platyphylla*, and are noted by Robinson in his original description of *M. vitrea* (= *M. Hookeriana* var. *platyphylla*) as "corollis—....limbo....paullo granulato." They are also found in the type collection of *M. sanjacintensis* Badillo ([*Steyermark* 56665] = *M. Hookeriana* var. *platyphylla*) and in *Steyermark* 61369 (*M. Hookeriana* var. *platyphylla*).

Mikania Hookeriana DC., var. *platyphylla* (DC.) Rob.

Mikania sanjacintensis Badillo, Bol. Soc. Venez. Cienc. Nat. 10: 298-299. 1946.

A study of type and cotype material (*Steyermark* 56665 and 56171) of *M. sanjacintensis* leaves no doubt that it is conspecific with *M. Hookeriana* var. *platyphylla*. Robinson (Contrib. Gray Herb. 104: 52. 1934) showed that *M. platyphylla* DC. and *M. vitrea* Rob. must be treated as varieties under *M. Hookeriana* DC., and that these were in turn related to other entities which he regarded as variations of *M. Hookeriana*, namely var. *Badieri* (DC.) Rob., var. *Kittsiana* (Urb.) Rob., and var. *cardiophylla* Rob. The plant described by Badillo has all the characters of var. *platyphylla*, i.e., robust stems with broadly ovate firmly membranaceous or subcoriaceous thickish leaves which are cuspidate-acuminate at the apex and obtuse or subtruncate at base, and heads of flowers densely spicate at the tips of the panicle branches.

Mikania lucida Blake, in *Brittonia* 3, 2: 199. 1939.

Mikania Phelpsii Maguire & Steyermark, *Brittonia* 7: 89. 1950.

A comparative study of the type specimens of *M. lucida* and *M. Phelpsii* leaves no doubt but that the two are conspecific.

Mikania lucida Blake, f. *hirticaulis* Steyermark, f. nov.

A typo differt caulibus petiolisque densiuscule puberulis; laminis subtus nervis principalibus puberulis; inflorescentiae ramulis pedicellisque valde puberulis; involucri bracteis extus puberulis; corol-

lis 4-4.5 mm. longis, tubo glandulis sessilibus obtectis; achaeniis 3.5-4.2 mm. longis glandulis sessilibus obtectis atque puberulis.

Type in herb. Chi. Nat. Hist. Mus., collected in dense forest along Río Karuai bordering savanna between base of Ptari-tepuí and Sororopán-tepuí, state of Bolívar, alt. 1220 m., November 28, 1944, Julian A. Steyermark 60735, "liana; leaves firmly membranaceous, rich deep green both sides; involucre pale green."

This form differs from typical *M. lucida* in having densely puberulous stems, petioles, pedicels, and branches of the inflorescence, principal nerves of the lower leaf surface puberulous, and more puberulous achenes.

Mikania Robinsoniana Steyermark, nom. nov.

Mikania racemulosa Klatt, Abh. Naturf. Gesellsch. Halle 15: 325. 1882 (in advance reprint p. 5. 1881), not *M. racemulosa* Benth. in Hook. Journ. Bot 2: 41. 1840.

Mikania racemulosa Klatt, based on a plant collected by Fendler (625) from Colonia Tovar, is a rare species belonging to the section *Thyrsigerae*. The earlier homonym, *M. racemulosa* Benth., is synonymous with *M. scabra* DC., a species pertaining to the section *Racemosae*.

Mikania stictophora Steyermark, sp. nov.

Planta volubilis; caulibus purpureis, juvenilibus sulcato-striatis moderatim hirsutulis pilis multicellularibus patentibus praeditis, vetustioribus paullo hirsutulis vel glabrescentibus ad 4 mm. diam.; internodiis superioribus 6-10 cm. longis; foliis oppositis petiolatis, petiolis 3-8 mm. longis supra subcanaliculatis, laminis coriaceis supra atroviridibus obovatis vel ellipticis apice breviter acuminatis vel acutis acumine obtusa basi cuneatis 4-8.7 cm. longis parte media 1.5-3.8 cm. latis, subtus valde atropunctatis glandulis sessilibus numerosis praeditis, supra glabris vel glabrescentibus, marginibus integerrimis pilis paucibus remotis brevissimis praeditis, pinnatim plerumque 7-nervatis, nervis lateralibus utroque plerumque 3-arcuato-ascendingibus ante marginem 2-4 mm. anastomosantibus, nervis lateralibus infimis supra basin 7-14 mm. nascentibus; inflorescentiis spicatis simplicibus vel parte inferiore ramosis lateralibus vel terminalibus 5-13 cm. longis; rhachi sulcata 1-1.5 mm. diam. glandulis sessilibus numerosis obtectis; capitulis sessilibus, internodiis inter capitula 3-11 mm. longis; involucri squamis oblongis apice rotundatis vel late obtusis 4.6-5 mm. longis 1.1-1.3 mm. latis dorso valde glandulis sessilibus conspersis; corollis 4-4.2 mm. longis pallide viridibus, parce glandulis sessilibus luteis conspersis, tubulo 2-2.3 mm. longo; pappi setis 36-42 albidis, 3.7-4.2 mm. longis setuloso-serrulatis; achaeniis maturis fuscis 3.8-4.2 mm. longis sparse glandulis sessilibus conspersis.

Type in herb. Chi. Nat. Hist. Mus., collected on Ptari-tepuí, steep forested slopes at base of first line of sandstone bluffs, on south-facing part, east of "Cave Rock," state of Bolívar, alt. 2130 m., November 4, 1944, Julian A. Steyermark 59860, "vine, scrambling at

base of bluffs; leaves coriaceous, dark green above, dull green below; rachis and bracts pale green; corolla pale greenish; style recurved, yellow-green; pappus white; stems dull purple.”

This species is a member of the section *Spiciformes* as defined by Robinson. It is closely related to *M. manaosensis* Hieron., described from Manáos, state of Amazonas, Brazil, and like that species has the involucre bracts, corollas, and achenes covered with sessile glands. It differs from *manaosensis*, however, in the thicker coriaceous leaves, glandular rachis, hirsutulous stems, lowest pair of lateral nerves arising higher from the base, and the numerous punctate glands covering the lower leaf surface. From *M. Sprucei* Baker it may be distinguished by the presence of sessile glands on the parts above mentioned and by the hirsutulous stems. Superficially, it resembles *M. roraimensis* Rob. in habit, but that species is glabrous throughout, even to the achenes, rachis, and involucre bracts, and has pedicellate heads.

Mikania Stuebelii Hieron., var. *larensis* (Badillo) Steyermark, comb. nov.

Mikania larensis Badillo, Bol. Soc. Venez. Cienc. Nat. 10: 298. 1946.

Mikania Stuebelii Hieron. of Colombia belongs to a group of species, to which pertain such others as *M. laurifolia* (L. f.) Willd. and *M. clematidiflora* Rusby of Colombia, and *M. baccharoides* Rusby and *M. eucosma* Rob. of Bolivia. All these species possess a similar habit of growth, the leaves being small, ovate, coriaceous to subcoriaceous, entire or sparsely denticulate, usually prominently 3-5-plinerved above base, and glabrous.

Of this group *M. laurifolia* is clearly differentiated from the others in having the achenes covered with sessile glands and in the punctate lower surface of the leaf blades. The differences separating the other species rest mainly on the sessile or pedicellate florets, pubescence or glabry of the inflorescence, leaf margin, and pubescence or glabry of involucre bracts.

Mikania larensis, recently described by Badillo from Venezuela and based upon a collection made by the present author (*Steyermark 55386*), cannot be clearly separated from *M. Stuebelii*. The two fully match each other in such details as size of heads, which are usually subsessile and in 3's, ciliate involucre bracts, mostly glabrous dorsally, slightly puberulent achenes, and remotely denticulate triplinerved leaves. They differ as follows: the inflorescence of typical *M. Stuebelii* is rusty-puberulent or tomentulose, whereas in *M. larensis* it is glabrous or glabrate; the achenes in *M. Stuebelii* are 4-5 mm. long, and in *M. larensis* are usually about 6 mm. long; the leaf blades in *M. larensis* are elliptic-ovate and somewhat approach those of *M. Stuebelii* var. *latifolia* Hieron. in shape, but are less pointed and less denticulate, as well as shorter-petiolate. In all other respects I find it difficult to distinguish *M. larensis* from *M. Stuebelii* var. *typica* (=var. *Stuebelii*) and var. *latifolia*, and it, therefore, appears feasible to merge *M. larensis* as a variety with

the *M. Stuebelii* group.

Mikania vitifolia, forma *cryptodonta* (Rob.) Rob.

Mikania anzoatiguensis Badillo, Bol. Soc. Venez. Cienc. Nat. 10: 301. 1946.

Study of type material of *Mikania anzoatiguensis* and *M. cryptodonta* Robinson, and of specimens of *M. cryptodonta* cited by Robinson, leaves little doubt that the two are conspecific. Robinson later (Contrib. Gray Herb. 104: 55. 1934) reduced his *M. cryptodonta* to a form of *M. vitifolia*, a procedure which is consistent with the degree of variation found between *M. vitifolia* and *M. cryptodonta*.

The two Venezuelan collections (*Steyermark* 61376 and 61335), upon which Badillo based his description, have the subtire to minutely denticulate ovate cuspidate leaves, which are not lobed or angled, characteristic of the forma *cryptodonta*.

Oliganthes roraimensis Steyermark, sp. nov.

Frutex 1-1.3-metralis; ramulis angulatis striatis sordido-tomentellis, tomento adpresso obsitis; foliis oppositis vel alternatis petiolatis, petiolis 6-13 mm. longis supra canaliculatis adpresso-tomentellis; laminis firmiter membranaceis supra atroviridibus rugulosis glabris, subtus pallido brunneis tomento adpresso obsitis, oblongo-ellipticis vel elliptico-lanceolatis apice obtusis basi subcuneatim angustatis subtus revolutis 3.5-7 cm. longis 1-3.2 cm. latis, integerrimis, nervis lateralibus utroque 10-14 subtus prominulis; inflorescentia corymbiformi polycephala 1.5-1.7 cm. alta 3.2-3.5 cm. lata; capitulis umbellatim decompositis plerumque trifloris cylindricis 6-7 mm. longis 2-2.5 mm. latis pedicellatis, pedicellis 3-4 mm. longis adpresso tomentello pallido brunneo obsitis; involucre 4-5 mm. longo, bracteis 4-5 seriatis, extimis infimisque dorso tomentellis, ceteris apicem versus et marginibus parce pubescentibus ceterum glabris, ovatis obtusis; achaeniis brunneis subturbinatis costatis 2-2.2 mm. longis ca. 15 mm. latis, superne valde glandulosis ceterum glandulis remotis sessilibus obsitis; pappo duplo aristis interioribus 8-12 elongatis linearibus setuloso-serratis ca. 4 mm. longis 0.3-0.4 mm. latis, aristis exterioribus inaequalibus minoribus plerumque 0.6-1 mm. longis irregulariter laceratis.

Type in herb. Chi. Nat. Hist. Mus., collected on Mount Roraima, forested southwest-facing quebrada near Rondón Camp, state of Bolívar, alt. 2040 m., September 25, 1944, *Julian A. Steyermark* 58678, "shrub 3-4 feet tall; leaves firmly membranaceous, dark dull green above, buff brown below; involucre buff-brown; pappus likewise."

This species is found on the upper slopes of Mount Roraima at an elevation of 2040 meters, and is related to *O. Schomburgkii* Sch. Bip. of the same region, but usually found at lower elevations at the base of this mountain between 975-1065 meters. It differs from *O. Schomburgkii* in having smaller obtuse leaf blades which are buff brown instead of silvery gray or silvery white below and which are not as conspicuously reticulate-veined below. The upper surface of the

leaf blades in *O. roraimensis* is more finely rugulose and almost bullate. The fruiting heads and involucre are smaller than in *O. Schomburgkii*, and the achenes are more conspicuously glandular above. Finally, the lowermost involucre bracts are more densely tomentose as contrasted with the other bracts, which are sparsely pubescent at the tip and otherwise glabrous, whereas in *O. Schomburgkii* they are more pubescent dorsally and the marginal hairs are longer.

From *O. Spruceana* Benth. of the Río Atabapo region of the vicinity of Maypures in Venezuela, *O. roraimensis* may be distinguished by its pedicellate heads with the involucre bracts much less pubescent, the inner ones obtuse, instead of acute, and with a different shape. *Oliganthes Spruceana* also possesses fewer elongated inner awns of the pappus and a more glabrous achene.

Oyedaea Blakeana Steyermark, sp. nov.

Suffrutex scandens 1.8-2.8-metralis; caulibus fusco-purpureis pilis adscendentibus densissime tuberculato-hispidulis 3.5-4 mm. diam.; internodiis 2.2-3.5 cm. longis; foliis oppositis petiolatis; petiolis 5-8 mm. longis densissime tuberculato-hispidulis; laminis firme membranaceis supra atroviridibus lanceolato-ellipticis utrinque acutis vel acuminatis 4.5-8.5 cm. longis 1.5-2.8 cm. latis penninerviis, nervis lateralibus utroque 9-12 subtus prominentibus supra pilis brevibus leviter scabris subtus densiuscule strigilloso-hispidulis, manifeste serratis, dentibus utroque 7-9 ca. 1 mm. longis in basin integram cuneatam angustatis; capitulis 10-15 cymoso-paniculatis ad apices ramosum terminalibus; disco in anthesi 0.9-1 cm. alto 0.9-1 cm. lato; pedicellis 0.7-1.6 cm. longis densissime hispidulis; involucre 3-seriato bracteis exterioribus ovato-lanceolatis acuminatis 5.5 mm. longis valde squarrosis strigilloso-hispidulis; radiis luteis 10 oblongo-ellipticis 16.5 mm. longis 5 mm. latis; corollis disci luteis 5.5-6 mm. longis (tubulo 1.3 mm. longo, fauce cylindrico 3.2 mm. longo, dentibus 0.9 mm. longis) glabris dentibus extus minutissime pilosulis exceptis; paleis lanceolatis acutis 7.5-8 mm. longis carinatis supra praesertim ad carinam scabris; achaeniis radii trigonis angulis pubescentibus 3-5-aristatis; achaeniis disci compressis obverse cuneatis angustate alatis subtrigonis angulis pubescentibus 2-aristatis, aristis inaequalibus 2-4 mm. longis hispidulis, basi cum squamellis intermediis in cyathum irregulariter erosum 1-1.3 mm. altum connatis (Fig. 141).

Type in herb. Chi. Nat. Hist. Mus., collected in edge of woods by bluffs, Cerro Duida, southeastern-facing sandstone bluffs near Caño Negro (tributary of Caño Iguapo), Territorio Federal Amazonas, alt. 1095-1520 m., August 16, 1944, *Julian A. Steyermark 58047*, "sprawling or vining stems, 5-8 feet tall; rays and disk yellow; anthers brown-purple; bracts green, the tips squarrose; leaves firmly membranaceous, deep green above, dull green below with raised nerves; stems dull purple."

This well-marked species is dedicated with great pleasure to Dr. S. F. Blake, Senior Botanist of the U.S.D.A., who has made out-

standing and fundamental contributions to the better understanding of *Oyedaea* and other members of the *Heliantheae*, in particular, and of the *Compositae* in general.

Oyedaea Blakeana is especially distinctive in its combination of prominently nerved membranaceous conspicuously serrulate leaves, cuneately narrowed at the base, and by the small heads. It probably is related to *O. scaberrima* (Benth.) Blake of Roraima, which has only obscurely serrulate leaves and much less prominent nerves on the lower leaf surface.

Oyedaea verbesinoides DC., var. *glabrior* Steyermark, var. nov.

A typo differt caulibus foliis, pedicellis, et bracteis involucri inconspicue hispidulis vel glabrescentibus; caulibus et pedicellis adpresso-hispidulis pilis basi tuberculatis; foliis triplinervis lanceolato-ellipticis utrinque acutis 4.5-15 cm. longis 1.2-4.5 cm. latis, supra vix tuberculato-hispidulis vel glabrescentibus subtus paullo hispidulo-pilosulis vel glabriusculis, marginibus subrevolutis subintegerrimis vel remote adpresso-serrulatis dentibus utroque 9-12; disco 1-1.3 cm. alto 0.8-1.3 cm. lato; bracteis involucri valde squarrosis ciliolato-hispidulis ceterum parce hispidulis vel glabrescentibus achaeniis fuscis 6.5 mm. longis 2 mm. latis paullo strigillosis.

Type in herb. Chi. Nat. Hist. Mus., collected on south-facing steep slopes, on rocky exposed shrubby portion of knife-edge ridge above tree zone, Cerro Peonía (Cerro Los Pajaritos), above Santa Cruz, headwaters of Río Manantiales, east of Bergantin, state of Anzoátegui, alt. 1800-2000 m., March 20, 1945, *Julian A. Steyermark* 61612, "shrub 3-4 feet tall; rays yellow; disk dull yellow, bracts squarrose; leaves subcoriaceous-chartaceous, dull green above, gray green below."

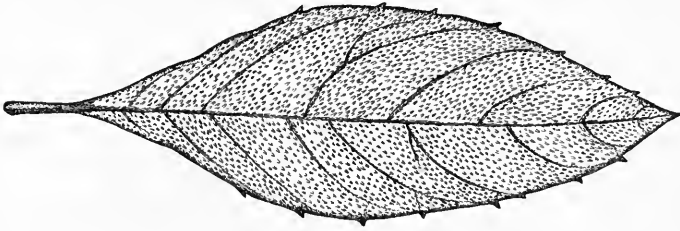
This variety may be distinguished from typical *O. verbesinoides* by the relative paucity of pubescence on all vegetative parts. The stems and pedicels are appressed-hispidulous, and the leaves and outer surface of the involucre bracts sparsely or minutely hispidulous or glabrescent in part.

Oyedaea verbesinoides DC., var. *hypomalaca* Steyermark, var. nov.

A typo differt foliis minoribus, laminis subtus dense molliter pubescentibus; foliis subcoriaceis valde rugosis 3-6 cm. longis 1.5-3.2 cm. latis grosse crenato-serratis dentibus utroque 7-15, supra atroviridibus dense tuberculato-hispidulis subtus cinereis dense molliter tomentosis; bracteis involucri dense hispidulo-pilosulis.

Type in herb. Chi. Nat. Hist. Mus., collected on Cerro Negro, above La Sabana de las Piedras, northwest of Caripe, state of Monagas, alt. 1500-2180 m., April 15, 1945, *Julian A. Steyermark* 62095, "rays and disk yellow; leaves subcoriaceous, dark green above, gray green below, rugose, subrevolute on margins."

At first it was believed that this plant represented a distinct and undescribed species of *Oyedaea*. The small rugose closely crenulate-serrate leaves which are densely and softly tomentose on the lower surface, and the densely hispidulous outer surface of the



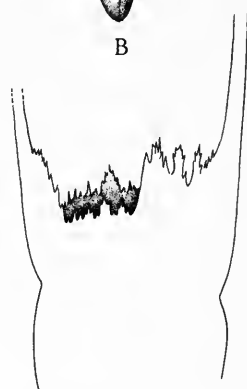
A



C



B



D

FIGURE 141

Oyedaea Blakeana

A, Leaf, from below (X 1); B, Ray achene and pappus (X 9); C, Disk flower (X 14); D, Detail of pappus in disk flower (highly magnified).

involucral bracts stamp the plant at once as different from typical *O. verbescinoides*. However, it does not appear to be more than an extreme small-leaved pubescent variation of that species, and may be shown to intergrade into that species by such collections as *Steyermark 62130* and *Bro. Elias 51* in which a similar type of tomentum occurs on the lower surface of mostly larger leaves, and in *Steyermark 61818*, in which the youngest leaves of vegetative shoots exhibit the same type of tomentum.

***Pectis venezuelensis* Steyermark, sp. nov.**

Herba annua, valde ramosa, 1.5-3 dm. alta, ramis divaricatis glabris angulatis; foliis lanceolato-linearibus vel linearibus apice acutis, 7-15 mm. longis 1.5-2.5 mm. latis ad basin paribus 1-3 setarum ciliatis, subtus inordinate glandulosis; capitulis ex angulis dichotomiarum prodeuntibus et terminalibus, 10-20 mm. longe pedunculatis, 4-5 mm. longis 3-3.5 mm. crassis, pedunculis glabris, bracteis 2-4 lanceolato-subulatis gerentibus; involucri bracteis 8, oblanceolato-oblongis acutato obtusis vel obtusiusculis 3-3.1 mm. longis 1.2-1.3 mm. latis, marginibus supra medium et apice paullo ciliolatis, valde concavis, dorso inferne obtuse carinatis, infra apicem 0.6-0.7 mm. 1-2 glandulis obsitis; floribus 23 in quoque capitulo, 8 radii, 15 disci; ligulis 2.1-2.5 mm. longis, lamina obovata apice rotundata 3-crenulata; corollis florum disci 1.5-1.7 mm. longis, lobis 0.6-0.7 mm. longis; pappo florum radii et florum disci consimile inaequaliter laciniatis in setas numerosas ferrugineas 0.3-0.5 mm. longas basi connatis; achaeniis nigrescentibus 2.2-2.3 mm. longis moderatim vel dense adpresso-pilosis (Fig. 142).

Type in herb. Chi. Nat. Hist. Mus., collected in upland savana with *Curatella*, 5 kms. west of Upata, state of Bolívar, alt. 500 m., July 31, 1944, *Julian A. Steyermark 57528*, "stems bushy-branching, 1/2-1 foot tall; flowers yellow; leaves lemon-scented."

It is reported that a drink ("té") is prepared from the plant. After immersing the plant in boiling water, the infusion is drunk like a lemonade, and used in the treatment of fevers.

This species is related to *P. Swartziana* Less. of the West Indies, Central America, and northern South America. It is distinguished from that species by the smaller heads of shorter involucral bracts, the latter with only 1-2 glands below the apex, and otherwise glandless, the shorter pappus, and the moderately to densely appressed-pilose achenes. From *P. brachycephala* Urb. it may be distinguished by the longer, more pubescent achenes, broader leaves, fewer flowers per head, and 8 oblanceolate-oblong involucral bracts.

***Piptocarpha polycephala* Baker, Mart. Fl. Bras. 6, pt. 2: 125. 1873.**

Piptocarpha kavanayensis Badillo, in Bol. Soc. Venez. Cienc. Nat. 10, no. 68: 280. 1946.

Piptocarpha kavanayensis Badillo, based on *Steyermark 60410* from the region of Santa Teresita de Kavanayen in the state of Bolívar, Venezuela, appears to be conspecific with *P. polycephala* Baker, a species originally collected in the Mount Roraima region.

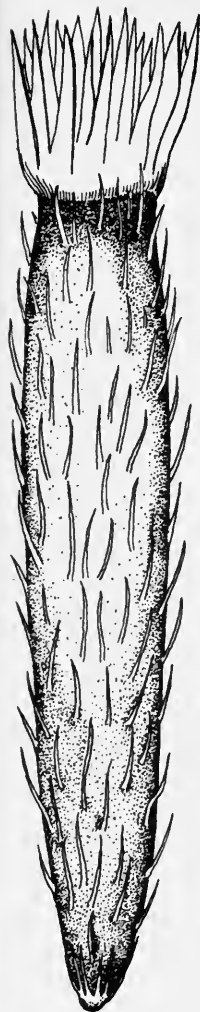


FIGURE 142

Pectis
venezuelensis
Achene with
pappus (X 50).

The specimens of the type collection of *P. polycephala* (Schomburgk 575) have been examined by me in the Chicago Natural History Museum Herbarium. They show the same type of leaf nervation, leaf shape, and tomentum color on the lower leaf surface, and identical pappus, achene, and involucre characters as exhibited in *P. kavanayensis*. Although the type collection of *P. polycephala* has the lower surface of the leaves more softly tomentose with somewhat longer tomentum than in *P. kavanayensis*, a topotype of *P. polycephala* (Pinkus 45 from vicinity of Arabupu, Mount Roraima district) has leaves with the shorter tomentum found in *P. kavanayensis*.

The heads in *P. polycephala* are described as 6-8-flowered. Although Badillo described the heads of *P. kavanayensis* as "4-5-flora," a careful examination of isotype material of this species discloses the heads to be mostly 6-7-flowered, rarely 5-flowered. Badillo further described the petioles as 12-15 mm. in length. Again, isotype material reveals the petioles to reach a length of 22 mm.

While the leaves average somewhat larger in *P. kavanayensis* than those found in the type collection of *P. polycephala*, this variation is so slight as to suggest only a normal type of variation. Apparently as the plant matures, the lower surface of the leaves becomes less softly tomentose, since both Pinkus 45 and Steyermark 60410 are more mature specimens with shedding heads of achenes than those of Schomburgk 575.

Polymnia meridensis Steyermark, sp. nov.

Herba ramosissima 1.3-1.7-metralis; caulibus supeme glandulari-hispidulis; ramulis junioribus pedunculisque dense glandulari-hispidulis; foliis membranaceis oppositis permagnis subhastato-deltaideis apice acutis vel acuminatis, sinuato angulosis, angulis acutis, remote denticulatis triplinerviis, reticulato-venosis praesertim infra, supra densissime asperuloscabridis pilis brevibus valde strumulosis 0.5-0.75 mm. longis obtectis, infra densissime molliter pilosis, caulinis superioribus

principalibus 15-25 cm. longis 15-20 cm. latis, laminis in petiolum alatum 6.5-8 cm. longum 2-2.5 cm. latum subito decurrentibus basi in auriculam subrotundatam semiamplexicaulem ampliatis; inflorescentiis corymboso-trichotomis terminalibus; pedunculis dense glandulari-hispidulis; floribus luteis; capitulis hemisphaericis; involucri squamis exterioribus 5, late suborbiculari-ovatis vel rhombeo-ovatis apice obtusis vel rotundatis 12-13 mm. longis 10-12 mm. latis, extus pilis glandulosis brevibus densissime obtectis, marginibus glandularibus, intus praesertim parte superiore pilis glandulosis praeditis ceterum glabris, squamis interioribus brevioribus oblongo-lanceolatis acutis 6.5-7 mm. longis 2.5-3.5 mm. latis subcucullatis extus pilis glandulosis longioribus adscendentibus prope medium paullo confertis intus glabris; floribus radiis involucri longioribus 12-15 tubo extus pilis glandularibus obtectis basi pilis villosis, ligulis 9-nervatis obovatis 10-12 mm. longis 4.5-5 mm. latis, apice rotundatis extus pilosis tridenticulatis dentibus 0.8-0.9 mm. longis extus et apicem versus pilosis, styli parte exserta 1.75-2 mm. longa, $1/4-1/5$ longitudinem ligulae aequanta; floribus disci masculis numerosis, corollis tubulosis infra medium angustatis 7.5-8 mm. longis, lobis tuboque dorso pilosis pilis adscendentibus praeditis; receptaculi paleis oblongo-lanceolatis subobtusis 7 mm. longis 1.8-2 mm. latis, marginibus supra medium minute glandularibus, ceterum glabris; achaeniis radii nigris subobovatis apice oblique rotundatis 4.5 mm. longis 3 mm. latis (Fig. 143).

Type in herb. Chi. Nat. Hist. Mus., collected in rocky thickets on slopes below Chachopo, state of Mérida, alt. 3045 m., July 22, 1944, Julian A. Steyermark 57519, "branching herb, 4-5 feet tall; rays yellow; disk dull yellow; leaves membranaceous."

This species superficially resembles *P. edulis* Wedd. (*P. sonchifolia* Poepp.), but differs in numerous respects. The style of the ray florets is only $1/4-1/5$ the length of the ligule, whereas it becomes $1/2$ the length of the ligule in *P. edulis*; the tube of the fertile ray florets in *P. edulis* is densely white-villous throughout with non-glandular hairs, whereas in *P. meridensis* the tube is covered with glandular hairs in the upper half and only sparsely pilose with non-glandular hairs near the base; the outer involucre bracts are shorter than the ligules, are twice as broad as in *P. edulis*, are of a different shape, rounded or obtuse instead of acute to acuminate, and densely glandular on the outside, whereas in *P. edulis* the outer bracts are sparsely villous in the upper half and only sparsely glandular in the lower half; the inner involucre bracts in *P. meridensis* are covered with glandular hairs on the outside, whereas in *P. edulis* they are hirsute without and conspicuously ciliate; the disk florets in *P. meridensis* are conspicuously pubescent on the outside, both on the tube and the lobes, whereas in *P. edulis* they are glabrous on the tube and only sparsely ciliate on the lobes; the receptacular pales in *P. edulis* are hispid with long hairs on the outer surface and 1-1.5 mm. wide, whereas in *P. meridensis* they are glabrous except for the minutely glandular margins, and are 1.8-2 mm. wide; in *P. meridensis* the peduncles and upper parts of

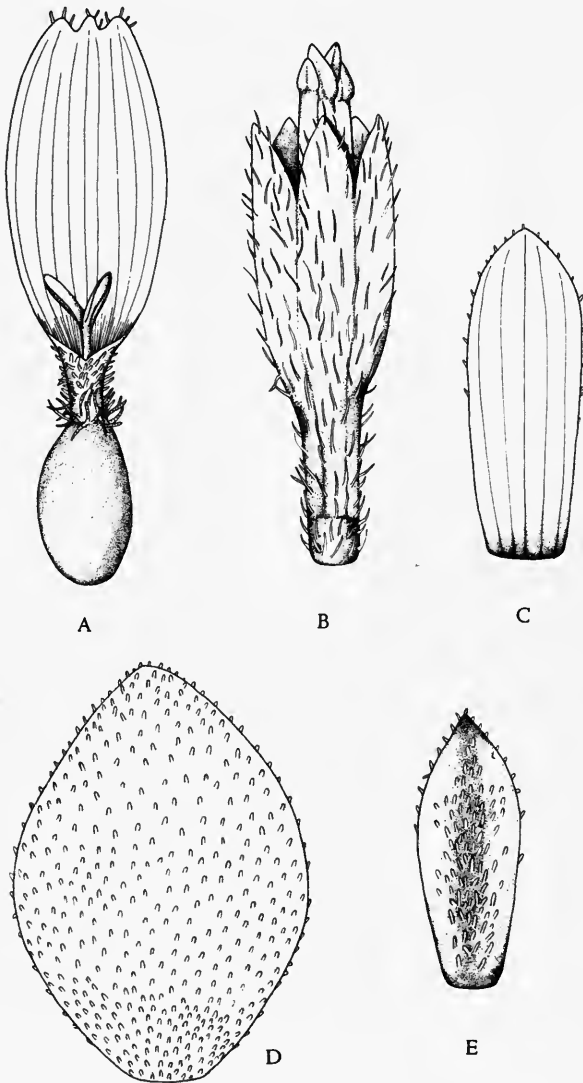


FIGURE 143

Polymnia meridensis

A, Pistillate ray floret (X 5); B, Staminate disk floret (X 7.5);
 C, Palea (X 7.5); D, Outer involucrel bract, dorsal surface (X 4.5);
 E, Inner involucrel bract, dorsal surface (X 4.5).

the stems are densely rough-glandular-hispidulous, whereas in *P. edulis* the peduncles are densely white-villous and the upper parts of the stems are pilose, becoming glabrescent, but the hairs are not glandular as in *P. meridensis*. Finally, the upper surface of the leaves in *P. meridensis* is covered with a dense rough strumulose pubescence of short hairs having an enlarged subpersistent base, whereas in *P. edulis* the upper surface is covered with longer softer rather appressed hairs.

Polymnia sonchifolia, described by Poeppig from Peru, agrees in all respects with *P. edulis* Wedd., and is here considered conspecific.

***Quelchia Cardonae* Steyermark, sp. nov.**

Arbor 6-metralis, ramulis teretibus striatis in sicco nigro-fuscentibus, apice tomentosis; foliis longe petiolatis, laminis subcoriaceis late obovatis apice rotundatis retusis apiculatis, basi subcuneato-obtusis, 7.5-11.5 cm. longis 3.5-5 cm. latis, nervis lateralibus utroque latere 10-11 integris, supra reticulato-venosis glabris vel subglabris, subtus praesertim novellis plus minusve laxe tomentellis; petiolis basi dilatatis 1.5-2.5 cm. longis dense brunneo-tomentellis vel glabrescentibus; capitulorum glomerulis pedunculatis, pedunculis ad 8-9 cm. longis dense tomentellis; corymbis subhemisphaericis multi-capitulis; capitulis cum bracteis foliosis late ovatis vel suborbicularibus apice rotundatis 1.3-2.2 cm. longis 1.2-1.8 cm. latis subtendentibus; capitulis congestis sessilibus, 1-floris 12-13 mm. altis; involucri fusiformi-cylindrico irregulariter 4-5-seriatis, bracteis 11-12, omnibus dense brunneo-tomentellis interdum apice glabratis exceptis, extimis ovatis apice rotundatis 3 mm. longis 3 mm. latis, medianis oblongis apice rotundatis vel obtusis 9 mm. longis, 3 mm. latis, intimis oblongo-lanceolatis, apice obtusis 10-11 mm. longis 2.5 mm. latis; corollis regularibus glabris 7.5-8.5 mm. longis anguste cylindricis, profunde 5-lobis, tubo brevissimi 1-2 mm. longo, lobis linearibus 5-6 mm. longis apice rotundatis vel obtusis crassiusculis; antheris 7-7.5 mm. longis basi caudato-sagittatis, appendice lanceolato subobtusis 0.5-0.7 mm. longo, tubo 5 mm. longo, caudicibus lanceolatis acutis 1.5-1.6 mm. longis hispidulo-barbulatis; stylo glabro ramis brevibus truncatis 1 mm. longis; achaeniis subapplanatis nigro-brunneis leviter paucicostatis 4.5-5 mm. longis 0.7-0.8 mm. latis glabris; pappo luteo-albido ad 8 mm. longo, setis scabridis.

Stamens with free filaments; anthers syngenesious, the tails of adjacent anthers connate for about half their length; achene not narrowed at summit, lightly several-costate (sometimes 6-costate); pappus bristles subequal, finely and closely scabridulous (Fig. 144).

Type in U.S. Nat. Herb. (no. 1932227), collected on "cumbre del Cerro Acopán," Río Caroní, Guayana, state of Bolívar, alt. 2200 m., Octubre, 1947, *F. Cardona* 2288, "arbusto 6 m., fls. blancas."

It is noteworthy to encounter a second species in this previously known monotypic genus, represented heretofore by *Q. conferta* N. E. Brown from the summit of Mount Roraima. This new species, named

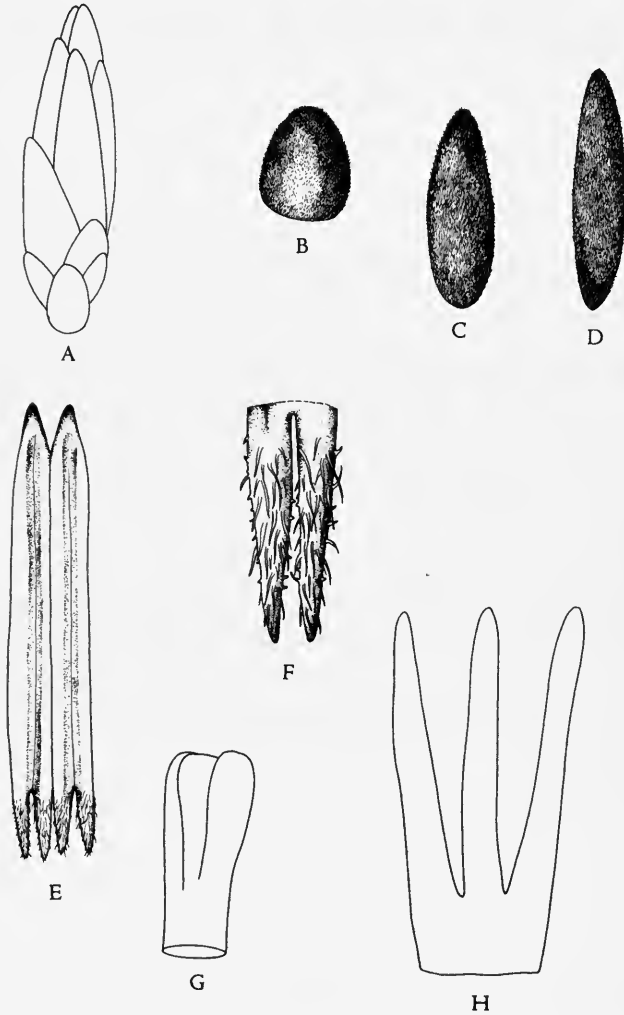


FIGURE 144

Quelchia Cardonae

A, Involucre (X 3); B, Outer involucre bract (X 3); C, Middle involucre bract (X 3); D, Inner involucre bract (X 3); E, Portion of anther (X 8); F, Detail of tails of anther (highly magnified); G, Style branches (highly magnified); H, Portion of corolla with lobes (highly magnified).

in honor of its collector, Captain Felix Cardona Puig, was found on the summit of Acopán-tepuí, another of the large isolated mesas of the Venezuelan Guyana. It lies far to the southwest of Mount Roraima.

Quelchia Cardonae differs in several respects from *Q. conferta*. It is much taller in habit of growth, the leaves are larger with a denser brownish tomentum on the lower surface, especially of younger leaves, the peduncles are more elongated, the heads are larger and subtended by larger more suborbicular leaf-like bracts, the involucre bracts are larger and obtuse or rounded at the apex, the inner and middle ones densely brown-tomentulose, whereas in *Q. conferta* these are glabrous or glabrescent, and the corolla is longer in *Q. Cardonae*.

It is possible that the achenes examined in *Q. Cardonae* are somewhat immature, but they are not subterete as described in *Q. conferta*; rather they are flattened, 2-angled, grooved, and lightly costate.

Sabazia urticaefolia (H.B.K.) DC., var. *venezuelensis* Steyermark, var. nov.

A typo differt foliis minoribus et achaeniis per omnes partes dense hispidulis.

Type in herb. Chi. Nat. Hist. Mus., collected on pastured open slopes of mountain between Santo Domingo and Los Quebraditos, south of Las Sabanetas, above Humocaro Bajo, state of Lara, alt. 2430-2475 m., February 8, 1944, *Julian A. Steyermark* 55379, "rays lavender; disk golden."

Local name: "pira georgen."

The inhabitants of this region locally use the plant as a pot herb when cooked.

Typical *S. urticaefolia* was described originally from Ecuador. The achenes in the original description (Humb., Bonpl., & Kunth, Nov. Gen. & Sp. Pl. 4: 257. pl. 389. 1820) are stated to be "laevia, margine hispidula," while the plate shows them to be hispid over the entire surface. An examination of a specimen from Peru (*Townsend A177*) preserved in the herb. Chi. Nat. Hist. Mus. shows the achenes to be nearly glabrous with a slight hispidulous pubescence developed near the apex. In var. *venezuelensis* the achenes are densely hispidulous throughout and the leaves are smaller with shorter dentations.

Soliva anthemidifolia R. Br., var. *lanuginosa* Steyermark, var. nov.

A specie differt foliis brevioribus angustioribus 1.5-2 cm. longis 5-9 mm. latis, pinnis bipinnatis vel bipinnatifidis ca. 3-jugis, segmentis anguste linearibus 1.5-3 mm. longis 0.2-1 mm. latis manifeste lanuginosis, petiolis 5-8 mm. longis eis et rhachibusque valde lanuginosis; capitulis sessilibus dense lanuginosis; achaeniis late oblongis apice truncatis 2.2-2.5 mm. longis 1-1.5 mm. latis.

Type in herb. Chi. Nat. Hist. Mus., collected in sunny open dry ground, between Buenos Aires to Canyon of El Callado, above Humocaro Alto, state of Lara, alt. 2285-2740 m., February 12, 1944,

Julian A. Steyermark 55506.

Cotype in herb. Chi. Nat. Hist. Mus., collected in waste places and in cultivation, San Rafael de Mucuchies, state of Mérida, January 17, 1929, *Pittier 13194.*

This new variety is distinguished by its more densely lanuginose leaves, affecting the leaf segments as well as the petioles and rachis, relatively shorter and narrower leaves, more densely lanuginose involucre of the flowering heads, and somewhat shorter achenes. In typical *S. anthemidifolia* (with which I would include *S. Mutisii* H.B.K.) the achenes are comparatively longer in proportion to their width, measuring 2.5-3.5 mm. long, whereas in var. *lanuginosa* they are 2.2-2.5 mm. long. As more collections become available, it is possible that this variety of the higher altitudes of the Venezuelan Andes may prove to be a distinct species.

Stenopadus talaumifolius Blake, var. *magnifolius* Steyermark, var. nov.

A specie recedit foliis majoribus, laminis 10-21 cm. longis, 3.5-8 cm. latis, laxe reticulato-venosis, nerviis lateralibus 9-13-jugis; petiolis 1-3 cm. longis glabris vel glabratis; internodiis 0.5-3 cm. longis; pedunculis breviter pedunculatis 1-2 cm. longis dense strigillosis; capitulis 17-floris; involucris 4 cm. altis subcylindrico-ellipticis basi angustatis valde graduatis ca. 11-12-seriatis; phyllariis adpressis coriaceis extus strigillosis 5-23 mm. longis 3-8 mm. latis; corollis 30 mm. longis, tubo 18 mm. longis, lobis 12 mm. longis; antheris 11 mm. longis, caudicibus 2 mm. longis.

Tree 10-15 m. tall; older branches pale brown, 1 cm. in diameter, those of the season darker brown; leaf blades subcoriaceous, obovate, obtuse or rounded, shining above, 10-21 cm. long, 3.5-8 cm. wide, loosely reticulate on both sides, glabrous; petioles stout, 1-3 cm. long, glabrous; disk 4 cm. high, about 2 cm. thick; phyllaries dull brown, coriaceous with thinner margin, the outermost broadly ovate, 5 mm. long, 4 mm. wide, the next ones ovate, 10-12 mm. long, 6-8 mm. wide, the middle ones oblong-lanceolate, acute to obtuse, 18 mm. long, 6-7 mm. wide, the innermost linear-lanceolate or lanceolate, acute, 23 mm. long, 3-4 mm. wide, all densely strigillose without; receptacle flattish, glabrous, up to 8 mm. in diameter, the pales one or few, narrowly linear, 28-29 mm. long, 0.4 mm. wide, hirsutulous without; corollas fleshy, the tube 18 mm. long, cylindrical to the middle, then funnelform, 3.5-4 mm. wide at apex, the segments linear-lanceolate, acuminate, strongly revolute, 2-nerved, 12 mm. long; anthers 11 mm. long, the terminal appendages broadly lanceolate, acute, 2 mm. long, the sacs 7 mm. long, the tails narrowly lanceolate, acuminate, 2 mm. long, backward-serrulate; style finely asperulous, the branches oblong-lanceolate, subsquarrose, acutish, glabrous; achenes black, 4-angled, about 5-ribbed, 9-13 mm. long; pappus buff or sordid-whitish, 1.5-2 cm. long.

Type in U.S. Nat. Herb. (no. 1932175), collected on Cerro Arepuchi, Río Caroní, state of Bolívar, alt. 600 m., September, 1947, *F. Cardona 2190.*

Additional collections, both in U.S. Nat. Herb., are: same locality, alt. 600-800 m., April, 1945, *F. Cardona 1181*; and en el Río Surukun, afluyente Río Caroní, alrededor del campamento Perai-tepui, state of Bolívar, alt. 900 m., March 17, 1947, *F. Cardona 2095*.

At first, the three collections cited above were believed to constitute a distinct new species closely related to *S. talaumifolius* Blake. Vegetative differences are in the larger and more elongated leaf blades with the upper surface more loosely reticulate-veined with larger areoles, less coriaceous blades, longer petioles and internodes, and taller trees. Dissection of the flower revealed these differences: the anther and corolla lobes are slightly shorter in *S. talaumifolius* var. *magnifolius*, and the middle and inner phyllaries are somewhat longer. However, all other measurements were so close to those taken by Blake for *S. talaumifolius*, including size of disk and involucre, pappus, and achene, that it was deemed wiser to indicate a relationship with *S. talaumifolius* as varietal in nature. Future collections will probably reveal more overlapping in floral measurements than are apparent at present. In general, the specimens of Cardona have more mature achenes and show less ribbing than noted by Blake. The achenes which I have examined in the Tate type collections of *S. talaumifolius* appear less mature.

***Verbesina Blakeana* Steyermark, sp. nov.**

Frutex 1.8-3.3-metralis, ramis glabris striatis 2.5-7 mm. diam.; internodiis 0.9-1.2 cm. longis; foliis alternis sessilibus subcoriaceo-chartaceis subtus albidis oblanceolatis apice acuminatis basi angustatis 5.5-9.5 cm. longis 0.8-2.1 cm. latis, marginibus integerrimis revolutis supra glabris costa media substrigillosa excepta subtus dense albido-tomentosis, nervis lateralibus utroque ca. 10 ante marginem anastomosantibus supra valde sulcatis cum venis reticulatis, subtus prominentibus; paniculis terminalibus polycephalis; pedicellis 6-15 mm. longis dense pilosulis; capitulis radiatis ca. 1.2-1.3 cm. latis; disco 5-7 mm. alto 5-6 mm. lato; involucre ca. 2-seriato 5 mm. alto, bracteis anguste oblongis vel oblongo-lanceolatis apice obtusis vel rotundatis extus parce pilosulis; radiis 4-6 albidis elliptico-obovatis apice rotundatis inaequaliter trilobatis, lamina 4 mm. longa 2.5 mm. lata dorso parce puberula, tubo 2 mm. longo piloso; corollis disci ca. 14 albidis 4 mm. longis extus parce puberulis (tubo 1.25-1.5 mm. longo, fauce 1.5-1.7 mm. longo, lobis ovatis 1.25-1.5 mm. longis); paleis oblanceolato-oblongis breviter mucronatis 5-5.75 mm. longis ciliolatis; achaeniis (immaturis) compressis 5.25 mm. longis angulis dense pilosis angustissime alatis; aristis 2, setulosis 2.5-2.75 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected between Mucutuy and Mucuchachí, state of Mérida, alt. 1065-2430 m., May 4, 1944, *Julian A. Steyermark 56300*, "shrub 5-10 feet tall; rays white; disk florets white, with anthers gray-lavender; leaves white below."

This is apparently a member of section *Ochraetia* and is outstanding in its combination of glabrous stems, narrow sessile leaves whitened beneath and mostly glabrous above, and relatively small

heads of white flowers. It is a pleasure to dedicate this species to Dr. S. F. Blake, Senior Botanist of the U. S. D. A., who has contributed so much to the better understanding of this genus.

Verbesina exalata Steyermark, sp. nov.

Perennis herbacea 2.3-2.8-metralis, caulibus dense sordideque pilosis superne et ramis floriferis lanulosis pilis elongatis onustis; foliis alternis elliptico-ovatis vel ovali-ovatis apice acuminatis basi in petiolum cuneate marginatum contractis 13-24 cm. longis 5-8 cm. latis irregulariter leviterque repando-denticulatis, dentibus utroque 30-40 ad mucrones callosos reductis, supra dense scabro-hispidulis pilis basi tuberculatis subtus dense subtomentosis, nervis lateralibus principalibus utroque 9-15 ascendentibus subtus prominulis; petiolis immarginatis supra basin 1 cm. cum lamina decurrentibus; paniculis terminalibus polycephalis 2-4 dm. diam.; ramulis vel pedunculis 3.5-15 cm. longis laxe sordideque lanuloso-pilosis pilis elongatis onustis; pedicellis ultimis 3-9 mm. longis laxe lanuloso-pilosis, pilis elongatis; bracteis ultimis linearibus 1.5-2 mm. longis; capitulis 0.8-0.9 cm. latis; disco 4-7 mm. alto 2.5-4 mm. diametro; involucrio 2-seriato 3.5-4 mm. alto, bracteis lanceolatis late oblanceolatis vel oblanceolato-spathulatis abrupte acuminatis mucronatis pilosis; radiis 4-7 albidis ovalibus vel late oblongis apice rotundatis trilobulatis, lamina 2.75-3 mm. longa 1.75-1.9 mm. lata, tubo 1.3-1.5 mm. longo piloso; corollis disci 19-21 albidis 2.5-3 mm. longis (tubo 0.5-0.75 mm. longo piloso, fauce infundibuliformi 1.5 mm. longo extus puberulo, dentibus ovatis 0.7-0.8 mm. longis); paleis spathulato-obovatis acutis mucronatis 4.25-4.5 mm. longis dorso pilosis dense longeciliatis; achaeniis (immaturis) cuneato-obovatis substipitatis 2.25-2.5 mm. longis parce pilosis angustissime alatis; aristis 2, inaequalibus 2.25-2.5 mm. longis setulosis.

Type in herb. Chi. Nat. Hist. Mus., collected on dry south-facing slopes above Caracas, Cordillera del Avila, between Colegio Nacional de Enfermera and Los Venados, Distrito Federal, alt. 1065-1520 m., January 5, 1944, *Julian A. Steyermark 55176*, "ray flowers white; disk dull white with blackish anthers; herb 5-7 feet tall with several stems at base."

This species of section *Ochractinia* strikingly resembles the Guatemalan *V. scabriuscula* Blake, but differs in the shorter rays, fewer disk corollas, larger and less compact inflorescences, longer awns of the achenes, and looser longer pubescence of stems, flowering branches, peduncles, and pedicels.

Verbesina negrensis Steyermark, sp. nov.

Frutex 1.8-5-metralis, ramis glabris purpureis superne 0.8-1.3 cm. diam.; internodiis 1-2 cm. longis; foliis alternis petiolatis firme membranaceis atroviridibus costa media subtus purpureo-lanceolatis vel anguste ellipticis utrinque acuminatis 10-20 cm. longis 2.3-4.5 cm. latis crebre dentatis, dentibus utroque 30-40, 1-2 mm. altis, fere omnino glabris costa media parce puberula excepta, penninerviis, nervis lateralibus utroque 25-30 divaricate patentibus ante marginem

anastomosantibus subtus prominulis; paniculis terminalibus polycephalis; pedicellis 1.2-1.5 cm. longis dense puberulis; capitulis discoideis, disco in anthesi 7-12 mm. alto 4-6 mm. lato, in fructu ad 13 mm. lato; involucri 1-seriato 4.5-6 mm. longis, bracteis oblongo-lanceolatis acutiusculis extus parce puberulis, marginibus ciliolatis; corollis 10-16 sordido-albidis 5-5.25 mm. longis (tubo 1.5-1.8 mm. longo extus pilosis, fauce infundibuliformi 1.2-1.75 mm. longo extus dense hispido-pilosis, lobis lineari-oblongis 2-2.75 mm. longis marginibus ciliatis ceterum fere glabris; paleis oblongo-lanceolatis vel oblongo-oblongeolatis subito acutis vel acuminatis 7.5-8 mm. longis 2.5-3.5 mm. latis extus plerumque glabris marginibus ciliolatis; achaeniis obovatis compressis breviter hispidulis 6.5-7 mm. longis 4-5 mm. latis prominenter alatis, alis 0.6-1 mm. latis parce ciliolatis, aristis 2 setulosis 1.5-3.5 mm. longis.

Type in herb. Chi. Nat. Hist. Mus., collected between Bailadores and Páramo de la Negra, state of Mérida, alt. 2285-2430 m., July 7, 1944, *Julian A. Steyermark 57066*, "shrub 15 feet tall; leaves firmly membranaceous, deep green above, dull green below with dull lavender midnerve below; stem purple as is base of petiole; peduncles pale green; corollas dull white; stamens black; stigmas white."

Cotype in herb. Chi. Nat. Hist. Mus., collected in thickets between La Grita and Páramo de la Negra, alt. 2130-2510 m., July 19, 1944, *Steyermark 57470*, "common; shrub 5-8 feet tall; flowers whitish and dull brown; leaves coriaceous, deep green and shining above, dull green below."

This belongs to section *Lipactinia* and is related to *V. laevifolia* Blake of Venezuela, from which it differs in the narrower, more slender pointed, more closely dentate leaves with more numerous divaricately spreading lateral nerves, more numerous disk corollas, and broader-winged achenes. It also resembles *V. simulans* Blake, likewise of Venezuela, but that species, among other characters, has radiate heads, more numerous disk flowers, and fewer lateral nerves of the leaf blades.

***Verbesina Schomburgkii* Sch. Bip.**

Verbesina guianensis Baker, in Mart. Fl. Bras. 6, part 3: 211. 1884.

Verbesina guianensis Baker apparently cannot be maintained as distinct from *V. Schomburgkii* Sch. Bip. in Schomb. Versuch. Faun. Fl. Brit. Guiana, 1078. 1848, nomen subnudum; Klatt, Leopoldina 20: 94. May, 1884. In their treatment of the genus *Verbesina*, Robinson & Greenman (Proc. Am. Acad. 34: 563-564. 1899) attempted to separate *V. Schomburgkii* and *V. guianensis* as follows: "leaves 'sessile': heads numerous" for *V. guianensis* as contrasted with "leaves narrowed below to distinct petioles; corymbs few-headed." These authors themselves regarded *V. Schomburgkii* as a species of doubtful value with the questionable status of "a form of the preceding?"

In his review of the section *Lipactinia* of *Verbesina*, Blake (Am. Journ. Bot. 12: 625-640. 1925) likewise maintained both species as

distinct, but used the number of florets in a head as his criterion for separating the two, *V. guianensis* being keyed out under "heads 4-24-flowered," *V. Schomburgkii* under "heads 40-90-flowered." Blake further notes that in *V. guianensis* the heads are "about 20-flowered" and in *V. Schomburgkii* "40-flowered." In both species the pales are pubescent above (loc. cit. pp. 638 and 639). Blake, who had not seen the type of *V. guianensis*, followed Baker in calling the leaves "sessile," as contrasted with their being petiolate in *V. Schomburgkii*, but my own examination of a photograph of part of the type of *V. guianensis* (Schomburgk 654) and of a leaf fragment of the same collection preserved in the Herbarium of the Chicago Natural History Museum shows the leaves of *V. guianensis* to be as petiolate as they are in *V. Schomburgkii*. Two recent collections, one from Mount Roraima, the type locality of *V. Schomburgkii* (Steyermark 58670), and another in the same general region (Steyermark 60070) show heads with 36 and 44 flowers respectively.

Since I believe that *V. Schomburgkii* and *V. guianensis* were collected from the same or practically the same region, and that the differences between a 20-flowered and 36- or 44-flowered plant, when not combined with other differences, is not sufficient to maintain these two as distinct species, it would seem proper to unite them as one.

While both species were validly published in May, 1884, it is here proposed to use the name *V. Schomburgkii*, since it was first proposed as early as 1848, and 36 years prior to Baker's *V. guianensis*, although only as a *nomen*. Then, later in May, 1884, it was validly published by Klatt.

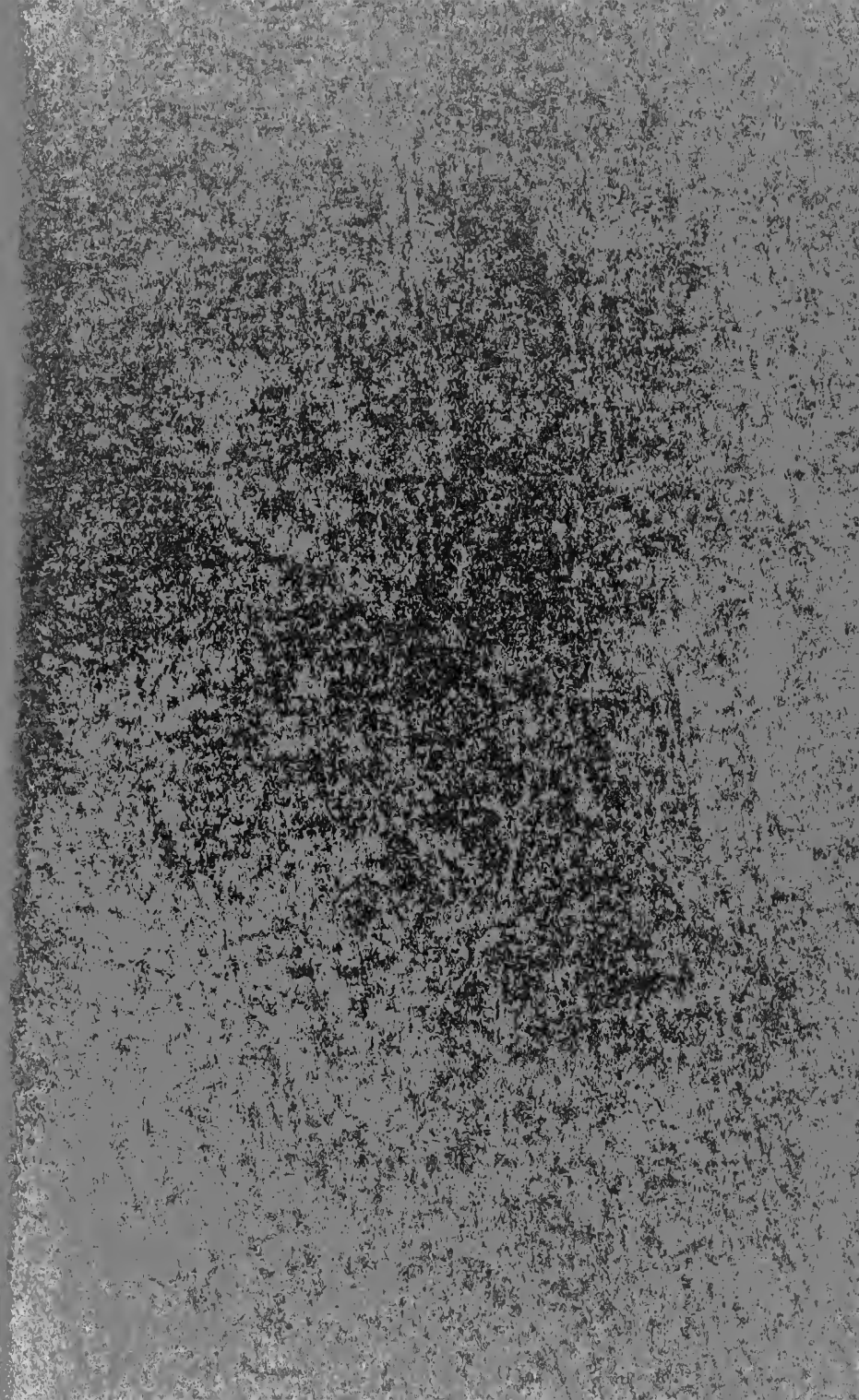
***Verbesina tachirensis* Steyermark, sp. nov.**

Frutex 3.3-5-metralis, ramis juvenilibus ochraceo-griseis striatis dense substrigoso-pilosis; foliis alternis petiolatis membranaceis utrinque graciliter rugosis subtus cinereo-viridibus elliptico-ovatis vel late ellipticis utrinque acuminatis 8-20 cm. longis 2.7-8.3 cm. latis subintegris vel obscure crenulatis, dentibus utroque ca. 20 minutis inconspicuis, supra graciliter scabris pilis tenuibus basi tuberculatis subtus dense hispido-pilosis pilis incurvatis substrigosis, nervis lateralibus utroque 7-9 eis atque reti venarum prominulis; petiolis 1.5-3.5 cm. longis densissime sordido-pilosis 1.5-2 cm. basi immarginatis; paniculis terminalibus polycephalis; pedicellis dense hispido-pilosis 7-13 mm. longis; capitulis radiatis ca. 1.3-1.5 cm. latis; disco 5-10 mm. alto 5-9 mm. lato; involucro 2-seriato 3.5-5 mm. alto, bracteis ovato-lanceolatis apice callosomucronatis subsquarrosis extus hispido-pilosis; radiis 3-4 albidis late elliptico-oblongis apice trilobatis, lamina 4.5 mm. longa 2.5-2.8 mm. lata, tubo 2 mm. longo hispido-piloso; corollis disci 14-19 cinereo-albidis vel -nigris 3.5-4 mm. longis extus hispido-pilosis (tubulo 1 mm. longo dense hispido-piloso, fauce 1.2-1.5 mm. longo anguste infundibuliformi, dentibus lanceolatis 1.5 mm. longis); paleis late oblongo-lanceolatis compressis acutiusculis 5.1-5.5 mm. longis parte superiore extus hispido-pilosis; achaeniis compressis nigris

5-5.5 mm. longis 2.5 mm. latis sparse strigillosis angustissime alatis, alis ciliolatis basibus aristarum 2 inaequalium setulosarum 2-3 mm. longarum adnatis.

Type in herb. Chi. Nat. Hist. Mus., collected between Las Delicias and Paraguita, bordering Río Táchira, along Colombian-Venezuelan boundary, state of Táchira, alt. 1675-1890 m., July 12, 1944, *Julian A. Steyermark 57149*, "shrub 10-15 feet tall; leaves membranaceous, finely rugose both sides, deep dull green above, gray green below; rays white; disk grayish-black; the corolla tube greenish; lobes grayish-black with white margins; anthers blackish; stigma white."

This is a member of the section *Ochraetia* and related to the Colombian *V. synethes* Blake and *V. nudipes* Blake, and *V. oligactis* Blake. From *V. synethes* it differs in the smaller heads with 3-4 instead of 8 rays, different type of leaf pubescence, and more petiolate leaf blades. It has more numerous rays, more numerous disk flowers, and less pairs of lateral nerves of the leaf blades than *V. oligactis*, and from *V. nudipes* it may be distinguished by the smaller number of lateral nerves of the leaf blades, fewer flowers per head, and sparsely strigillose achenes.





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