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STUDIES OF SOUTH AMERICAN  
PLANTS, XII

By A. C. SMITH



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## PREFACE

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THE present number of the Contributions, by A. C. Smith, curator of the division of phanerogams, United States National Herbarium, is a continuation of his series of studies of South American plants, of which it is the twelfth. In it are described 45 new species of the families Myristicaceae, Hippocrateaceae, Ericaceae, and Vacciniaceae, these being groups that have already been partially monographed or revised by the author. Recent collecting in northern South America continues to disclose new or noteworthy plants in these families, as in others; in the present treatment various range extensions are noted, and the synonymies of certain plants are adjusted.

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# STUDIES OF SOUTH AMERICAN PLANTS, XII

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By A. C. SMITH

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## INTRODUCTION

THE present paper, like preceding studies in this series,<sup>1</sup> is intended to bring together miscellaneous notes on South American representatives of special families of phanerogams. The families discussed in this treatment are the Myristicaceae, Hippocrateaceae, Ericaceae, and Vacciniaceae. Recently collected South American specimens of these families that have come to the writer's attention include numerous plants of unusual interest; particular mention should be made of the excellent collections of Dr. J. Cuatrecasas in Colombia and Dr. J. A. Steyermark in Ecuador (Dr. Steyermark's Venezuelan material of these families will be discussed as a part of his report, now in press). As a result of the field work of these and other collectors, I find it desirable to describe 45 species as new and to propose 4 new combinations and 3 new names in the mentioned families. Other notes pertain to range-extensions, rare or particularly noteworthy species, or adjustments in synonymy.

Specimens cited in this study are deposited at the following institutions: Arnold Arboretum of Harvard University (A); Chicago Natural History Museum (Ch); New York Botanical Garden (NY); U. S. National Herbarium (US). I am grateful to the directors and curators of these institutions for their kindness in making material available for study.

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<sup>1</sup> Previous papers in this series have been published as follows:

- I. Bull. Torrey Club 58: 87-110. 1931.
- II. Op. cit. 59: 513-524. 1932.
- III. Op. cit. 60: 99-121. 1933.
- IV. Phytologia 1: 126-132. 1935.
- V. Bull. Torrey Club 63: 307-316. 1936.
- VI. Op. cit. 66: 231-249. 1939.
- VII. Trop. Woods 58: 25-32. 1939.
- VIII. Amer. Journ. Bot. 26: 407-412. 1939.
- IX. Op. cit. 27: 541-547. 1940.
- X. Journ. Arn. Arb. 24: 460-471. 1943.
- XI. Op. cit. 27: 86-120. 1946.

## MYRISTICACEAE

Since my revision of this family in 1937 and the few supplementary notes I have since published,<sup>2</sup> numerous species have been found to occur beyond the limits of the ranges ascribed to them. Up to the present, 12 species of Myristicaceae have been known from Colombia, and of these only one was known with certainty to occur on the Pacific coastal strip. Largely as a result of recent collections by Dr. Cuatrecasas, I am able to record 8 additional species from Colombia, while 12 species are now known to occur on the Pacific coast (4 of these being new and described in this treatment). In addition to these Colombian records, the present notes deal with interesting records in Venezuela and elsewhere, based on recently available collections.

***Componeura cuatrecasasii* A. C. Sm. sp. nov.**

Arbor grandis *C. racemosae* Ducke, *C. sprucei* (A. DC.) Warb., et *C. capitellatae* (A. DC.) Warb. affinis, foliorum laminis apice obtusis vel obtuse cuspidatis, nervis tertiariis immersis, inflorescentia mascula copiose strigosa, perianthio plerumque 4-lobato, antheris 4 brevibus cum connectivis carnosis acutis quam thecis longioribus valde differt.

Large tree, 20 m. high or more, the branchlets slender, terete, brownish, at first densely strigose (hairs pale-ferruginous, predominantly 2-branched, about 0.2 mm. in total length), glabrescent; petioles slender, deeply canaliculate, 8–15 mm. long, strigose like the branchlets, glabrescent; leaf-blades subcoriaceous, pale brown when dried, elliptic or obovate-oblong, 8–13.5 cm. long, 3.5–7 cm. broad, rounded or broadly obtuse at base, obtuse or obtusely cuspidate at apex, narrowly recurved at margin, glabrous on both surfaces or with inconspicuous scattered hairs beneath like those of branchlets, the costa slightly raised above, prominent beneath, the secondary nerves 6–9 per side, arcuate-ascending, slightly impressed above, sharply raised beneath, the tertiary nerves immersed, sometimes faintly impressed above and scarcely prominulous beneath; staminate inflorescences solitary or paired, usually axillary, simple or essentially so, copiously strigose on all exterior surfaces (hairs predominantly 2-branched, 0.1–0.3 mm. in total length), fasciculate-racemose, 1.5–2.5 cm. long at anthesis, the rachis slender, subterete, the peduncle short, the fascicles alternate, 3 or 4 per inflorescence, sessile or very short-stalked, subtended by subcoriaceous oblong-orbicular bracts 1.5–2 mm. long and broad; flowers usually 3–5 per fascicle, the pedicels slender, 4–5 mm. long at anthesis; perianth carnose, essentially glabrescent at anthesis, 2.5–3 mm. long, predominantly 4-lobed (sometimes 5-lobed) for slightly more than half its length, the lobes deltoid-lanceolate, acute; androecium about

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<sup>2</sup> Brittonia 2: 393–510. 1937; 3: 339–340. 1939; Journ. Arn. Arb. 24: 460–461. 1943.

1.5 mm. long, the filament-column stout, terete, slightly swollen at base, the anthers 4 (as far as observed), 0.5–0.6 mm. long, free, erect, consisting of carnose acute pellucid-glandular connectives slightly exceeding the dorsally adnate anthers, the thecae 0.3–0.4 mm. long; pistillate and complete fruiting inflorescences not known; mature fruits pedicellate (pedicels about 4 mm. in diameter, the complete ones not seen), oblong-ovoid, up to 8 cm. long and 4 cm. in diameter, rounded to cuneiform at base, obtusely cuspidate at apex, the pericarp brittle, 2–3 mm. thick, finely rugulose without, glabrous or with a few minute scattered 2-branched hairs (suggesting a strigose ovary), the aril apparently entire, thin and inconspicuous, adhering to inner wall of pericarp in dried fruits; seed similar to entire fruit in shape, only slightly smaller, the testa copiously reticulate-veined, the endosperm white, not ruminant.

Type in the herbarium of the Arnold Arboretum, collected at Guayabal, Río Micay, Pacific coast, Department of Cauca, Colombia, alt. 5–20 meters, February 25, 1943, by J. Cuatrecasas (No. 14139). Duplicate in the Chicago Natural History Museum.

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: El Valle: Pacific coast, Río Cajambre, Silva, alt. 5–80 m., Cuatrecasas 17535 (A, Ch).

The species described above is superficially not suggestive of *Compsonaura*, as the tertiary nerves of its leaf-blades are immersed, but nevertheless these nerves are oriented in the manner typical for the genus. The essential floral characters are those of Warburg's subgenus *Eucompsonaura*, in which, however, the unusually heavy indument of the inflorescence, the predominantly 4-lobed perianth, the comparatively few anthers, the large fruits with apparently colored seeds, and other obvious features of inflorescence and foliage readily distinguish it.

The type collection bears staminate inflorescences and No. 17535 is accompanied by detached fruits. The specimens are from large trees, at least 20 meters high and 25 cm. in diameter. The bark is rugose and scaly-fissured, dark ochraceous, and the trunk yields a somewhat sticky red sap. The outer wood is white and the heartwood castaneous. The leaves are dark green and shining above, and the staminate flowers are yellow. The fruits are brownish green, almost smooth, with slender longitudinal veinlets (these not apparent when dried). The seed has a white endosperm with the consistency and taste of the chestnut.

*Compsonaura trianae* Warb. Nova Acta Acad. Leop.-Carol. 68: 147. 1897.

COLOMBIA: El Valle: Chocó region, Río Calima, La Trojita, alt. 5–50 m., Cuatrecasas 16590 (A, Ch). Pacific coast, Río Cajambre, Silva, alt. 5–80 m., Cuatrecasas 17434 (A, Ch). Río Cajambre, Barco, alt. 5–80 m., Cuatrecasas 16980 (A, Ch).

The three cited collections are of particular interest because the species has previously been known only from Triana's type collection,<sup>3</sup> from Colombia without definite locality. The occurrence of the species at low elevations on the Pacific coast inclines one to believe that Triana may have obtained his specimen in that general region, or perhaps slightly to the south, where he is known to have worked. Although Cuatrecasas's specimens are all in fruit, and the diagnostic characters of the genus are in the staminate flowers, the agreement with the type in foliage is so exact that I have little doubt of the identification. My description of 1937 may be amplified as follows:

Fruiting inflorescence 3–8 cm. long, the mature fruits apparently 2–4 per inflorescence; rachis and pedicels stout, terete, rugulose, the pedicels 5–7 mm. long; fruits ovoid or ellipsoid, 3–4.5 cm. long, 2–2.8 cm. broad, abruptly stipitate at base (stipe 1–2 mm. long), obtuse at apex, the pericarp brittle, about 0.3 mm. thick, the aril inconspicuously laciniate at apex, the seed ellipsoid, up to 3 cm. long and 2 cm. broad, the testa conspicuously splotched.

Cuatrecasas's ample field notes indicate the plant as a large tree, 15 meters or more in height, with the trunk about 15 cm. in diameter, with white wood and the usual latex of the family. The fruits are greenish yellow and have a bright red or scarlet aril.

*Dialyanthera parvifolia* Markgraf, Notizbl. Bot. Gart. Berlin 9: 964. 1926.

*Virola glycyarpa* Ducke, Bol. Téc. Inst. Agron. Norte (Belém) 4: 9. 1945.

BRAZIL: Amazonas: Esperança, mouth of Rio Javary, *Ducke* 1508 (type coll. of *Virola glycyarpa*, US).

Careful examination of the above cited isotype and of Ducke's original description indicates that a species of *Dialyanthera* is represented. The specimen bears essentially mature fruits, which are said to be green and to have a very sweet, white aril. The hairs of the branchlets and leaves of this specimen are of the typical 2-armed type characteristic of *Dialyanthera*.<sup>4</sup> In all essential respects Ducke's collection is typical for *D. parvifolia*, although its leaf-blades are more copiously pilose beneath than usual; however, some of the leaves are nearly glabrous, and examination of an extensive series of specimens indicates that the species is very variable in this respect, the dense tomentum being characteristic of young leaves but in general evanescent.

*Dialyanthera gracilipes* A. C. Sm. sp. nov.

Arbor *D. acuminatae* Standl. et *D. otoa* (Humb. & Bonpl.) Warb. affinis; a priore foliorum laminis apice acutis vel breviter cuspidatis non acuminatis, inflorescentia mascula longiore sparse strigosa, fasci-

<sup>3</sup> Cf. *Brittonia* 2: 414. 1937.

<sup>4</sup> Cf. illustration in *Brittonia* 2: fig. 3, e, h, k, on p. 420. 1937.



culis numerosioribus paucifloris, antheris basifixis recedit; a posteriore foliis minoribus gracilius petiolatis cum nervis secundariis paucioribus, inflorescentia sparse strigosa pauciflora, pedicellis et floribus omnino brevioribus differt.

Large tree, the branches slender, rugulose, brownish, glabrous or when juvenile with a few scattered minute 2-branched hairs; petioles slender, canaliculate, 1–2 mm. broad including the narrow wings, 10–15 mm. long, essentially glabrous; leaf-blades narrowly elliptic or lanceolate-oblong, 7–10 cm. long, 2–4.5 cm. broad, acute to attenuate at base, acute or short-cuspidate at apex, papillose on both surfaces, bearing a few scattered 2-branched hairs beneath, the costa plane or slightly raised above, prominent beneath, the secondary nerves 6–8 per side, arcuate-spreading, faintly impressed above and slightly raised beneath; staminate inflorescences 1–3 in leaf-axils, simple, sparsely strigose on all exterior surfaces (hairs usually 2-branched, about 0.2 mm. in total length), 6–7 cm. long at anthesis, the peduncle 1–2 cm. long; fascicles alternate, 4–6 per inflorescence, the bracts minute, caducous, the flowers 2–4 per fascicle, the pedicels slender, 2–3 mm. long at anthesis; perianth about 3 mm. long, 3-lobed nearly to base, the lobes oblong, rounded or obtuse; androecium about 2 mm. long, the filament-column swollen at base, divided in the distal 0.5 mm., the anthers about 0.5 mm. long, attached at base; pistillate inflorescences solitary or paired, 2.5–4 cm. long, sparsely strigose like the staminate; fascicles 2 or 3 per inflorescence, the flowers usually 2 or 3 per fascicle, the pedicels about 4 mm. long at anthesis; perianth like the staminate but up to 4.5 mm. long at anthesis, the ovary ellipsoid, short-stipitate, glabrous, the stigma obviously cleft.

Type in the herbarium of the Arnold Arboretum, collected along Quebrada de Guapecito, Río Cajambre, Pacific coast, Department of El Valle, Colombia, alt. 0–5 meters, May 16, 1944, by J. Cuatrecasas (No. 17708). Duplicate in the Chicago Natural History Museum.

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: El Valle: Pacific coast, Río Micay, Noanamito branch, right bank, El Chachajo, alt. 2–5 m., *Cuatrecasas* 14252 (A, Ch).

The cited specimens are from large trees; the perianth is said to be greenish white or pale greenish yellow. The type collection bears staminate inflorescences and No. 14252 pistillate. From its closest allies, *D. acuminata* Standl. and *D. otoba* (Humb. & Bonpl.) Warb., the new species is distinguished by the foliage and floral characters mentioned in the foregoing diagnosis.

*Dialyanthera otoba* (Humb. & Bonpl.) Warb. Bericht. Deutsch. Bot. Ges. 13: (89). 1895.

COLOMBIA: El Valle: Chocó region, Río Calima, La Trojita, alt. 5–50 m., *Cuatrecasas* 16293 (A, Ch), 16609 (A, Ch). Norte de Santander: Sarare region,

Quebrada de la China (branch of Río Cubugón), Santa Librada, alt. 820 m., *Cuatrecasas* 12977 (US).

The two specimens from El Valle are particularly interesting, as previously<sup>5</sup> I had listed Colombian specimens of *D. otoba* only from the Magdalena Valley. Both specimens from El Valle are in fruit. Another specimen from La Trojita, which I refer here with question, is *Cuatrecasas* 16245 (Ch), which has unusually small and clearly nerved leaves for the species, while the fruiting inflorescences are very robust.

***Dialyanthera latialata* Pittier, Contr. U. S. Nat. Herb. 20: 454. 1922.**

COLOMBIA: El Valle: Western slope of Western Cordillera, valley of Río Anchicayá, left side, woods between Pavas and Miramar, alt. 350–450 m., *Cuatrecasas* 14421 (A, Ch).

The cited collection appears to be the second of the species, otherwise known only from the type collection, from Colón, Panama; it agrees in all respects with the type, like which it bears staminate inflorescences. The small perianth and anthers of *D. latialata*, as well as its much sparser indument, permit its ready separation from *D. lehmannii* A. C. Sm., which on the basis of available material appears to be more abundant in Pacific Colombia.

***Dialyanthera lehmannii* A. C. Sm. Brittonia 2: 423. fig. 3, g-i. 1937.**

COLOMBIA: El Valle: Chocó region, Río Calima, La Trojita, alt. 5–50 m., *Cuatrecasas* 16709 (A, Ch). Río Calima, right bank, slopes opposite Quebrada de la Brea, alt. 30–50 m., *Cuatrecasas* 21103 (A, Ch). Pacific coast, Buenaventura Bay, Quebrada de Aguadulce, alt. 0–10 m., *Cuatrecasas* 19979 (A, Ch). Western slope of Western Cordillera, valley of Río Anchicayá, between Sabaletas and Quebrada del Tátabro, alt. 30–60 m., *Cuatrecasas* 22051 (A, Ch); valley of Río Digua, left side, Piedra de Moler, alt. 900–1,180 m., *Cuatrecasas* 14958 (A, Ch); valley of Río Sanquinini, left side, La Laguna, alt. 1,250–1,400 m., *Cuatrecasas* 15455 (A, Ch). Western Cordillera, La Cumbre, among rocks, alt. 1,680 m., *Cuatrecasas* 19567 (A, Ch). Eastern slope of Western Cordillera, valley of Río Cali, Río Pichindé, between Los Cárpatos and El Olivo, alt. 2,025–2,920 m., *Cuatrecasas* 21746 (A, Ch).

The beautiful series of specimens cited above demonstrates that *D. lehmannii*, thus far known only from two Lehmann collections from low elevations near the coast of El Valle and Cauca, is actually not a rare species. Cuatrecasas's material demonstrates that its range covers a wide altitudinal belt, extending over the crest of the Western Cordillera to its eastern slopes at altitudes exceeding 2,000 meters.

The new material differs from my original description in one important feature: The filaments are sometimes separate distally and the anthers are always separate to the base, not dorsally connate. The original mention of the anthers as connate nearly to apex was possibly

<sup>5</sup> Brittonia 2: 421. 1937.

due to faulty observation on my part, or possibly to normal variation within the species; other species of the family show considerable variation in degree of fusion of anthers. Cuatrecasas's material permits amplification of the original description in several respects, and the following notes should be taken in connection with the earlier description:

A large tree, the trunk up to 60 cm. in diameter; petioles up to 55 mm. long and 18 mm. broad (including wings); leaf-blades up to 35 cm. long and 13 cm. broad, attenuate to obtuse at base, usually persistently tomentellous beneath but sometimes (e. g., No. 21103) subglabrescent; staminate inflorescences up to 12 cm. long, the fascicles sometimes as many as 8 per inflorescence, subtended by large ovate-deltoid bracts, these up to 10 mm. long and 6 mm. broad, tomentellous without, obtuse, caducous as soon as fascicles expand; flowers sometimes only 4 per fascicle but usually 10–20, the pedicel 4–8 mm. long at anthesis, the perianth 5–6.5 mm. long; androecium 3.5–4 mm. long, the filament column entire to apex or the filaments free in the distal 1 mm., the anthers 0.8–1.2 mm. long, attached dorsally at base, free but often curved with the apices contiguous; pistillate inflorescences 3–4 cm. long at anthesis, usually with 4 or 5 fascicles of flowers, the flowers usually 3–5 per fascicle; perianth as in staminate flowers, the ovary short-stipitate, ovoid, densely strigose, the style short, glabrous, the stigma cleft; fruiting inflorescences up to 12 cm. long, the rachis at length glabrescent, the mature fruits probably not more than 5 per inflorescence, pedicellate (pedicels 15–25 mm. long, stout, rugulose, glabrescent, swollen distally), ovoid, inconspicuously carinate, 50–60 mm. long, 40–45 mm. broad, stipitate at base (stipe 3–5 mm. long), cuspidate at apex, the pericarp 3–5 mm. thick, glabrescent, very strongly rugose when dried, the aril laciniate nearly to base, the seed ovoid, 30–35 mm. long, 22–27 mm. broad, obtusely cuspidate at apex.

Ample color notes accompanying the new collections indicate that the tomentum is ferruginous, the perianth yellow or pale green within, the fruit with a brownish green to pale greenish yellow pericarp, the aril semitransparent and white or cream-colored to pink, the seed pale brown or castaneous, and the endosperm white.

*Iryanthera tessmannii* Markgraf, Notizbl. Bot. Gart. Berlin 10: 236. 1928.

*Iryanthera microcarpa* Ducke, Bol. Téc. Inst. Agron. Norte (Belém) 4: 8. 1945.

BRAZIL: Amazonas: Tabatinga, Igarapé Mariassú, Ducke 1510 (type coll. of *I. microcarpa*, US).

Ducke<sup>6</sup> has already noted the identity of his proposed species with *I. tessmannii*.

<sup>6</sup>Trop. Woods 90: 10. 1947.

***Iryanthera macrophylla* (Benth.) Warb. Bericht. Deutsch. Bot. Ges. 13: (85). 1895.**

VENEZUELA: Amazonas: Capihuara, Alto Casiquiare, alt. 120 m., "cuajo," *L. Williams* 15813 (US).

The cited collection is the first of this species from Venezuela that has come to my attention; it is otherwise known from British Guiana, Amazonian Brazil, and adjacent Peru.

***Iryanthera crassifolia* A. C. Sm. Brittonia 2: 431. 1937.**

*Virola papillosa* Ducke, Trop. Woods 90: 10. 1947.

BRAZIL: Amazonas: Esperança, mouth of Rio Javary, *Ducke* 1911 (US, type coll. of *Virola papillosa*).

The type collection of *Virola papillosa* agrees excellently in foliage with material of *I. crassifolia*, known from Amazonian Peru and adjacent Brazil. Although *Ducke* 1911, in young fruit, is essentially glabrous, the few hairs which persist on the inflorescence are typically iryantheroid and 2-branched; the shape of immature fruit is not a dependable character in separating *Virola* from *Iryanthera*.

***Iryanthera juruensis* Warb. Verh. Bot. Ver. Brand. 17: 137. 1905.**

COLOMBIA: Vaupés: San José del Guaviare, on Río Guaviare, alt. 240 m., *Cuatrecasas* 7476 (US). El Valle: Pacific coast, Río Yurumanguí, Veneral, alt. 5-50 m., *Cuatrecasas* 15717 (A, Ch).

Not previously noted from Colombia but known to occur over a wide area in Amazonian Brazil and Peru. The occurrence of the species on the Pacific coast is especially noteworthy; the cited specimen is very typical of the species and cannot be confused with *I. ulei* Warb., which seems to be more abundant in Pacific Colombia.

***Iryanthera ulei* Warb. Verh. Bot. Ver. Brand. 47: 137. 1905.**

COLOMBIA: El Valle: Chocó region, Río Calima, La Trojita, alt. 5-50 m., *Cuatrecasas* 16287 (A, Ch), 16589 (A, Ch). Pacific coast, Río Cajambre, Silva, alt. 5-80 m., *Cuatrecasas* 17471 (A, Ch); Río Yurumanguí, Veneral, alt. 5-50 m., *Cuatrecasas* 15847 (A, Ch); Río Naya, Puerto Merizalde, alt. 5-20 m., *Cuatrecasas* 13955 (A, Ch), 14036 (A, Ch). Cauca: Pacific coast, Río Micay, Guayabal, alt. 5-20 m., *Cuatrecasas* 14123 (A, Ch).

Although *I. ulei* has already been reported from the Magdalena Valley, the excellent series of specimens cited above permits a noteworthy extension of range; these specimens are quite similar in all respects to typical ones from the Amazon Basin.

***Iryanthera hostmanni* (Benth.) Warb. Bericht. Deutsch. Bot. Ges. 13: (84). 1895.**

VENEZUELA: Bolívar: El Tigre, Bajo Caura, alt. 120 m., *L. Williams* 11793 (A, NY, US). La Prisión, Medio Caura, alt. 120 m., *L. Williams* 11704 (NY, US). Río Tonoro, Alto Río Paragua, alt. 300 m., *Cardona* 874 (A, US). Alto Caroni region, *Lasser* 1669 (US). Amazonas: Selva alta de Yavita, alt. 128 m., *L. Williams* 14144 (A, US).

The cited specimens are the first ones of the species from Venezuela which have come to my attention; otherwise I have known it from Surinam and French Guiana.

*Iryanthera megistophylla* A. C. Sm. sp. nov.

Arbor grandis androecio obovoideo minuto et antheris basi divergentibus *I. grandi* Ducke valde affinis, ramulis petiolisque multo robustioribus, foliorum laminis majoribus, nervis secundariis numerosis et intramarginalibus conspicuioribus, inflorescentia mascula validiore, perianthio minore facile distinguitur.

Large tree, to 30 m. high, the trunk up to 50 cm. in diameter; branchlets very robust (up to 15 mm. in diameter within 30 cm. of apices), irregularly angled and rugulose when dried, brownish or cinereous, copiously strigose on the youngest parts (hairs with ferruginous base and paler branches, minute, scarcely 0.2 mm. in total length, most often 2-branched), soon glabrescent; petioles stout (5–7 mm. in diameter), canaliculate, 18–26 mm. long, glabrous; leaf-blades coriaceous, essentially smooth on both surfaces, glabrous, oblong, 28–40 cm. long, 10–14 cm. broad, rounded or truncate at base, obtuse or obtusely cuspidate at apex, narrowly recurved at margin, the costa stout, very prominent and striate on both surfaces, the secondary nerves 22–25 per side, spreading, nearly straight, elevated (often in grooves) above, prominent beneath, conspicuously anastomosing 6–8 mm. within the margin, the veinlets immersed; staminate inflorescences 1–3 in leaf-axils or arising from internodes, fasciculate-racemose, up to 5 cm. long with some mature flowers but probably longer at full maturity, densely ferruginous-tomentellous on all exterior surfaces (hairs branched from base, the branches 0.1–0.2 mm. long, often several per hair but usually 1 or 2 the most obvious), the rachis stout (about 3 mm. in diameter), striate, the fascicles contiguous when young but eventually spaced on the rachis, each subtended by a broadly ovate concave bract about 1.5 mm. long and 2.5 mm. broad; flowers congested, apparently at least 10 per fascicle, subsessile, the pedicel less than 1 mm. long as observed but perhaps elongating, bracteolate at summit (bracteole 1-sided, about 0.4 mm. long and 1 mm. broad); perianth thick-carnose, subrotate, 1–1.2 mm. long at apparent maturity, 3-lobed nearly to base, the lobes ovate-deltoid, acute; androecium obovoid, sharply contracted at base, 0.5–0.6 mm. long and broad, the anthers 0.3–0.4 mm. long, dorsally adnate to the thick-carnose filament-column, divergent at base, contiguous at apex of androecium; old pistillate inflorescences apparently similar to the staminate, the pedicels (past anthesis) stout, up to 3 mm. long, the perianth apparently slightly larger than the staminate, the ovary glabrous; fruiting inflorescences apparently short, the rachis stout, the mature fruits few, pedicellate (pedicels up to 10 mm. long),

transversely ellipsoid, 3.5–4 cm. long, about 5 cm. broad, apparently obtusely cuspidate at apex, short-stipitate, the lateral extremities rounded, the pericarp woody, rugulose when dried, 4–7 mm. thick at the suture, the aril laciniate near apex with narrow lobes, the seed about 2 cm. long and 3.5 cm. broad.

Type in the herbarium of the Arnold Arboretum, collected at Sabaletas, valley of Río Anchicayá, western slope of Western Cordillera, Department of El Valle, Colombia, alt. 25 meters, November 16, 1945, by J. Cuatrecasas (No. 19866). Duplicate in Chicago Natural History Museum.

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: El Valle: Chocó region, Río Calima, La Trojita, alt. 5–50 m., *Cuatrecasas* 16269 (A, Ch).

The minute perianth and androecium of this new species, contrasting so strongly with its robust branchlets and foliage, are of the type found in my species-group *Sagotianae*,<sup>6</sup> in which it is most closely related to the Amazonian *I. grandis* Ducke. Cuatrecasas notes his new plant as a large tree with fissured brownish bark and reddish wood; it yields a thin reddish resinous liquid, like most members of the family. The leaves are deep green or bright yellowish green (becoming brown in drying); the perianth is pale yellow within and brown-pubescent without; the fruit is green, with a red aril.

*Osteophloem platyspermum* (A. DC.) Warb. Bericht. Deutsch. Bot. Ges. 13: (89). 1895.

COLOMBIA: El Valle: Pacific coast, Río Naya, Puerto Merizalde, alt. 5–20 m., *Cuatrecasas* 14022 (Ch), 14035 (A, Ch); Río Yurumangú, Veneral, alt. 5–50 m., *Cuatrecasas* 15718 (A, Ch), 15780 (A, Ch), 15809 (A, Ch); Río Cajambre, Silva, alt. 5–80 m., *Cuatrecasas* 17494 (A, Ch).

The cited series of six specimens provides a fine record of this monotypic genus in Pacific Colombia; previously<sup>7</sup> I had cited only two collections of the species from Colombia, one from the Putumayo River and one (*Lehmann* 9044) without locality. It seems likely that Lehmann also obtained his specimen from low elevations near the Pacific coast, where he is known to have collected. The Cuatrecasas specimens are from trees up to 40 meters in height, and in most characters they agree excellently with my previous description of the species. However, it should be noted that the leaf-blades are sometimes abruptly cuspidate at apex, with a callose-tipped acumen about 5 mm. long, whereas the available Amazonian specimens have leaves either rounded or merely obtuse at apex. In floral characters the new Colombian material shows an extreme of size for the species, the perianth being 5–7 mm. in length, the androecium 3.5–4 mm. long, with the anthers about 3 mm. long and sometimes covering the connective mass to its apex. These more robust floral aspects, however, do not seem to

<sup>6</sup> *Brittonia* 2: 426–427, and *fig.* 4, *f*, *g*, on p. 428. 1937.

<sup>7</sup> *Brittonia* 2: 453. 1937.



provide grounds for recognizing the Pacific Colombian material nomenclaturally.

***Virola cuspidata* (Benth.) Warb.** *Nova Acta Acad. Leop.-Carol.* 68: 176. 1897.

COLOMBIA: Vaupés: Bank of Río Vaupés, between Mitú and Mirití, alt. 200 m., *Cuatrecasas* 6918 (US). Caquetá: Florencia, wooded hills at Buenavista, alt. 450 m., *Cuatrecasas* 8881 (US).

Not previously recorded from Colombia, although it has been known from the adjacent Vaupés region in Brazil; it is a common species in Amazonian Brazil and adjacent Peru.

***Virola elongata* (Benth.) Warb.** *Bericht. Deutsch. Bot. Ges.* 13: (89). 1895.

COLOMBIA: Meta: Villavicencio, toward El Parrao, alt. 500 m., *Cuatrecasas* 4594 (US). About 20 km. southwest of Villavicencio, alt. about 500 m., *Killip* 34252 (NY, US). El Valle: Pacific coast, Río Cajambre, Barco, San Isidro, and Silva, alt. 5–100 m., *Cuatrecasas* 17025 (A, Ch), 17345 (A, Ch), 17372 (A, Ch).

Previously I have recorded only one collection of this species from Colombia, from the Peruvian boundary. The species is abundant in Amazonian Brazil and Peru, and its occurrence in Meta was expected, but the localities on the Pacific coast are noteworthy.

***Virola macrocarpa* A. C. Sm.** *Brittonia* 2: 476. 1937.

COLOMBIA: El Valle: Pacific coast, Río Cajambre, Silva, alt. 5–80 m., *Cuatrecasas* 17540 (A, Ch). Chocó region, Río Calima, La Trojita, alt. 5–50 m., *Cuatrecasas* 16613 (A, Ch). Western slope of Western Cordillera, valley of Río Sanquinín, left side, La Laguna, alt. 1,250–1,400 m., *Cuatrecasas* 15596 (A, Ch).

*Virola macrocarpa* has previously been known only from the type collection, in fruit, collected in the Department of Boyacá at about 1,100 meters altitude. The additional material cited above is of considerable interest, as it extends the range of the species to the Western Cordillera and down to sea level on the Pacific coast. *Cuatrecasas* 15596 and 16613 bear young unexpanded (pistillate?) inflorescences; in foliage they closely match the type collection and so I refer them to the species with confidence. No. 17540, however, has leaves considerably smaller, although similar in texture, shape, and indument. This specimen bears staminate inflorescences. If it is correctly placed in *V. macrocarpa*, the position which I previously assigned to that species as a member of the species-group *Calophyllae* is open to question; on the basis of the staminate flowers now available, the species may be better referred to the species-group *Surinamenses*, in which its relationship appears to be with *V. guatemalensis* (Hemsl.) Warb. A more complete series of specimens from Colombia will eventually permit a better understanding of the entity, but for the present a description of the staminate inflorescence of *Cuatrecasas* 17540 follows. The pubescent inner surface of the perianth is a particularly noteworthy feature.

Staminate inflorescences axillary, broadly paniculate, many-flowered, up to 7 cm. long and broad, freely (4 or 5 times) branched, minutely ferruginous-tomentellous on all exterior surfaces (hairs stellate-sessile, 6-8-branched, about 0.1 mm. in total diameter), the peduncle (1-1.5 cm. long) and branchlets slightly flattened, the bracts apparently small and soon caducous; flowers in ultimate clusters of 4-8, the pedicels about 1.5 mm. long; perianth carnose, 2.5-3 mm. long, copiously but minutely pilose within with simple yellowish hairs about 0.2 mm. long, 3-lobed for slightly more than half its length, the lobes deltoid, obtuse; androecium about 1.8 mm. long, the filament column slightly contracted at apex, the anthers 3, subequal in length to the column, connate to apex, subacute.

***Virola atopa* A. C. Sm. sp. nov.**

Arbor grandis, ramulis petiolisque robustis dense stellato-tomentellis, foliorum laminis magnis conspicue nervatis subtus copiose tomentosus; a speciebus adhuc notatis fructibus magnis longitudinaliter conspicue costatis apice rostratis distinguenda.

Tree to 20 m. high, the trunk 20 cm. in diameter, the branchlets terete, robust, 7-9 mm. in diameter toward apices, when young densely ferruginous-tomentellous (hairs unevenly sessile-stellate, with 4-8 branches, about 0.2 mm. in total diameter), at length glabrescent; petioles stout, about 7 mm. in diameter, flattened above, 20-25 mm. long, persistently tomentellous; leaf-blades subcoriaceous, brownish when dried, paler beneath, elliptic-oblong, 40-45 cm. long, 17-20 cm. broad, rounded at base and decurrent on the petiole, short-cuspidate at apex (actual apex rounded), nearly plane at margin, glabrous above or sparsely pilose along the costa proximally, very densely ferruginous-tomentose beneath (hairs sessile-stellate, about 0.2 mm. in diameter, the branches 6-10, subequal, paler than the dark center), the costa conspicuously raised above and very prominent beneath, 2-4 mm. thick, the secondary nerves 25-27 per side, spreading, slightly curved, conspicuously anastomosing about 5 mm. within the margin, with the undulating marginal nerve shallowly impressed above and sharply prominent beneath, the tertiary nerves subparallel, slightly impressed above and prominulous beneath; flowering inflorescences not seen; fruiting inflorescences arising from branchlets below leaves, apparently solitary or paired, comparatively simple, with about 3 fruits congested at apex of a short peduncle, this terete, about 1 cm. long and 5 mm. in diameter, copiously tomentellous like the branchlets; fruits apparently sessile, ovoid, 45-55 mm. long, 35-40 mm. broad, conspicuously rostrate with a blunt apex 5-10 mm. long, sharply circumcarinate (not dehiscent as far as observed) and also with 8-10 subsidiary longitudinal costae, these less sharp and less regular than the carina, projecting 1-3 mm. from the surface; pericarp copiously



and persistently tomentellous with irregular sessile-stellate few-branched hairs 0.1–0.2 mm. in diameter, coriaceous, 2–3 mm. thick; aril not observed, presumably very thin and readily drying, the seed ellipsoid-ovoid, up to 35 mm. long and 28 mm. broad.

Type in the herbarium of the Arnold Arboretum, collected at La Trojita, Río Calima, Chocó region, Department of El Valle, Colombia, alt. 5–50 meters, between February 19 and March 10, 1944, by J. Cuatrecasas (No. 16285). Duplicate in the Chicago Natural History Museum.

It seems certain that the plant described above belongs to the Myristicaceae, as indicated by its general facies, type of indument, type of sap, and the general form of its 1-seeded, carinate (and presumably 2-valved) fruit. Unfortunately the fruits are so dried that no trace of an aril is present, while only the shell remains of the seeds. Because of the unique features of its fruits, which are rostrate at apex and with conspicuous subsidiary costae in addition to the sutural carinae, I hesitate to refer the plant to *Virola*, but its indument indicates this position for it. It is possible, of course, that *V. atopa* represents an undescribed genus. In *Virola* it cannot definitely be assigned a position in one of the existing species-groups, although a relationship to some species of the *Rugulosae* (e. g., *V. rugulosa* Warb.) may be indicated.

The collector's notes state that the bark is light brown, reddish brown in section and with chocolate-colored sap, which is resinous and which forms a film on the scaly surface; the wood is reddish; the leaves are thick, coriaceous, distichous, dark yellowish green above, and cinnamon-colored beneath; the endosperm is edible.

*Virola venosa* (Benth.) Warb. Nova Acta Acad. Leop.-Carol. 68: 224. 1897.

VENEZUELA: Amazonas: In forest along the road to Yavita, alt. 128 m., *L. Williams* 13954 (US).

Although this species is fairly abundant in the central part of Amazonian Brazil, this appears to be the first authentic record of it from Venezuela.

*Virola pavonis* (A. DC.) A. C. Sm. Brittonia 2: 504. 1937.

VENEZUELA: Amazonas: San Carlos de Río Negro, alt. 100 m., *L. Williams* 14579 (A, US).

The cited specimen provides a new but not unexpected record for Venezuela, the species having previously been known from Amazonian Brazil and Peru.

*Virola carinata* (Benth.) Warb. Nova Acta Acad. Leop.-Carol. 68: 222. 1897.

COLOMBIA: Meta: Vicinity of Villavicencio, near Peralonso, alt. 450 m., "guajo", *Jaramillo, Mesa, Idrobo, & Fernández* 359 (US).

Although this species is frequent in Amazonian Brazil and Venezuela, I have not previously seen specimens from Colombia.

## HIPPOCRATEACEAE

**Anthodon decussatum** R. & P. Fl. Peruv. Chil. 1: 45. *pl.* 74, b. 1798.

COLOMBIA: Magdalena: Northern flank of the Sierra Nevada de Santa Marta, R. Romero C. 784 (US).

In mentioning this plant as being new to the Colombian flora,<sup>8</sup> I listed a specimen from the Magdalena Valley in Santander. The second known specimen from Colombia, cited above, is also noteworthy; although it consists only of fruits and a few detached leaves, these are highly characteristic for the species and cannot be mistaken.

**Salacia insignis** A. C. Sm. Brittonia 3: 435. 1940.

PERU: Loreto: Mishuyacu, near Iquitos, alt. 100 m., *Klug* 13 (US).

BRAZIL: Amazonas: Basin of Rio Madeira, Municipality Humayta, near Livramento, on Rio Livramento, *Krukoff* 6799 (NY), 6991 (NY, US), 7043 (NY).

Previously I have recorded only the type collection of this species, *Klug* 74, from the same locality as his No. 13. The additional specimens now cited were overlooked when I described the species; they are essentially identical with the type, but the Brazilian collections are indicated as shrubs or small trees 5–8 meters high and have smaller leaves than those originally described. The petioles of specimens now available are sometimes only about 8 mm. long, while the leaf-blades may be as small as 15 by 5 cm., or even smaller on younger parts of the plant; the secondary nerves are occasionally as few as 8 or 10. Inflorescences toward the apices of branchlets are considerably smaller than those of the type specimen, often only 7–10 cm. long, but available flowers (*Klug* 13, *Krukoff* 6991) are quite typical. *Krukoff* 6799 and 7043 bear fruits, which are subglobose, 3–3.5 cm. in diameter, the pericarp being 1.5–2 mm. thick; the seeds are several (possibly as many as 6 per fruit), ellipsoid-oblong, 18–20 mm. long, 8–10 mm. broad. In spite of the differences in habit and size of leaves and inflorescences, the cited specimens seem indubitably to fall into *S. insignis*, of which the type was apparently an unusually robust specimen.

**Salacia spectabilis** A. C. Sm. Brittonia 3: 436. 1940.

BRAZIL: Amazonas: Esperança, mouth of Rio Javary, Lago de Genipapo, igapó, *Ducke* 1574 (A, US).

The second collection of this highly distinctive species agrees very closely with the type, from the Río Itaya in adjacent Peru. The collector's notes describe the plant as a small tree, the flowers being green with the apices of petals dark red.

<sup>8</sup> Journ. Arn. Arb. 27: 87. 1946.

**Salacia multiflora** (Lam.) DC. Prodr. 1: 570. 1824.

COLOMBIA: El Valle: Pacific coast, Río Cajambre, Barco, alt. 5–80 m., *Cuatrecasas* 17246 (A, Ch). Chocó region, Río Calima, Quebrada de La Brea, alt. 20–40 m., *Cuatrecasas* 21295 (Ch, US).

These extremely interesting collections are perfectly typical for the species, which is thus first reported from Colombia. I had earlier<sup>9</sup> known it only from the Guianas and Amazonian Brazil, but Dr. Steyermark has recently obtained specimens in Venezuela. However, all the previously known localities are far removed from the Pacific coast of Colombia.

**Salacia impressifolia** (Miers) A. C. Sm. Bull. Torrey Club 66: 247. 1939.

COLOMBIA: Vaupés: Bank of Río Cuduyarí, tributary of Río Vaupés, alt. 200 m., *Cuatrecasas* 6824 (US).

New to Colombia; in my earlier treatment of this species<sup>10</sup> I cited specimens from Amazonian Brazil and adjacent Peru and Bolivia. The type collection comes from the Vaupés River, probably not far below the locality cited above. Cuatrecasas states that the fruit is edible.

**Salacia duckei** A. C. Sm. sp. nov.

Frutex scandens, *S. solimoesensi* A. C. Sm. et *S. cauliflorae* A. C. Sm. affinis, foliorum laminis basi attenuatis et margine serrulatis, nervis secundariis paucioribus impressis, ovulis 2 distinguitur; a priore foliorum laminis multo minoribus et floribus omnino majoribus etiam recedit; a posteriore inflorescentia axillari pauciflora, pedicellis multo brevioribus, floribus minoribus differt.

Liana, glabrous throughout, the branchlets slender, subterete, slightly flattened at nodes, gray to purplish, copiously lenticellate; leaves opposite, the petioles rugulose, canaliculate, slender, 8–12 mm. long, the leaf-blades coriaceous, apparently shining above and duller beneath, olivaceous when dried, lanceolate-oblong, (7–) 10–12 cm. long, (2.5–) 3.5–5.3 cm. broad, attenuate at base and decurrent on the petiole, gradually narrowed distally to a subacute acumen about 5 mm. long, slightly thickened and recurved at margin and undulate-serrulate (teeth 2 or 3 per centimeter, often inconspicuous), the costa prominent on both surfaces, the secondary nerves 6 or 7 per side, arcuate-ascending, inconspicuous, slightly impressed on both surfaces, the veinlet-reticulation immersed or slight impressed; inflorescences axillary or arising from defoliate branchlets, fasciculate, apparently 4–8-flowered but with some flowers caducous, the peduncle gemmiform, the bracts

<sup>9</sup> Brittonia 3: 441–445. 1940.

<sup>10</sup> Brittonia 3: 447–449. 1940.

crowded, minute; flowers 8–9 mm. in diameter at anthesis, the pedicels sparsely farinose-ceriferous, 4–5 mm. long at anthesis; sepals deltoid-suborbicular, 1–1.5 mm. long, 1–2 mm. broad, rounded at apex, scariose toward the entire margin, white-lineolate-glandular; petals rotate or subspreading at anthesis, submembranaceous, elliptic, 4–4.5 mm. long, 3–4 mm. broad, rounded at apex, entire and conspicuously recurved at margin; disk carnose, annular-pulvinate, about 3 mm. in diameter and 1 mm. high, rounded at outer margin; stamens suberect, the filaments ligulate, about 1.5 mm. long, the anthers transversely ellipsoid, about 0.4 by 0.7 mm., dehiscing by horizontal apical confluent clefts; disk, ovary, and style with copious immersed whitish glands, the ovary conical, the style about 0.8 mm. long; ovules 2 per locule, obliquely superposed.

Type in the U. S. National Herbarium, No. 1908110, collected on "mata da terra firme" at Esperança, mouth of Rio Javary, State of Amazonas, Brazil, March 15, 1944, by A. Ducke (No. 1575). Duplicate in the herbarium of the Arnold Arboretum.

The collector's notes indicate that the plant is a large liana, the flowers being dull pale yellow with a dark reddish center. The only close allies of the new species, *S. solimoesensis* A. C. Sm. and *S. cauliflora* A. C. Sm., also occur in the basin of the Solimoes River; combinations of fairly obvious characters readily differentiate the three species.

***Cheiloclinium habropodum* A. C. Sm. sp. nov.**

Frutex scandens *C. klugii* A. C. Sm. et *C. hippocrateoidi* (Peyr.) A. C. Sm. affinis, foliorum laminarum nervis secundariis numerosis patentibus et rete venularum immersis haud prominulis distinguendus; a priore foliorum laminis majoribus basi obtusis, pedicellis brevioribus, floribus minoribus, stigmatibus profunde bifidis recedit; a posteriore inflorescentiae pedunculo multo longiore etiam differt.

Liana, glabrous throughout, the branchlets slender, subterete, pale brown, slightly flattened at nodes; leaves opposite, the petioles stout, rugose, canaliculate, 10–12 mm. long, the leaf-blades chartaceous, remaining green when dried, elliptic-oblong, 12–18 cm. long, (4.5–) 6–8 cm. broad, broadly obtuse at base and decurrent on the petiole, cuspidate at apex (acumen 5–10 mm. long, obtuse), slightly thickened and entire at margin or obscurely undulate-crenulate distally, the costa prominent on both surfaces, the secondary nerves 10–14 per side, spreading, curved and obscurely anastomosing toward margin, nearly plane or faintly prominulous on both surfaces, the veinlet-reticulation immersed; inflorescences axillary, apparently solitary, at maturity 5–7 cm. long and broad, 6–8 times dichotomously branched, the branchlets slender, terete, striate when dried, the peduncle 2–3 cm. long, the bracts and bracteoles papyraceous, deltoid, 0.5–1 mm. long;

mature flowers about 2 mm. in diameter, solitary or paired at ends of ultimate branchlets but apparently not occurring in the dichotomies; pedicels slender, terete, 1–1.5 mm. long; sepals submembranaceous, ovate-deltoid, 0.4–0.5 mm. long and broad, subacute, erosulous-margined; petals thin-carnose, elliptic-oblong, about 1 mm. long and 0.8 mm. broad, rounded at base and apex, very faintly erosulous at margin; lips of the disk carnose, about 0.5 mm. broad; filaments ligulate, about 0.5 mm. long, the anthers transversely ellipsoid, minute, scarcely 0.1 mm. broad; ovary about 0.8 mm. in diameter at anthesis, with copious immersed pale mucilaginous glands, the stigmas deeply bifid and free only at apices, the ovules 2 per locule, superposed.

Type in the U. S. National Herbarium, No. 1876374, collected at Capihuará, Alto Casiquiare, State of Amazonas, Venezuela, alt. 120 meters, June 1, 1942, by Llewelyn Williams (No. 15720).

A member of the species-group *Hippocrateoides* as defined in my revision<sup>11</sup>, *C. habropodium* is readily distinguished from its closest relatives, *C. klugii* A. C. Sm. and *C. hippocrateoides* (Peyr.) A. C. Sm., as stated in the above diagnosis. The collector's notes state that the common name is "gengibrillo"; the plant is a liana, with minute yellowish flowers and spherical bright yellow fruits, of which the pulp is edible and sweet; it climbs on trees of the forested and flooded riverbank.

*Cheiloclinium hippocrateoides* (Peyr.) A. C. Sm. *Brittonia* 3: 546. 1940.

COLOMBIA: Vaupés: Macú-paraná, P. H. Allen 3077 (US).

The cited specimen provides the first Colombian record of this widespread species, to which I have referred specimens from Guiana, Amazonian Peru, Bolivia, and Brazil. Possibly the concept outlined in my revision is too broad, but the specimens from these areas agree in essential floral characters, differing principally in leaf-size and -shape. Allen's plant is very similar to *Klug* 154, from Peru.

#### ERICACEAE

*Befaria nana* A. C. Sm. & Ewan, sp. nov.

Frutex nanus a speciebus omnibus generis valde dispar, *B. cubensi* Griseb. et *B. ledifoliae* Humb. & Bonpl. affinis, habitu confertissimo, omnium partium parvitate, praesertim floribus subsessilibus multo minoribus facile distinguitur.

Shrub, compact in habit and apparently very small; branchlets copiously marked with leaf-scars, the internodes negligible, the young parts viscid-pilose with slender castaneous gland-tipped hairs about

<sup>11</sup> *Brittonia* 3: 528–529. 1940.

1 mm. long and also closely cinereous-tomentellous, the older parts tomentellous but eventually glabrescent; leaves extremely congested toward apices of branchlets, the petioles 1-2 mm. long, deciduously tomentellous, the blades coriaceous, essentially glabrous and shining above, sparsely tomentellous beneath at least along the costa, oblong-linear, 5-8 mm. long, 1-2 mm. broad, narrowed at base, callose-obtuse at apex, conspicuously and tightly revolute at margin, the reflexed upper surface completely obscuring the lower surface, the costa faintly impressed above; inflorescence terminal, short-racemose, congested, forming a compact mass not more than 2 cm. in diameter (including flowers), the rachis stout, viscid, pubescent like the branchlets but with the glandular hairs very delicate and about 0.5 mm. long, the bracts foliaceous but greatly reduced; flowers subsessile, the pedicels less than 1 mm. long, stout, bibracteolate (bracteoles linear, about 2 mm. long, appressed to the calyx); calyx subcampanulate, about 3 mm. long, copiously viscid-glandular-hispidulous with minute whitish hairs, 7-lobed, the lobes broadly imbricate, ovate, about 1.5 mm. long and broad, erose-margined, obtuse; petals apparently 6 or 7, subcar-nose, glabrous, narrowly obovate, at anthesis 9-10 mm. long, 3-3.5 mm. broad, gradually narrowed at base, rounded at apex; stamens 12-15, apparently slightly shorter than the petals, the filaments very slender, copiously puberulent except toward apex, the anthers oblong, about 1 mm. long; ovary glabrous, slightly depressed at apex, laterally fur-rowed from pressure of filaments, the style stout, terete, slightly longer than the petals, swollen distally; capsule 3-4 mm. in diameter, apparently 5- or 6-valvate.

Type in the U. S. National Herbarium, No. 1833475, collected on Tres Tetas (south peak), Sierra Perijá, Department of Magdalena, Colombia, alt. 3,000 meters, April 28-May 4, 1942, by M. A. Carriker, Jr. (No. 16).

The plant described above is one of the most distinct species of *Befaria*, characterized by conspicuously revolute leaf-blades and a type of glandular pubescence found elsewhere, in combination, only in *B. cubensis* Griseb. and *B. ledifolia* Humb. & Bonpl. Neither of these species, however, approaches *B. nana* in extreme reduction in size of parts.

***Befaria peruviana*** Mansf. & Sleumer, Notizbl. Bot. Gart. Berlin 12: 268. 1935.

ECUADOR: Azuay: Between Kilometer 67 and south toward Oña, alt. 3,715 m., *Steyermark* 53663 (A, Ch).

The species has previously been reported only from the type collection in the Department of Cajamarca, Peru; our specimens match a duplicate of the type (*Weberbauer* 6106, US) very closely. In Azuay the plant is a shrub more than 1 m. high, growing in dense patches, with a very showy deep rose-pink corolla; it is known as "payama."



*Leucothoe venezuelensis* A. C. Sm. sp. nov.

Frutex ramulis petiolisque gracilibus puberulis, laminis foliorum basi attenuatis et margine valde recurvatis distinguitur; *L. duckei* Huber valde affinis, petiolis paullo longioribus, laminis foliorum obovato-oblongis et basi distinctius attenuatis, calycis lobis conspicue acuminatis, corolla ore abruptius contracta et lobis paullo longioribus differt; a *L. albiflora* Fedtsch. & Basil. basi foliorum, racemis brevioribus, et pedicellis longioribus facile distinguendus.

Shrub 4–5 m. high, the branchlets subterete or slightly angled, slender, at first copiously white-puberulent, glabrescent; petioles canaliculate, very slender (0.5–0.7 mm. in diameter), puberulent like the branchlets; leaf-blades coriaceous, olivaceous when dried, prevailing obovate-oblong, (2.5–) 3–4.5 cm. long, 1–1.7 cm. broad, gradually narrowed at base, conspicuously and often abruptly mucronate at apex with a tip about 2 mm. long, sharply recurved or narrowly revolute at margin, faintly puberulent on the costa beneath and otherwise essentially glabrous, the costa sharply impressed above and prominent beneath, the lateral nerves numerous, copiously interconnected by a reticulation which is obscure above and faintly raised beneath; inflorescence axillary or arising from branchlets below leaves, often crowded, the rachis slender, 2–3 cm. long, persistently white-crispate-puberulent like the pedicels, bracts, and bracteoles; pedicels subterete, very slender, 5–7 mm. long, each subtended by a subulate bract 1–1.5 mm. long and similarly bibracteolate near base, swollen distally and readily disarticulating just below the calyx; calyx rotate, at anthesis about 5 mm. in diameter, uniformly pale-puberulent without, the lobes ovate-triangular, about 1.5 mm. long and broad, sharply narrowed at apex into an acumen about 0.5 mm. long; corolla cylindric-urceolate, 6–7 mm. long, about 2.5 mm. in diameter, strongly contracted at throat, the lobes spreading, oblong, about 1 mm. long, obtuse; filaments ligulate, very slender, about 4 mm. long, obviously crispate-pilose, distally inflexed, the anthers about 1 mm. long, the tubules very short, dehiscing by broad oval subterminal pores; ovary 5- or rarely 6-lobed, puberulent, soon glabrescent, the style stout, terete, obscurely puberulent at anthesis; mature capsule depressed-globose, 5–6 mm. in diameter, glabrous, the calyx persistent, the seeds very numerous, pale brown, falcate-linear, about 3 mm. long.

Type in the U. S. National Herbarium, No. 1908090, collected on Cerro Akurimá, Gran Sabana, State of Bolívar, Venezuela, in March 1946, by F. Tamayo (No. 3236).

The closest relationship of this new species appears to be with *L. duckei* Huber, from the western part of the State of Pará, Brazil, from which it differs as mentioned in the diagnosis above. The new

species is less closely related to *L. albiflora* Fedtsch. & Basil. and other Andean species proposed by Sleumer.<sup>12</sup>

*Tepuia* Camp, *Brittonia* 3: 178-184. *figs. 4, 5.* 1939.

The remarkable genus *Tepuia*, based upon three species known only from Auyan-tepuí in southern Venezuela, is certainly, as Camp implies in his analysis, a very sharply marked entity. Its most obvious characters, the foliar marginal leaf-glands and the connate apical pedicellary bracteoles, at once distinguish it from other Ericaceae of the American Tropics. The three original species are all characterized by their small revolute leaf-blades. A fourth species from Auyan-tepuí, with comparatively large leaves and inflorescences, is described below as *T. speciosa*. The first known collection of the genus from elsewhere than Auyan-tepuí is here described as a fifth species, *T. cardonae*; this plant comes from the nearby Cerro Acopán and in size of leaves is somewhat intermediate between *T. speciosa* and the other known species. *Tepuia* is thus now known from five species, all clearly distinct but certainly not abundantly collected. The discovery of other species on the Venezuelan sandstone mountains belonging to this spectacular genus is to be anticipated.

*Tepuia speciosa* A. C. Sm. sp. nov.

Species inter congeneros omnium partium magnitudine, ramulorum et foliorum tomento copioso facile distinguenda; a *T. tatei* Camp etiam floribus numerosis, calyce et corolla tomentosis, filamentis dense strigoso-sericeis, ovario copiose pubescente valde differt.

Apparently a shrub, the branchlets stout, terete, distally subflexuose, copiously and closely ferruginous-tomentose, the hairs becoming grayish and presumably eventually falling; petioles subterete, 8-11 mm. long, tomentose like the branchlets; leaf-blades coriaceous, elliptic-oblong, (4-) 5-6.5 cm. long, (1.5-) 2-4 cm. broad, acute at base and gradually decurrent on the petiole, obtuse at apex, narrowly revolute at margin and bearing 3 or 4 conspicuous supramarginal glands on each side near the petiole, ferruginous-tomentellous above when young and soon glabrescent and yellowish green when dried, persistently and very densely ferruginous-velutinous beneath with a thick layer of fine tangled hairs, pinnate-nerved, the costa impressed above, strongly elevated beneath, the secondary nerves 3-5 per side, arcuate-ascending, nearly plane above, slightly raised beneath, the veinlet-reticulation immersed; inflorescence axillary or arising from efoliate nodes near apices of branchlets, racemose, 5-10-flowered, the rachis stout, terete, subflexuose, with the pedicel copiously and very closely ferruginous-tomentose, 2-3 cm. long, the flowers each subtended by a coriaceous lanceolate bract, these 3-4 mm. long, 1.5-2 mm. broad, acute, tomentose

<sup>12</sup> Notizbl. Bot. Gart. Berlin 12: 131. 1934; 478-480. 1935.



like the rachis without, glabrous within; pedicels stout, terete, at anthesis 3–6 mm. long, surmounted by 2 basally connate bracteoles, these subcoriaceous, broadly ovate, about 2.5 mm. long and 3 mm. broad, obtuse, tomentose without, glabrous within; calyx leathery, cupuliform-rotate, at anthesis 10–12 mm. in diameter, closely ferruginous-tomentose without, deeply 5-lobed, the lobes oblanceolate-oblong, about 6 mm. long, 3–3.5 mm. broad, broadest distally and suddenly narrowed to an acute apex, densely and closely ochraceous-tomentose near apex but otherwise glabrous within, the midvein raised on the inner surface; corolla thin-carnose, broadly campanulate at anthesis, 9–10 mm. long, about 15 mm. in apical diameter, copiously ferruginous-tomentose without with fine tangled hairs 1–2 mm. long, glabrous within, deeply 5-lobed, the lobes broadly ovate-deltoid, about 5 mm. long, 6–7 mm. broad, subacute, slightly reflexed at margin; stamens 10, about 7 mm. long, the filaments ligulate, slightly incurved, 4–5 mm. long, narrowed at base, broadest just above base and tapering distally, conspicuously and very densely strigose-sericeous dorsally with stramineous hairs 1–2 mm. long, glabrous within, the anthers 3–3.5 mm. long, finely granular, the thecae about 2 mm. long, rounded (not mucronulate) at base, the tubules rigid, shorter than the thecae, dehiscing by short oval introrse pores; disk bordered by 10 pale glabrous fleshy oblong appendages about 0.3 mm. long; ovary depressed-globose, deeply 5-sulcate, at anthesis about 2.5 mm. high and 4 mm. in diameter, copiously pubescent like the filaments, 5-loculate, the ovules 25–30 per locule, imbricate in a mass on small placentae, the style stout, terete, glabrous, about 4 mm. long, the stigma minute.

Type in the U. S. National Herbarium, No. 1693757, collected on Mount Auyan-tepuí, State of Bolívar, Venezuela, in September 1937, by F. Cardona (No. 257). Fragment in the herbarium of the New York Botanical Garden.

*Tepuia speciosa*, while agreeing in essential characters with the three species of the genus already described, differs from them markedly in the greater size of all its vegetative parts. Whereas the other species have leaves with 2 (rarely 3 or 4) supramarginal basal glands, those of *T. speciosa* appear always to have 3 or 4 such glands per side. Although *T. tatei* Camp more nearly approaches the new species in size of parts than do the other known species, it has leaf-blades with a maximum size of 2.5 by 0.8 cm.; its merely puberulent rachis is less than 1 cm. long and with only 1 to 4 flowers, its calyx and corolla are essentially glabrous, its filaments are less copiously pilose, and its ovary is glabrous.

Previously and very carelessly I identified *Cardona 257* as *Notopora schomburgkii* Hook. f., and as such it was cited<sup>13</sup> in 1939. *Notopora*

<sup>13</sup> *Brittonia* 3: 185. 1939.

has only a superficial resemblance, in foliage and indument, to *T. speciosa*, and it has not yet been observed on Auyan-tepuí.

***Tepuia cardonae*** A. C. Sm. sp. nov.

Frutex *T. speciosae* supra descriptae affinis, ramulis hispidis ac etiam tomentellis, petiolis brevioribus, foliorum laminis minoribus cum glandulis marginalibus paucioribus, inflorescentia brevioris gracilioris, pedicelli bracteolis floribusque minoribus, antheris basi mucronulatis differt.

Shrub about 3 m. high, the branchlets slender, terete, distally subflexuose, hispid with stiff castaneous eglandular (or very obscurely apically glanduliferous) hairs 1-2 mm. long and also closely ferruginous- or grayish-tomentellous, at length glabrescent; petioles terete, 3-4 mm. long, pilose like the branchlets or merely tomentellous; leaf-blades coriaceous, ovate-elliptic, (2-) 3.5-5 cm. long, (1-) 1.5-2.5 cm. broad, obtuse at base, obtusely mucronulate at apex, conspicuously revolute at margin and bearing 1 or 2 conspicuous supramarginal glands on each side near base, pale-puberulent above when young and soon glabrescent and pale green when dried, persistently and closely ferruginous-tomentose beneath, pinnate-nerved, the costa impressed above, prominent beneath, the secondary nerves 3-5 per side, arcuate-spreading, anastomosing, nearly plane above, raised beneath, the veinlets immersed; inflorescence axillary toward apices of branchlets or subterminal, racemose, 2-8-flowered, the rachis slender, terete, strongly flexuose, 0.5-2 cm. long, with the pedicel copiously ferruginous-tomentose, at length merely puberulent or glabrescent; flower-subtending bracts subcoriaceous, lanceolate-oblong, 1-2 mm. long, about 1 mm. broad, obtuse, tomentellous without, glabrous within; pedicels slender, terete, at anthesis 4-7 mm. long, the apical bracteoles basally connate, ovate, about 1.5 mm. long and 2 mm. broad, tomentellous without, glabrous within; calyx at anthesis 8-10 mm. in apical diameter, tomentose without like rachis, deeply lobed, the lobes 5 (rarely 6 or 7), lanceolate-oblong, about 5 mm. long and 3 mm. broad, acute, ferruginous-tomentellous distally and at margin but otherwise glabrous within, the midvein scarcely obvious; corolla thin-carnose, broadly campanulate, at anthesis about 7 mm. long and 7-9 mm. in apical diameter, ferruginous-tomentellous without, glabrous within, deeply 5-lobed, the lobes deltoid, about 3 mm. long, 4-5 mm. broad, acute and reflexed at apex; stamens 10, about 5 mm. long, the filaments ligulate, 3-3.5 mm. long, densely strigose-sericeous dorsally with yellow-brown hairs about 1 mm. long, glabrous within, the anthers about 2.5 mm. long, the thecae finely granular, about 1.5 mm. long, mucronulate at base, the tubules slender, dehiscing by flaring oval introrse pores; disk-appendages inconspicuous, fleshy, glabrous; ovary depressed-globose,

5-sulcate, at anthesis about 3 mm. high and 5 mm. in diameter, copiously ferruginous-tomentose, 5-locular, the ovules numerous, massed on small stalked placentae, the style slender, glabrous, about 3.5 mm. long, the stigma minutely capitate.

Type in the U. S. National Herbarium, No. 1932235, collected on Cerro Acopán, Río Caroni, State of Bolívar, Venezuela, alt. 2,000 meters, in October 1947, by F. Cardona (No. 2300).

Although in general aspect, leaf size, and indument the new species approaches *T. speciosa* A. C. Sm. more closely than it does any of the original three species of *Tepuia*, it is readily distinguished as mentioned in the above diagnosis. In its basally mucronulate anthers *T. cardonae* resembles *T. tatei*, and its reduced number of supramarginal foliar glands also suggests that species.

***Gaultheria elassantha* A. C. Sm. sp. nov.**

Species foliis parvis, floribus solitariis, corolla breviter campanulata distinguitur; a *G. pubescente* Fedtsch. & Basil. foliorum laminis angustioribus, pedicellis pilis brevioribus hispidulis non puberulis, forma corollae glabrae, filamentis antherisque brevioribus, ovario glabro vel obscurissime puberulo recedit; a *G. secunda* Remy ramulis pedicellisque strigosis sed non puberulis, filamentis brevioribus, antheris aristas conspicuas gerentibus, ovario haud piloso differt.

Tree about 4 m. high or scrambling shrub, the branches freely divided distally and copiously leafy, the branchlets slender, terete, strigose with pale brown eglandular hairs 0.7–1 mm. long, eventually glabrescent; petioles canaliculate, 1–3 mm. long, strigose like the branchlets; leaf-blades coriaceous, brownish when dried, elliptic-oblong, 1.3–3 cm. long, 0.5–1.2 cm. broad, obtuse or rounded at base, callose-apiculate at apex, slightly recurved and serrulate at margin (teeth 5–9 per centimeter, callose-mucronulate or rigidly ciliate), glabrous above or obscurely puberulent along nerves, scattered-strigose beneath with hairs like those of the branchlets, pinnatinerved, the costa nearly plane above, elevated beneath, the secondary nerves about 3 per side, curved-ascending, slightly elevated on both surfaces, the veinlet reticulation prominulous on both surfaces or obscure; flowers solitary in the axils of distal leaves on the branchlets, these leaves sometimes reduced and bractlike, the flowers then appearing to be in short terminal racemes; pedicels 4–7 mm. long at anthesis, hispidulous with slender eglandular or obscurely glandular hairs 0.2–0.5 mm. long, bibracteolate near base, the bracteoles ovate-deltoid, 1–2 mm. long, acute, obscurely glandular-margined and puberulent distally; calyx deeply 5-lobed, the lobes deltoid, 2–2.5 mm. long, 1.5–2 mm. broad, acute, closely puberulent within; corolla short-campanulate, at anthesis about 5 mm. long and 5–6 mm. in apical diameter, glabrous, the lobes 5, broadly deltoid, acute, about 1.5 mm. long and 2.5 mm.

broad, reflexed at anthesis; stamens much shorter than corolla, the filaments about 1.5 mm. long, glabrous, obscurely scabridulous, contracted at base and apex, the anthers 1–1.2 mm. long including the awns, these inconspicuous, about 0.4 mm. long; ovary depressed-globose, glabrous or very obscurely puberulent, about 2 mm. in diameter at anthesis, the style stout, glabrous, about 2.5 mm. long at anthesis.

Type in the U. S. National Herbarium, No. 1517466, collected at La Sierra, 18 km. north of Medellín, Department of Antioquia, Colombia, alt. about 2,000 meters, in January 1931, by W. A. Archer (No. 1499).

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: Antioquia: La Sierra, 18 km. north of Medellín, alt. about 2,000 m., *Archer* 1320 (US). San Roque, vicinity of Medellín, *R. A. Toro* 1339 (NY). San Pedro, *Tomás* 179 (US). Near Las Palmas, road between Medellín and El Retiro, alt. about 2,500 m., *Hodge* 6701 (US).

Notes accompanying the type describe the plant as a tree 4 meters high, with pale greenish flowers, while *Archer* 1320 is said to be from a clambering plant about 1.5 meters high. *Tomás* 179 is said to have white flowers and black fruits.

Although at first glance the new species suggests *G. pubescens* Fedtsch. & Basil., also of western Colombia, it is readily distinguished by its short-campanulate corolla; *G. pubescens* has a cylindric-urceolate corolla which is about 7 mm. long and sparsely puberulent at anthesis. The pedicels of *G. pubescens* are hispidulous with slender eglandular hairs about 1 mm. long and also copiously white-puberulent, its filaments are about 3 mm. long and conspicuously pilose, its anthers about 2 mm. long, and its ovary copiously pilose. *Gaultheria secunda* Remy, of Bolivia and southern Peru, has leaves very similar to those of the new species, but its branchlets and pedicels are white-puberulent as well as strigose with stiff hairs. The southern species has longer filaments than those of the new species, its anthers are very inconspicuously awned, and its ovary is copiously puberulent. On the basis of corolla-characters, *G. secunda* is apparently the closest ally of *G. elassantha*.

*Gaultheria amoena* A. C. Sm. sp. nov.

Frutex nanus habitu prostrato, foliis parvis, floribus solitariis, pedicellorum bracteolis conspicuis, calycis lobis elongatis distinguitur; *G. barosmoidi* Rusby boliviensi affinis, floribus et habitu subsimilis, ramulis pedicellisque glabris vel puberulis non strigoso-hispidulis, pedicellorum bracteolis majoribus peristentibus differt.

Low shrub, often repent, freely branching, the branchlets slender, when young reddish or brownish and white-puberulent, at length glabrescent and grayish, the younger parts sometimes bearing internodal bracteoles like those of the pedicel described below; petioles slender, shallowly canaliculate, 1–3 mm. long, essentially glabrous; leaf-blades

subcoriaceous, greenish brown when dried, elliptic, (1-) 1.5–2.5 cm. long, 0.8–1.5 cm. broad, broadly obtuse or subrounded at base, obtusely callose-apiculate at apex, slightly recurved and serrulate at margin (teeth 4–6 per centimeter, glandular-mucronulate), glabrous on both sides, pinnate-veined, the costa prominulous above, elevated beneath, the secondary nerves 2–4 per side, curved-ascending, elevated on both surfaces, the veinlet reticulation coarse, often prominulous on both surfaces; inflorescence axillary, 1-flowered, the pedicel (doubtless partially peduncular in origin) slender, 5–12 mm. long at anthesis, sparsely puberulent, soon glabrescent, bearing several alternate bracteoles (bracts?), these papyraceous, ovate-lanceolate, obtuse, 3–6 mm. long, about 2 mm. broad, faintly ciliolate-margined; calyx submembranaceous, deeply 5-lobed, the lobes spreading, elongate-deltoid, about 5 mm. long and 2.5 mm. broad, acute, obviously nerved, faintly puberulent distally within, otherwise glabrous; corolla submembranaceous when dried, glabrous, urceolate, 7–8 mm. long, about 4 mm. in diameter, contracted at throat, the lobes 5, oblong, obtuse, about 1 mm. long; stamens 4–4.5 mm. long, glabrous, the filaments slender, ligulate, 3–3.5 mm. long, the anthers about 1.3 mm. long including the awns, these minute, about 0.2 mm. long; ovary depressed-subglobose, glabrous, the style about 5 mm. long, the stigma minutely capitate; fruit carnose, subglobose, 8–10 mm. in diameter, many-seeded, the calyx-lobes persistent.

Type in the U. S. National Herbarium, No. 1951713, collected on páramo in the vicinity of Laguna de San Rafael, crest of the Central Cordillera north of Volcán Puracé, Department of Cauca, Colombia, alt. 3,350 meters, January 29, 1947, by J. Cuatrecasas (No. 23432). Duplicates in the herbaria of the Arnold Arboretum and the Chicago Natural History Museum.

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: Caldas: On dry grassy páramo, Cerro Tatamá, alt. 3,400–3,700 m., *Pennell* 10570 (NY). El Valle: Western slope of Central Cordillera, headwaters of Ríos Tuluá and Bugalagrande, Páramo de Las Vegas, alt. 3,600–3,800 m., *Cuatrecasas* 20294 (A, Ch). Cauca: Laguna de Guanacas, *Lehmann* K.183 (herb. Kew).<sup>14</sup>

The cited specimens are described as low or repent shrubs, sometimes growing on rocks. The only available flowering collection, designated as the type, has the calyx white or greenish white and the corolla rose. *Pennell* 10570 is said to have a red corolla, which I have not seen. The fruits are described as fleshy and white.

The new species is very distinctive and appears to have no close relatives in the northern Andes. It suggests the Bolivian *G. barosmoides* Rusby, differing as indicated in the above diagnosis.

<sup>14</sup> The cited Lehmann specimen is not available for study at the moment, but while working at Kew in 1931 I noted its precise similarity to *Pennell* 10570, like which it is also a fruiting specimen.

***Gaultheria stereophylla* A. C. Sm. nom. nov.**

*Gaultheria serrulata* Danguy & Cherm. Bull. Mus. Hist. Nat. Paris 28: 435. 1922; non Herzog (1915).

ECUADOR: Azuay: Between Huagraranca and Loma de Galápagos, alt. 3,140–3,505 m., a shrub 3–4 feet tall, *Steyermark* 53458 (A, Ch).

The cited material matches in all essential details the type of this well-marked species, the original name of which is unfortunately a later homonym.

***Gaultheria oreogena* A. C. Sm. sp. nov.**

Frutex compactus foliorum laminis parvis rigidis subglabris, rete venularum obvio, floribus paucis saepe in axillis foliorum solitariis, calyce amplo, corolla glabra distinguitur; a *G. stereophylla* A. C. Sm. foliis majoribus, rete venularum prominentiore, bracteis bracteolisque majoribus, calycis lobis elongatis differt.

Shrub about 30 cm. tall, the branchlets terete, at first strigose with dark stiff eglandular hairs 2–3 mm. long, glabrescent and covered with smooth loose grayish bark; petioles stout, rugulose, 2–4 mm. long, sparsely and deciduously strigose; leaf-blades coriaceous, olivaceous when dried, elliptic-oblong, 2–3.5 cm. long, 0.7–1.7 cm. broad, rounded or broadly obtuse at base, obtusely callose-apiculate at apex, thickened, slightly recurved, and serrulate at margin (teeth 4–6 per centimeter, callose-mucronate or rigidly ciliate), glabrous on both sides or sparingly strigose along principal nerves beneath with hairs less than 1 mm. long, sometimes scattered-brown-punctate beneath, pinnatinerved, the costa and secondary nerves (3 or 4 per side, curved-ascending) slightly elevated above and conspicuously so beneath, the veinlet-reticulation coarse, nearly plane above, prominulous beneath; flowers sometimes solitary in axils of distal leaves, sometimes aggregated into subterminal or axillary 3–7-flowered racemes, the rachis up to 2.5 cm. long, with the pedicels at first hispidulous with slender (usually eglandular but sometimes gland-tipped) hairs 1–2 mm. long and also white-puberulent, the longer hairs caducous; flower-subtending bracts and pedicellary bracteoles papyraceous, elliptic-oblong, 4–9 mm. long, 3–4 mm. broad, scarious and puberulent at margin; pedicels variable in length, usually 10–15 mm. long at anthesis, bibracteolate below middle; calyx cupuliform, at anthesis 5–8 mm. long, deeply 5-lobed, the lobes elongate-deltoid, 4.5–7 mm. long, 2.5–4 mm. broad, acute, sparsely puberulent without; corolla urceolate, at anthesis about 9 mm. long and 6 mm. in diameter, glabrous, the lobes 5, deltoid-oblong, obtuse, about 1.5 mm. long; stamens 5–6 mm. long, the filaments slender, obscurely puberulent, 3.5–4 mm. long, the anthers 2–2.5 mm. including awns about 0.5 mm. long; ovary depressed-globose, about 3 mm. in diameter at anthesis, closely puberulent, the style stout, 4–6 mm. long, truncate at apex.



Type in the herbarium of the Arnold Arboretum, collected between La Torre and Alto del Buey, Los Farallones, crest of the Western Cordillera, Department of El Valle, Colombia, alt. 3,400–3,550 meters, August 10, 1946, by J. Cuatrecasas (No. 21898). Duplicate in the Chicago Natural History Museum.

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: El Valle: Western Cordillera, Los Farallones, crest of the cordillera, in thickets on páramo of La Torre, alt. 3,750 m., *Cuatrecasas* 17845 (A, Ch).

The specimens are said to be from shrubs about 20 cm. high, with coriaceous leaves which are bright green above and yellowish green beneath; the pedicels, bracts, and calyx are red to purplish red; the urceolate corolla is red, crimson, or purplish.

The new species suggests the Ecuadorian *G. stereophylla* A. C. Sm. (*G. serrulata* Danguy & Cherm.), from which it differs as mentioned in the above diagnosis. *Gaultheria oreogena* shows unusual variations in its inflorescence, the flowers being either solitary or aggregated into short racemes. The stiff hairs of the rachis and pedicels are usually eglandular, but in some parts of the available material these hairs are obviously glandular. The size of the calyx also varies more than usual in the genus.

*Gaultheria grata* A. C. Sm. sp. nov.

Frutex *G. alnifoliae* (Dun.) A. C. Sm. venezuelensi affinis, forma et textura foliorum similis, indumento strigoso ramulorum foliorum inflorescentiarumque, floribus majoribus differt; *G. strigosae* Benth. colombiensi indumento subsimilis, foliorum forma valde differt.

Shrub, the branchlets slender, terete, brownish, strigose with stiff stramineous hairs about 2 mm. long and also obscurely pale-puberulent, at length glabrescent and cinereous; petioles rugulose, 3–6 mm. long, pubescent like the branchlets; leaf-blades coriaceous, brownish when dried, obovate, (3–) 4.5–5.5 cm. long, (1.5–) 2.5–3.2 cm. broad, attenuate at base and long-decurrent on the petiole, rounded or slightly emarginate and often obtusely callose-mucronate at apex, slightly recurved and serrulate at margin (teeth 7–9 per centimeter, callose- or bristle-tipped), faintly puberulent above when young, sparsely strigose-hispidulous beneath on principal nerves with hairs like those of the branchlets, at length glabrescent and scattered-brownish-punctate, pinnatinerved, the costa nearly plane above, prominent beneath, the secondary nerves 2–4 per side, ascending, prominulous above, sharply raised beneath, the veinlet-reticulation intricate, prominulous on both surfaces; inflorescences axillary toward apices of branchlets, racemose, 8–12-flowered, circumscribed at base by imbricate bracts, the largest (inner) ones similar to flower-subtending bracts; rachis slender, 3–4.5 cm. long, copiously hispidulous with slender stramineous eglandular hairs about 1 mm. long and also white-puberulent; flower-subtending bracts papyraceous, obovate-oblong,

5–7 mm. long, 2–3 mm. broad, obtuse, ciliolate with fine white hairs, otherwise glabrous; pedicels slender, 5–8 mm. long at anthesis, pubescent like the rachis, bibracteolate near base, the bracteoles obovate, about 2 mm. long, scariose-margined, glabrous; calyx about 4 mm. in apical diameter at anthesis, deeply 5-lobed, the lobes ovate-deltoid, about 2 mm. long and 1.5 mm. broad, acute, strigose without (hairs about 1 mm. long), puberulent within; corolla white, cylindrical-urceolate, 7–8 mm. long, about 5 mm. in diameter, sparsely strigose without, the lobes 5, deltoid, subacute, about 1.5 mm. long and 2 mm. broad; stamens about 4.5 mm. long, the filaments about 3 mm. long, broadest near base, very slender distally, hispidulous without with very fine hairs about 1 mm. long, glabrous within, the anthers about 2 mm. long including the awns, these very slender, about 0.6 mm. long; ovary 2–2.5 mm. in diameter at anthesis, copiously strigose-puberulent, the style terete, 4.5–5 mm. long, glabrous, the stigma obscurely lobed.

Type in the U. S. National Herbarium, No. 1851304, collected between Miranda and the Alto de la Aurora, Quebrada del Sararito, valley of Río Margua, Sarare region, Department of Norte de Santander, Colombia, alt. 950–1,087 meters, November 23, 1941, by J. Cuatrecasas (No. 13404).

This attractive plant resembles *G. alnifolia* (Dun.) A. C. Sm. in foliage, but clearly differs in its strigose indument, which suggests that of *G. strigosa* Benth., a species probably not closely related.

***Gaultheria tolimensis* Wedd. Chlor. And. 2: 173. 1860.**

ECUADOR: Santiago-Zamora: Between Loma de Galápagos and headwaters of Río Tintas, alt. 3,200–3,505 m., *Steysmark* 53496 (A, Ch). Trail between Pailas and El Pan, on páramo, alt. about 3,400 m., *Steysmark* 54339 (A, Ch).

The cited specimens agree well with the Colombian material of this species which I have cited,<sup>15</sup> except that its leaves are smaller than typical; however, the smallest leaves of such specimens as *Pennell* 10569 are essentially similar to those of the *Steysmark* material. The species is apparently new to Ecuador. The collector notes it as a shrub about 5 feet tall, with the leaf-blades gray-green or whitish below, the calyx dull red or rose-red, and the corolla red.

***Gaultheria arachnoidea* A. C. Sm. Bull. Torrey Club 60: 101. 1933.**

COLOMBIA: Nariño: North of Yacuanquer, temperate zone, *M. de Garganta* 461 (Ch).

To my knowledge this species has been previously represented only by the type collection, *Jameson* 499, from Volcán de Pasto, Nariño. The newly collected material agrees precisely with the type.

***Gaultheria ornata* A. C. Sm. sp. nov.**

Frutex *G. santanderensi* A. C. Sm. affinis, foliorum laminis pilis brevibus subpersistentibus copiose glanduloso-hispidulis, floribus par-

<sup>15</sup> Bull. Torrey Club 60: 101. 1933.



tibus exterioribus pilis glanduliferis persistentibus circiter 0.5 mm. longis copiose hispidulis non tomentosis, calyce profunde lobato lobis brevioribus, corolla paullo brevior, antheris brevioribus inconspicue aristatis differt.

Shrub, probably less than 1 m. tall, the branchlets terete, brownish, copiously hispidulous with gland-tipped hairs 0.5–1 mm. long and sometimes obscurely whitish-puberulent, eventually glabrescent; petioles subterete, 2–4 mm. long, pubescent like the branchlets; leaf-blades coriaceous, broadly ovate or ovate-oblong, 2–4 cm. long, 1.5–2.8 cm. broad, cordate or subcordate at base, subacute and callose-mucronate at apex, minutely serrulate at margins with crowded callose-tipped teeth, pinnatinerved, the costa slightly impressed above and elevated beneath, the secondary nerves 3 or 4 per side, ascending, less conspicuous than the costa, the veinlet-reticulation immersed above, often prominulous beneath, the young leaf-blades copiously glandular-hispidulous with hairs less than 1 mm. long, these persisting for a short time on lower surfaces and margins but the blades eventually glabrescent, brown-punctate beneath; inflorescences subterminal or axillary toward apices of branchlets, racemose, 8–12-flowered, circumscribed at base by several imbricate bracts similar to those subtending flowers; rachis slender, 3–5 cm. long at anthesis, very densely glandular-hispidulous with reddish brown hairs 0.5–1 mm. long and also closely pale-puberulent; flower-subtending bracts papyraceous, lanceolate-obovate, 8–16 mm. long, 3–5 mm. broad, copiously short-glandular-hispidulous dorsally and at margin, minutely puberulent within, eventually glabrescent, persistent; pedicels slender, 8–13 mm. long at anthesis, copiously glandular-hispidulous (hairs stramineous, about 0.5 mm. long) and puberulent like the rachis, bibracteolate near middle, the bracteoles lanceolate, 5–7 mm. long, 1–1.5 mm. broad, pubescent without like the pedicel; flowers on exterior surfaces very copiously hispidulous with yellowish gland-tipped hairs about 0.5 mm. long; calyx 5-lobed nearly to base, the lobes elongate-deltoid, acuminate, 3.5–4 mm. long, 2–3 mm. broad; corolla urceolate, at anthesis 7–8 mm. long and about 5 mm. in diameter, the lobes deltoid, obtuse, about 1 mm. long; stamens 5–6 mm. long, the filaments slender, 4–5 mm. long, narrowed distally, pale-hispidulous within, the anthers 2–2.5 mm. long including the awns, these minute, about 0.3 mm. long; ovary depressed-subglobose, at anthesis about 2.5 mm. in diameter, the style about 4 mm. long, truncate at apex.

Type in the U. S. National Herbarium, No. 1932305, collected on Páramo Negro, above Bailadores, State of Mérida, Venezuela, May 12, 1944, by V. Rudd (No. 525).

ADDITIONAL SPECIMENS EXAMINED:

VENEZUELA: Mérida: Dry exposed slopes, Páramo de la Negra, between Bailadores and La Grita, alt. 2,745–3,045 m., *Steyermark* 57093 (A, Ch).

Although the new species and *G. santanderensis* A. C. Sm., from adjacent Colombia, are very closely allied, differences in the pubescence seem of such a nature that the two entities are best separated. In the Colombian species the leaf-blades are soft-tomentose beneath, the hairs being long and tangled, while the floral hairs are much longer, finer, and obscurely (if at all) glandular. Steyermark's notes indicate the plant to have leaf-blades dark green above and silvery beneath, while the pedicels, calyx, and corolla are deep rose-red.

*Gaultheria meridensis* A. C. Sm. sp. nov.

Species a *G. santanderensi* A. C. Sm. foliorum laminis pilis circiter 1.5 mm. longis plerumque eglanduliferis subpersistenter strigoso-hispidulis non tomentosis, inflorescentia partibus exterioribus pilis circiter 1 mm. longis glanduloso-hispidula non tomentosa, corolla paullo brevior, filamentis antherisque brevioribus inconspicue aristatis recedit; a *G. ornata* A. C. Sm. supra descripta inflorescentiae pilis conspicue longioribus, foliorum laminarum pilis rigidis longioribus plerumque eglanduliferis utrinque longe persistentibus, calycis lobis longioribus, filamentis brevioribus differt.

Shrub, the branchlets terete, copiously hispidulous with gland-tipped hairs 1–1.5 mm. long and also obscurely pale-puberulent, at length glabrescent and cinereous; petioles 2–3 mm. long, pubescent like the branchlets; leaf-blades coriaceous, ovate, 2–3 cm. long 1.3–2 cm. broad, lightly cordate or rounded at base, callose-mucronate at apex, subentire or obscurely serrulate at the thickened margin, copiously hispidulous on both surfaces with stiff ascending hairs about 1.5 mm. long, these stout at base, tapering, usually gland-tipped when young but eventually sharp-pointed and at length deciduous except for the bases, the costa slightly impressed above and elevated beneath, the secondary nerves 2 or 3 per side, ascending, inconspicuous, the veinlets immersed on both sides; inflorescences axillary near apices of branchlets, racemose, 8–10-flowered, the basal bracts similar to the flower-subtending bracts, papyraceous, oblong or lanceolate-obovate, 8–12 mm. long, 2.5–4 mm. broad, minutely puberulent within, persistent; rachis slender, 3–5 cm. long at anthesis, with the pedicels, bracts, and bracteoles glandular-hispidulous and puberulent like the young branchlets; pedicels slender, 12–14 mm. long at anthesis, elongating to 16 mm. in young fruit, bibracteolate slightly above middle, the bracteoles lanceolate, 5–6 mm. long, about 1 mm. broad; flowers on exterior surfaces copiously hispidulous with subascending yellowish gland-tipped hairs about 1 mm. long; calyx deeply 5-lobed, the lobes lanceolate, acuminate, 5–6 mm. long, about 2 mm. broad; corolla cylindric-urceolate, at anthesis about 7 mm. long and 5 mm. in diameter, the lobes deltoid, obtuse, about 1 mm. long; stamens about 5 mm. long, the filaments slender, 3–3.5 mm. long, pale-hispidulous, the

anthers about 2 mm. long including the awns, these minute, about 0.3 mm. long; ovary about 3 mm. in diameter at anthesis, sparsely puberulent, the style stout, about 5 mm. long, truncate at apex.

Type in the U. S. National Herbarium, No. 1186618, collected on Páramo del Molino, State of Mérida, Venezuela, alt. 3,200 meters, January 19, 1922, by A. Jahn (No. 936).

Another specimen from the same locality, but at 2,600 meters altitude, is Jahn 955 (US).

In the type of pubescence of its branchlets and inflorescence parts, the new species agrees with *G. ornata* A. C. Sm. rather than *G. santanderensis* A. C. Sm., but the stiff hairs are conspicuously longer throughout. In foliar pubescence, *G. meridensis* differs from its two allies; its leaf-hairs are copious, stiff, ascending, subpersistent, tapering, and very early devoid of terminating glands. The three species form a coherent group, in general allied to the Colombian *G. vestita* Benth. and *G. setulosa* N. E. Br., of Mount Roraima. *Gaultheria cordifrons* Sleumer (*G. glandulifera* Fedtsch. & Basil.), also from Mérida, suggests *G. meridensis* and *G. ornata* in foliage but has glabrous flowers.

***Gaultheria remyana* A. C. Sm. nom. nov.**

*Gaultheria mucronata* Remy, Ann. Sci. Nat. III. 8: 232. 1847; non Hook. & Arn. (1834), nec Phil. (1858).

PERU: Puno: Prov. Sandia, 2-6 km. from Oconeque, on trail, alt. 1,800-2,100 m., Metcalf 30568 (US). Prov. Sandia, near Pajonal, on trail, alt. 1,000-1,300 m., Metcalf 30625 (US).

BOLIVIA: La Paz: Vicinity of Sorata, Mandon 559 (US). Sirupaya, alt. 2,200 m., Buchtien 505 (US). Region of Coripata, alt. 1,700 m., Buchtien 8155 (US), 8156 (US). Tipuana Valley, alt. 1,600 m., Buchtien 7429 (US). Near Aten, Williams 1942 (US). Yungas, Bang 223 (US).

Remy's excellent species has been confused in herbaria with the Ecuadorian *G. tomentosa* H. B. K., with which it agrees in type of pubescence but from which it differs in its broad leaves and other obvious characters. Remy cites specimens of Pentland and d'Orbigny, from the Yungas region of Bolivia; the first is illustrated by photograph No. 38262 of the Chicago Natural History Museum series.

VACCINIACEAE<sup>14</sup>

***Themistoclesia anfracta* (A. C. Sm.) Sleumer, Notizbl. Bot. Gart. Berlin 13: 110. 1936.**

COLOMBIA: El Valle: Los Farallones, crest of the Western Cordillera, thickets on páramo of La Torre, alt. about 3,750 m., Cuatrecasas 17857 (Cb).

The cited collection, apparently the second of the species, agrees in all respects with the type, from Mount Santa Ana in the Department

<sup>14</sup> In this treatment the genera are discussed in the sequence proposed by Sleumer, Bot. Jahrb. Engler 71: 386-389. 1941.

of Cauca. Cuatrecasas indicates the plant as a small shrub with an orange-red corolla.

***Themistoclesia cuatrecasasii* A. C. Sm. sp. nov.**

Frutex epiphyticus foliis conspicue distichis, petiolis brevissimis, floribus subsessilibus solitariis vel binis, calyce hispidulo, filamentis elongatis facile distinguitur; *T. anfractae* (A. C. Sm.) Sleumer affinis, foliis majoribus, pedicellis brevioribus, floribus paulo majoribus, staminium proportione differt.

Epiphytic shrub with pendulous branches, the branchlets slender, brownish, copiously hispidulous with reddish brown hairs about 0.5 mm. long, glabrescent; leaves apparently regularly distichous, the petioles inconspicuous, glabrous, 1–1.5 mm. long, the leaf-blades subcoriaceous, brownish when dried, ovate, (2–) 2.5–3.5 cm. long, (1–) 1.5–2 cm. broad, subcordate at base, short-cuspidate to a callose-acute apex, slightly recurved at margin, glabrous, inconspicuously brown-punctate beneath, obscurely 5-nerved from base, the costa and short secondary nerves immersed or plane on both surfaces; flowers axillary, solitary or paired, subsessile, the rachis essentially none, indicated only by several imbricate papyraceous glabrous ovate bracts less than 1 mm. long subtending the flowers; pedicels slender, subterete, about 1 mm. long, essentially glabrous, obscurely bibracteolate; calyx soft-carnose, at anthesis 4–5 mm. long and about 3 mm. in apical diameter, copiously hispidulous with reddish brown hairs about 0.3 mm. long, the tube obconical, gradually tapering into the pedicel, the limb suberect, about 1.5 mm. long, glabrous within, 5-dentate, the lobes broadly triangular, about 0.5 mm. long, apiculate, the sinuses rounded; corolla carnose, cylindric, at anthesis 11–12 mm. long and about 4 mm. in diameter, hispidulous on the lobes externally with stiff hairs about 0.7 mm. long, otherwise glabrous, the lobes 5, oblong, obtuse, 1–1.5 mm. long; stamens 10, shorter than the corolla, about 9 mm. long, the filaments ligulate, slender, about 6 mm. long, pale-hispidulous distally at margin, the anthers about 4 mm. long, the tubules slightly longer than the thecae, dehiscing by elongate clefts; style slender, terete, subequal to the corolla, slightly swollen at apex.

Type in the herbarium of the Arnold Arboretum, collected below El Diamante mine, Quebrada de Las Nieves, northwestern slope of Los Farallones, Western Cordillera, Department of El Valle, Colombia, alt. 2,900 meters, July 30, 1946, by J. Cuatrecasas (No. 21785). Duplicate in the Chicago Natural History Museum.

The collector's notes indicate the plant to be an epiphytic shrub with leafy pendulous branches; the leaves are thick, coriaceous, dark shining green above and bright green beneath; the calyx is rosy green and the corolla carmine.

*Themistoclesia cuatrecasatii* is at once distinguished by its solitary or paired sessile flowers, and is further characterized by such details as the sessile and regularly distichous leaves, hispidulous calyx, and elongate filaments. The last character suggests *T. dryanderæ* Sleumer, but that species has differently shaped and obviously petiolate leaves, a racemose inflorescence, long pedicels, a glabrous calyx, and longer floral parts. A closer relative of the new species is doubtless *T. anfracta* (A. C. Sm.) Sleumer, from which it differs in several obvious characters as noted above.

***Themistoclesia compta* A. C. Sm. sp. nov.**

Frutex ramulis dependentibus, partibus novellis, calyce, et corollae apice debiliter hispidulis, foliorum laminis lanceolatis, floribus solitariis, corolla cylindrico-urceolata facile distinguitur; a *T. anfracta* (A. C. Sm.) Sleumer habitu, foliorum forma, pedicellis longioribus, calyce majore, corollae forma valde differt.

Slender shrub with elongate drooping branches, the branchlets very slender, brownish, copiously but weakly hispidulous with pale hairs about 1 mm. long, glabrescent; petioles slender, rugulose, about 2 mm. long, pubescent like the young branchlets; leaf-blades coriaceous and brownish when dried, apparently fleshy when fresh, lanceolate, (2-) 2.5–3.5 cm. long, 0.7–1.2 cm. broad, obtuse at base, attenuate to a callose-apiculate apex, often sharply recurved at margins, pale-hispidulous on both surfaces when young, subpersistently so beneath and also sparsely brownish-glandular-punctate, inconspicuously 3-nerved from near base, the costa impressed above, slightly raised beneath, the secondary nerves short, often obscure, the veinlets immersed; flowers solitary, axillary, the pedicel slender, 5–7 mm. long at anthesis, hispidulous like the young branchlets, circumscribed at base by a few obscure bracts, bibracteolate near middle, the bracteoles minute, deltoid-oblong, less than 1 mm. long; calyx 6–7 mm. long and in apical diameter at anthesis, hispid with pale stiff hairs 0.5–0.8 mm. long, the tube sharply 5-angled, the limb submembranaceous, erect, 2.5–3 mm. long, with 5 minute apiculate teeth; corolla subcarnose, conical-urceolate, about 8 mm. long and 5 mm. in diameter at anthesis, hispid at apex like the calyx, otherwise glabrous, the lobes 5, deltoid, acute, about 1 mm. long; stamens 10, nearly as long as the corolla, glabrous, the filaments slender, ligulate, about 2.5 mm. long, the anthers about 6 mm. long, the thecae 2–2.5 mm. long, the tubules dehiscing by oval clefts about 2 mm. long; disk weakly hispidulous; style slender, nearly as long as the corolla, truncate at apex.

Type in the herbarium of the Arnold Arboretum, collected on páramo at the extreme north of the Alto del Buey, Los Farallones, crest of the Western Cordillera, Department of El Valle, Colombia, alt. 3,500–3,600 meters, October 11, 1944, by J. Cuatrecasas (No. 17928). Duplicate in the Chicago Natural History Museum.

The collector describes the plant as a small shrub with hanging branches, coriaceous grayish green leaves, and a bright red urceolate corolla.

*Themistoclesia compta* is readily distinguished, among described species, by its slender pendulous habit, lanceolate leaf-blades, hispidulous indument, solitary flowers, and cylindric-urceolate corollas. Although it is without immediate allies, it may be placed in Sleumer's key<sup>17</sup> in the vicinity of *T. anfracta* (A. C. Sm.) Sleumer, from which it differs in many obvious foliar and floral characters.

**Spherospermum majus** Griseb. Fl. Brit. W. Ind. 143. 1859.

*Vaccinium valerii* Standl. Field Mus. Bot. 18: 884. 1938.

*Themistoclesia valerii* Sleumer, Bot. Jahrb. Engler 71: 390. 1941.

Although the Costa Rican specimens included in the concept here reduced to synonymy do not strictly fall into the geographic area of the present paper, the identity of *Vaccinium valerii* with the widespread *S. majus* should be noted. The actual type specimen (*Standley & Valerio* 52483) bears only very immature and minute flowers, but another specimen from the type locality (*Standley & Valerio* 52343) has a mature corolla about 7 mm. long, as described by Standley. *Themistoclesia smithii* (Standl.) Sleumer, inferred by Sleumer<sup>18</sup> to be closely related to *T. valerii*, is correctly placed in *Themistoclesia*.

**Spherospermum buxifolium** Poepp. & Endl. Nov. Gen. & Sp. 1: 4. pl. 8. 1835.

*Vaccinium pachycardium* Standl. Field Mus. Bot. 18: 883. 1938.

The type specimen of *Vaccinium pachycardium* (*Standley & Torres* 51769, from Province of Cartago, Costa Rica), although lacking corollas, is quite similar to the numerous Costa Rican specimens referred without question to *S. buxifolium*.

**Eleutherostemon** Herzog, Meded. Rijks Herb. Leiden 27: 22. 1915.

*Diogenesia* Sleumer, Notizbl. Bot. Gart. Berlin 12: 121. 1934.

The genus *Diogenesia* Sleumer has indeed, as pointed out by Macbride,<sup>19</sup> been one of the most puzzling components of the Andean vacciniaceous complex. Proposed by Sleumer in 1934 on the basis of a single species, *D. octandra*, it was subsequently reduced by him in 1936<sup>20</sup> to *Vaccinium*, under Sect. *Leptothamnia* Benth. & Hook. In his treatment of 1936, Sleumer grouped in this relationship four species of *Vaccinium*: *V. octandrum* (Sleumer) Sleumer, *V. incarum* Sleumer, *V. bolivianum* (Britton) Sleumer, and *V. thibaudioides* Sleu-

<sup>17</sup> Bot. Jahrb. Engler 71: 390-392. 1941.

<sup>18</sup> Bot. Jahrb. Engler 71: 392. 1941.

<sup>19</sup> Univ. Wyoming Publ. 11: 39, 40. 1944.

<sup>20</sup> Notizbl. Bot. Gart. Berlin 13: 136, 137. 1936.



mer. In 1941<sup>21</sup> he again elevated the group to generic rank, to the above four species adding two more, *Diogenesia laxa* (A. C. Sm.) Sleumer and *D. amplectens* (Sleumer) Sleumer.

However, both Sleumer and I have completely overlooked the generic name *Eleutherostemon* Herzog, validly published in 1915 with an excellent description of its type species, *E. racemosum*, and furthermore accompanied by a new combination, *E. bolivianum*, based upon *Rusbya boliviana* Britton. Herzog allied his new genus to *Themistoclesia*; its identity with *Diogenesia* Sleumer is apparent upon perusal of the description, and I have verified this by examination of a photograph and fragments of the type, lent me from the Rijksherbarium at Leiden through the kindness of the director, Prof. H. J. Lam, and the curator, Dr. J. Th. Koster. Herzog's type species, *E. racemosum*, is conspecific with *Diogenesia thibaudioides* (Sleumer) Sleumer.

The fact that species of this group have been referred at times to no fewer than six genera (*Eleutherostemon*, *Diogenesia*, *Vaccinium*, *Thibaudia*, *Themistoclesia*, and *Rusbya*) gives point to Macbride's remarks (loc. cit.) that students of these species have appeared more than a little uncertain of their relationships. Macbride would prefer to regard *Diogenesia octandra* and its allies as a section of *Thibaudia* (apparently without a formal sectional name), connecting that genus with *Themistoclesia* and perhaps *Vaccinium*. Without attempting here to justify current generic lines in the Andean Vacciniaceae,<sup>22</sup> which are indeed rather tenuous, one may remark that *Eleutherostemon* (*Diogenesia*) is composed of a group of indubitably related species with recognizable and usable characters. Our uncertainties as to the alliance and circumscription of this group in the past may well have been due to the paucity of available material.

The significant characteristics of the species of *Eleutherostemon* are their slender, often epiphytic, habit, persistent and aristate stipules, nonarticulate calyces, small flowers and sometimes elongate filaments, and their subglobose, dry, easily shattered fruits. In my opinion, Sleumer in 1941 correctly placed the genus (as *Diogenesia*) as an ally of *Rusbya*, *Sphyrospermum*, and *Themistoclesia*; its relationship to *Vaccinium* and *Thibaudia* seems more remote. The genus is thus known to be composed of six species, reported from Bolivia, Peru, Ecuador, and Colombia; to these I now add two more species, from Colombia and Venezuela. Below are cited the synonymies of the known components of *Eleutherostemon*.

<sup>21</sup> Bot. Jahrb. Engler 71: 395, 396. 1941.

<sup>22</sup> E. g., Sleumer, Bot. Jahrb. Engler 71: 386-408. 1941.

**Eleutherostemon racemosum** Herzog, Meded. Rijks Herb. Leiden 27: 22. 1915.

*Vaccinium thibaudioides* Sleumer, Notizbl. Bot. Gart. Berlin 12: 140. 1934.

*Diogenesia thibaudioides* Sleumer, Bot. Jahrb. Engler 71: 396. 1941.

Type: Locotal, Cochabamba, Bolivia, *Herzog* 2246 (Herb. Leiden; photograph US).

Range: Known only from the two type collections involved. The type of *Vaccinium thibaudioides* is *Steinbach* 9628 (Herb. Berlin, probably destroyed; duplicate US), from Incacorral, Cochabamba, Bolivia.

There can be no doubt of the specific identity of the two binomials concerned. The most careful comparison of inflorescences shows precise agreement in all details. The leaves also are similar in texture, shape, venation, etc.; those of Herzog's type are the larger (8–10 cm. long as contrasted with 4.5–6 cm. for Sleumer's type), but this slight difference is the only one apparent.

**Eleutherostemon amplexans** (Sleumer) A. C. Sm. comb. nov.

*Thibaudia amplexans* Sleumer, Notizbl. Bot. Gart. Berlin 12: 58. 1934.

*Diogenesia amplexans* Sleumer, Bot. Jahrb. Engler 71: 396. 1941.

Type: San Miguel (Province?), Ecuador, *Schimpff* 248 (Herb. Berlin, probably destroyed; fragment US).

Range: Known only from the type.

**Eleutherostemon laxum** (A. C. Sm.) A. C. Sm. comb. nov.

*Thibaudia laxa* A. C. Sm. Contr. U. S. Nat. Herb. 28: 424. 1932.

*Vaccinium laxum* A. C. Sm. & Camp, Brittonia 2: 264. 1936.

*Diogenesia laxa* Sleumer, Bot. Jahrb. Engler 71: 396. 1941.

Type: Putis, Choimacota Valley, Ayacucho, Peru, *Weberbauer* 7532 (Ch).

Range: Known only from the type and *Pearce* (Kew), from "Cuitoc," presumably also in Peru.

**Eleutherostemon caudatum** (Sleumer) A. C. Sm. comb. nov.

*Themistoclesia caudata* Sleumer, Notizbl. Bot. Gart. Berlin 12: 134. 1934.

*Vaccinium incarum* Sleumer, Notizbl. Bot. Gart. Berlin 13: 137. 1936.

*Diogenesia caudata* Sleumer, Bot. Jahrb. Engler 71: 396. 1941.

Type: Between Quellacocha and Puytac, Ayacucho, Peru, *Raimondi* 9873 (Herb. Berlin, probably destroyed; fragment US).

Range: Known only from the type.

**Eleutherostemon bolivianum** (Britton) Herzog, Meded. Rijks Herb. Leiden 27: 23. 1915.

*Rusbya boliviana* Britton, Mem. Torrey Club 4: 215. 1895.

*Vaccinium bolivianum* Sleumer, Notizbl. Bot. Gart. Berlin 13: 137. 1936.

*Diogenesia boliviana* Sleumer, Bot. Jahrb. Engler 71: 396. 1941.

Type: Songo, Bolivia, *Bang* 852 (NY; duplicates US and other herbaria).

Range: Known only from the type collection.

**Eleutherostemon octandrum** (Sleumer) A. C. Sm. comb. nov.

*Thibaudia acuminata* Don ex Griseb.; Benth. & Hook. Gen. Pl. 2: 575. 1876, nomen, non Hook. (1837).

*Diogenesia octandra* Sleumer, Notizbl. Bot. Gart. Berlin 12: 121. 1934.

*Vaccinium octandrum* Sleumer, Notizbl. Bot. Gart. Berlin 13: 136. 1936.

*Thibaudia octandra* Macbr. Univ. Wyoming Publ. 11: 40. 1944.



Type: Tatanera, Prov. Carabaya, Puno, Peru, *Lechler* 2614 (Herb. Berlin, probably destroyed; dupl. Herb. Genève; photograph and fragment US).

Range: In addition to the type, Sleumer has subsequently listed specimens from Cerro de Cusilluyoc, Cuzco, Peru (*Pennell* 14098a, US), from Tungurahua, Ecuador (*Sydow* 549, 587), and from Cauca, Colombia (*von Sneidern* 1003). I have not been able to verify the identity of the Ecuadorian and Colombian collections with this species.

***Eleutherostemon andinum*** A. C. Sm. sp. nov.

Frutex divaricatus foliorum laminis conspicue nervatis et basi obtusis, inflorescentia multiflora bracteis numerosis persistentibus subtenta, calyce basi truncato, corolla brevi urceolata, filamentis puberulis, antherarum tubulis per poros elongatos dehiscentibus, ovarii disco conspicue elevato distinguitur; *E. octandro* (Sleumer) A. C. Sm. forsan affinis, foliorum forma nervisque, inflorescentia brevior, floribus minoribus, staminibus 10 valde differt.

Robust shrub, the branches spreading, distally dependent, striate, cinereous, the young branchlets terete, brownish, pale-puberulent, soon glabrescent; stipules conspicuous, 4–5 mm. long, aristate from a swollen base, puberulent when young, subpersistent; petioles semiterete, 3–5 mm. long, puberulent like the branchlets; leaf-blades subcoriaceous, ovate-oblong, (4–) 5–9.5 cm. long, 2–4.5 cm. broad, obtuse at base and shortly decurrent on the petiole, acuminate at apex (acumen 0.5–1 cm. long, obtusely callose-tipped), entire and slightly recurved at margin, sparsely glandular-pilose on both sides when young with stiff reddish hairs about 0.3 mm. long and sometimes sparsely puberulent-hispidulous on the nerves, soon glabrescent, 5-nerved from near the base, the principal nerves conspicuously impressed above and raised beneath, the veinlet-reticulation immersed or slightly raised on both surfaces; inflorescences axillary or arising from defoliate branchlets, congested, subfasciculate, 8–16-flowered, subtended by numerous imbricate persistent bracts, these papyraceous, lanceolate, 3–5 mm. long, long-acuminate; pedicels slender, terete, 8–15 mm. long, continuous with the calyx, subpersistently pale-puberulent, bibracteolate near base, the bracteoles oblong-lanceolate, acute, about 1.5 mm. long; calyx-tube depressed-subglobose, truncate at base, faintly 5-angled, about 1.5 mm. long and 3 mm. in diameter, sparsely and minutely reddish-glandular-hispidulous, the limb erect, about 1.5 mm. long, 5-dentate, the teeth broadly triangular, apiculate, the sinuses rounded; corolla thin-carnose, glabrous (or with a few minute appressed pale hairs), urceolate, about 4 mm. long and 2.5 mm. in diameter at anthesis, conspicuously contracted at base and apex, the lobes 5, deltoid, acute, about 0.5 mm. long; stamens 10, similar, shorter than the corolla; filaments free, ligulate, 1.5–1.8 mm. long, copiously puberulent on both surfaces; anthers about as long as the filaments, erect, the thecae smooth, the tubules broad, slightly longer than the thecae, dehiscing by

introrse oval clefts for nearly their entire length; upper surface of ovary surmounted by a subcarnose short-cylindric disk about 0.5 mm. high closely surrounding the style, this stout, subterete, nearly as long as the corolla, the stigma inconspicuous, peltate; fruit subglobose, 4–5 mm. in diameter, the pericarp thin, easily shattering, the short calyx-limb and disk subpersistent.

Type in the herbarium of the Arnold Arboretum, collected in woods at Almorzadero, western slope of Los Farallones, Western Cordillera, Department of El Valle, Colombia, alt. 2,950 meters, July 25, 1946, by J. Cuatrecasas (No. 21706). Duplicate in the Chicago Natural History Museum.

The collector describes the plant as a very robust shrub with spreading branches which are pendulous at the apices; the leaves are coriaceous, dark green above and bright green beneath; the calyx is green and the corolla greenish white.

Although the stipules, fruits, and other characters of this plant point to its place in *Eleutherostemon*, it is, as mentioned in the above diagnosis, very distinct from the known species. The genus (as *Diogenesia*) has otherwise been mentioned from Colombia only on the basis of a single collection which Sleumer referred to *Diogenesia octandra*.

***Eleutherostemon tetrandrum* A. C. Sm. sp. nov.**

Frutex vel arbor ab omnibus speciebus generis stipulis brevioribus, staminibus 4, filamentis longis, disco conspicuiore facile distinguitur; *E. octandro* (Sleumer) A. C. Sm. primo aspectu similis, characteribus supra enumeratis valde differt.

Tree or shrub, or shrubby epiphyte; branchlets slender, subterete, cinereous, glabrous; stipules comparatively inconspicuous, 1–2 mm. long, pulvinate at base, apiculate; petioles semiterete, glabrous, 2–5 mm. long; leaf-blades coriaceous, ovate- or elliptic- or lanceolate-oblong, 4–7.5 cm. long, 1.5–3.5 cm. broad, obtuse or acute at base and decurrent on the petiole, acuminate at apex (acumen 0.5–1 cm. long, the actual apex blunt), entire at margin, sometimes obscurely and sparsely glandular-pilose on both sides with dark hairs about 0.2 mm. long, 5–7-nerved from near base, the nerves ascending, impressed above, faintly elevated beneath, the innermost pair sometimes concurrent with the costa for 1.5 cm., the outermost pair often obscure, the veinlets immersed; inflorescences axillary or arising from branchlets below leaves, borne singly or occasionally in pairs, subtended by a few imbricate papyraceous deltoid bracts about 1 mm. long, racemose, 5–15-flowered, the rachis (5–15 or rarely to 25 mm. long) and pedicels very slender, minutely pale-puberulent; pedicels 7–10 mm. long at anthesis, continuous with the calyx, bibracteolate slightly below the middle, the bracteoles lanceolate, about 1 mm. long; calyx-tube subglobose-urceolate or obovoid, at anthesis 1.2–1.5 mm. in diameter, glabrous, the limb subspreading, less than 1 mm. long, 4-dentate, the

teeth broadly triangular, apiculate, the sinuses flattened; corolla thin-carnose, cylindric, 6–7 mm. long at anthesis, 1–1.5 mm. in diameter proximally and slightly broader toward apex, glabrous without, obscurely puberulent within, the lobes 4, deltoid, subacute, about 0.5 mm. long; stamens 4, alternate with the corolla-lobes, nearly as long as the corolla; filaments free, submembranaceous, ligulate, about 5 mm. long, densely and minutely puberulent within, glabrous without; anthers erect, about 2 mm. long, the thecae smooth, the tubules about as long as the thecae, broadly conical, dehiscing by introrse pores for nearly their entire length; upper surface of ovary surmounted by a conspicuous cylindric carnose glabrous disk 0.6–0.8 mm. high closely surrounding the style, this slender, terete, eventually longer than the corolla (8–12 mm. long), truncate at apex; young fruit subglobose, 3–4 mm. in diameter, surmounted by the persistent calyx-limb and disk.

Type in the herbarium of the Chicago Natural History Museum, No. 1256443, collected along Quebrada del Sararito, Sarare region, Department of Norte de Santander, Colombia, alt. 1,930–1,950 meters, October 22, 1941, by J. Cuatrecasas, R. E. Schultes, and E. Smith (No. 12574).

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: Norte de Santander: Sarare region, between Alto del Loro and Alto de Santa Inés, in woods, alt. 1,800–2,200 m., *Cuatrecasas, Schultes, & E. Smith* 12553 (Ch). Páramo de Fontibón, alt. 2,600–2,750 m., *Cuatrecasas, Schultes, & E. Smith* 12324 (Ch, US). Páramo de Tamá, toward Samaria, alt. 2,600–2,900 m., *Cuatrecasas, Schultes, & E. Smith* 12749 (Ch).

VENEZUELA: Mérida: Moist rich forest, Quebrada de Los Salichales, tributary of Río Canaguá, southwest of Canaguá, alt. 1,950–2,135 m., *Steyermark* 56420 (A, Ch).

The Colombian collections are all in flower and are described as shrubs or trees, with white corollas. Steyermark's specimen is mentioned as a shrubby epiphyte, with a pale green (apparently immature) fruit. These collections extend the known range of *Eleutherostemon* into the Eastern Cordillera of Colombia and into Venezuela. Although there are slight variations among them, their specific identity seems unquestionable. The short, pulvinate, apiculate stipules and shape and texture of the leaves are similar on all the specimens. All examined flowers are essentially identical, those of No. 12324 being immature and consequently somewhat smaller than stated in my description.

*Eleutherostemon tetrandrum* is remarkable in the genus for the reduction of the number of stamens and the long filaments. The disk is more prominent than noted in the other species, although it is in general similar to that described above for *E. andinum*. In general appearance and leaf shape, the new species most closely approximates *E. octandrum* (Sleumer) A. C. Sm., but floral differences are obvious.

*Disterigma cryptocalyx* A. C. Sm. sp. nov.

Frutex *D. alaternoidi* (H. B. K.) Nied. affinis, ramulis juvenilibus longe pilosis, foliorum laminis acute cuspidatis, floribus solitariis ses-

silibus bracteis 8-10 circumdatis, bracteis intimis magnis calycem involventibus, corolla majore, staminibus longioribus differt.

Branching shrub, sometimes epiphytic and scandent, the branchlets sometimes rooting at nodes; branchlets slender, when young obtusely angled, brownish, and stramineous- or pale ferruginous-pilose (hairs 1.5-2 mm. long, often forming a tangled indument), soon glabrescent and cinereous; petioles subterete, 1-2 mm. long, pale-hispidulous, glabrescent; leaf-blades subcoriaceous, dark green above and brownish beneath when dried, ovate, 15-25 mm. long, 8-12 mm. broad, rounded or broadly obtuse at base, sharply cuspidate at apex, entire at margin, essentially glabrous or with a few scattered glandular reddish hairs beneath, obscurely 3- or 5-nerved from base, the costa faintly impressed above and elevated beneath, the secondary nerves inconspicuous, the veinlets immersed; flowers solitary in leaf-axils, essentially sessile, circumscribed by 8-10 bracts, these papyraceous, broadly ovate or elliptic, glabrous, entire and scariose-margined, rounded at apex, the outer ones minute, the inner ones progressively larger, the 2 innermost 6-7 mm. long and broad, enveloping and completely concealing the calyx, often splitting longitudinally; calyx about 4 mm. long and in apical diameter at anthesis, the tube obtusely 4-angled, glandular-pilose with scattered minute appressed reddish hairs, the limb 2-2.5 mm. long including lobes, these 4, deltoid, subacute, 1-2 mm. long, 2-2.5 mm. broad, glabrous or sparsely setose distally; disk conspicuously annular-pulvinate, glabrous; corolla thin-carnose, glandular-pilose without like the calyx-tube, sparsely white-pilose within, subcylindric, 10-11.5 mm. long and about 5 mm. in diameter at anthesis, the lobes 4, reflexed at anthesis, deltoid, obtuse, about 1.5 mm. long; stamens 8, shorter than corolla, the filaments distinct, ligulate, 4-5 mm. long, copiously villose on both sides with pale hairs about 1 mm. long, the anthers 5-6 mm. long, the tubules slightly exceeding the thecae in length; style stout, terete, exerted at anthesis.

Type in the U. S. National Herbarium, No. 1795396, collected between Gabinete and Andaluca, western slope of Eastern Cordillera, Department of Huila, Colombia, alt. 2,200-2,300 meters, March 25, 1940, by J. Cuatrecasas (No. 8675).

ADDITIONAL SPECIMEN SEEN:

COLOMBIA: Huila-Caqueta boundary: Eastern Cordillera on the dividing crest, at Gabinete, alt. 2,300-2,450 m., Cuatrecasas 8419 (US).

The most obvious difference between this new species and *D. alaternoides* (H. B. K.) Nied. lies in the inflorescence bracts; the pedicels of *D. alaternoides*, although sometimes very short, are usually apparent, with an apical pair of bracteoles (rarely exceeding 4 mm. in length) which are shorter than the calyx and do not completely conceal it. The leaf-apex of *D. alaternoides* is obtuse or at most subacute, while the hairs of the young branchlets are cinereous and comparatively incon-

spicuous, usually less than 0.5 mm. long. The flowers of *D. alaternoides* are usually not solitary, and dimensions of the corolla and stamens are appreciably less than those of *D. cryptocalyx*. In leaf shape the new species suggests *D. acuminatum* (H. B. K.) Nied., from which it differs in obvious dimensions of leaves and flowers as well as in its much larger floral bracts.

Two sterile specimens which probably also represent the new species are:

COLOMBIA: Boyacá: Region of Mount Chapon, alt. about 2,270 m., *Lawrance* 103 (NY, US). Antioquia: Páramo de Sonsón, alt. 2,700–2,850 m., *Daniel* 3435 (US).

In the absence of flowers these specimens cannot be definitely assigned to *D. cryptocalyx*, but they have similar pubescence and leaf-apices, while their bud scales are very numerous and large (up to 12 mm. long), in texture suggesting the inflorescence bracts described above.

*Disterigma popenoei* Blake, Proc. Biol. Soc. Washington 35: 120. 1922.

ECUADOR: Loja: Western slopes of Cordillera de Condor and northwest slopes of Nudo de Sabanillas, around Tambo Cachiyaçu, along Río Cachiyaçu, about 2 leagues southeast of Yangana, alt. 2,000–3,000 m., *Steyermark* 54801 (A, Ch).

This is only the third collection of the species which has come to my attention; the other two are also from the Province of Loja. The Steyermark collection is described as from a shrub less than 1 meter tall, with spreading branches; the leaves have 3 prominent sulcate nerves above; the corolla is white, with reflexed lobes; the anthers are tawny-brown; and the fruit is fleshy and white.

*Disterigma elassanthum* Blake, Journ. Washington Acad. Sci. 16: 362. 1926.

COLOMBIA: Santander: Vicinity of Las Vegas, alt. 2,600–3,000 m., *Killip & Smith* 15947 (US); vicinity of Bucaramanga, alt. about 1,500 m., *F. A. Barkley & J. Araque M.* 18S114 (US).

In my revision of *Disterigma* I cited only the type collection for *D. elassanthum*,<sup>23</sup> but the above-cited Santander specimens agree precisely with the type, from Huila.

*Killipiella stereophylla* A. C. Sm. sp. nov.

Frutex a *K. styphelioide* A. C. Sm. ramulis puberulis haud tomentellis, foliorum laminis latioribus inconspicue nervosis, corolla leviter fissa, antheris basi rotundatis, tubulis levibus non tuberculatis, ovulis numerosis differt; a speciebus *Disterigmati*s inflorescentia uniflora conspicue multibracteata, calycis lobis magnis erectis, antherarum tubulis gracilibus distinguitur.

Shrub (epiphytic?) with slender elongate branches, these terete, cinereous, glabrous, when young brownish, obtusely angled, and minutely pale-puberulent; petioles semiterete, 2–3 mm. long, soon

<sup>23</sup> Brittonia 1: 230. 1933.



glabrescent; leaf-blades coriaceous, stiff, glabrous, brownish when dried, narrowly oblong-elliptic, (15-) 20-32 mm. long, 7-12 mm. broad, truncate or broadly obtuse at base, acute or callose-apiculate at apex, entire at margin, the principal nerves 3, ascending from base, the costa faintly impressed above and raised beneath, the other nerves and veinlets immersed; inflorescence axillary, 1-flowered, the rachis very short, bearing 6-8 crowded bracts, these papyraceous, oblong-elliptic, striate with close parallel nerves, often split distally, minutely ciliolate at the scarious margin, the outer ones minute, the 2 innermost about 5 mm. long and broad, shorter than the calyx; flower terminal, the pedicel (above innermost bracts) very short or essentially none, up to 1 mm. long; calyx 7.5-8 mm. long, glabrous or obscurely puberulent when young, the tube cupuliform, about 2 mm. long and 2.5 mm. in diameter, the limb erect, papyraceous, cleft nearly to base, the lobes 4, narrowly imbricate, obovate-elliptic, about 5 mm. long, 2.5-3 mm. broad, callose-subacute at apex, similar to bracts in margin and venation; disk annular-pulvinate, glabrous; corolla thin-carnose, cylindrical, about 10 mm. long and 4 mm. in diameter, the lobes 4, reflexed at anthesis, deltoid, subacute, about 1 mm. long; stamens 8, nearly as long as corolla, the filaments distinct, ligulate, about 4 mm. long, copiously short-pilose within, the anthers about 5 mm. long, the thecae rounded at base, about 2 mm. long, the tubules very slender, essentially smooth; style slender, subequal to corolla; ovules numerous, small, flattened.

Type in the herbarium of the Chicago Natural History Museum, No. 1296124, collected at Ricaurte, western slope of Western Cordillera, Department of Narinó, Colombia, alt. 1,300 meters, April 18, 1941, by K. von Sneider (No. 612).

In general aspect and type of inflorescence this plant agrees with the recently described monotypic genus *Killipiella*,<sup>24</sup> like which it also has a very deeply cleft calyx-limb and slender anther-tubules. However, it disagrees with *K. styphelioides* and agrees with the genus *Disterigma* in having its corolla shallowly cleft, its anthers not appendaged at base and with smooth rather than tuberculate tubules, and its ovules comparatively numerous. The discovery of this new species demonstrates a stronger connection between *Disterigma* and *Killipiella* than was realized on the basis of the original species. Furthermore, the new species *Disterigma cryptocalyx*, described above, has floral bracts very similar to those of *Killipiella*.

*Vaccinium cardonae* A. C. Sm. sp. nov.

Frutex foliorum laminis elongato-ellipticis margine crenulatis et inflorescentiis copiose pilosis distinguitur; *V. puberulo* Kl. affinis,

<sup>24</sup> Journ. Washington Acad. Sci. 33: 242-244. fig. 1. 1943.



laminis longioribus et pro longitudine angustioribus, calycis lobis elongato-deltaideis acuminatis differt.

Small tree, to 3 m. high, the branchlets terete, copiously pilose with spreading whitish hairs about 0.5 mm. long, presumably glabrescent; petioles semiterete, 2–3 mm. long, pilose like the branchlets; leaf-blades subcoriaceous, sparsely puberulent along the costa on both sides when young, glabrescent, lanceolate or narrowly elliptic, 3–5.5 cm. long, (0.8–) 1–1.8 cm. broad, attenuate at base and decurrent on the petiole, obtuse and obscurely callose-apiculate at apex, slightly recurved and obviously apiculate-crenulate at margin, the teeth 3–5 per centimeter, tipped distally with short and eventually caducous glands, the costa slightly impressed above, raised beneath, the lateral nerves 5–7 per side, short, subspreading, inconspicuously raised on both surfaces, the veinlet-reticulation obscure; inflorescences axillary toward apices of branchlets, essentially racemose or very narrowly paniculate and apparently sometimes leaf-bearing distally, the rachis, bracts, bracteoles, and pedicels copiously spreading-pilose like the branchlets; flower-subtending bracts lanceolate, 5–10 mm. long, sometimes leaflike; pedicels slender, at anthesis 5–8 mm. long, proximally bibracteolate with subulate bracteoles about 2 mm. long; calyx-tube copiously pilose, the limb suberect, about 2.5 mm. long, the lobes elongate-deltoid, about 2 mm. long, acuminate, dorsally puberulent, glabrous within; corolla white, thin-carnose, urceolate, about 4 mm. long, 5- or 6-angled, sparsely puberulent proximally, glabrous distally, the lobes minute, deltoid; stamens 10–12, about 2 mm. long, the filaments slender, spreading-white-pilose, the anthers about 1 mm. long, the thecae finely rugulose, the tubules subequal to the thecae, dehiscing by oblique oval pores; ovary sparsely puberulent on the distal surface, the style glabrous, subequal to the corolla.

Type in the U. S. National Herbarium, No. 1932221, collected on Cerro Acopán, Río Caroni, State of Bolívar, Venezuela, alt. 2,100 meters, in October 1947, by F. Cardona (No. 2279).

Although the new species clearly differs from typical specimens of *V. puberulum* Kl. as noted in the above diagnosis, a more extensive series of collections is desirable to show the variation in leaf form and calyx-lobes in this complex. Among the other species of southern Venezuela, the only one suggesting *V. cardonae* is *V. spathulatum* Camp & A. C. Sm., of Auyan-tepuí, which has entire leaf-blades and a glabrous short-lobed calyx.

*Semiramisia speciosa* (Benth.) Kl. *Linnaea* 24: 25. 1851.

ECUADOR: Santiago-Zamora: Along wooded slopes of Río Tintas, southeast of El Pan, alt. 2,895 m., *Steyermark* 53506 (A, Ch). Wooded slopes along Río Valladolid, between Quebrada Honda and Tambo Valladolid, alt. 2,000–3,000 m., *Steyermark* 54605 (Ch).

Since mentioning<sup>25</sup> that this species was known only from the type collection, I have also seen a specimen from Carchi, *Mexia* 7603 (US). The Steyermark specimens are from suffrutescent epiphytes with pendent flowers; the corolla is deep red or orange-red distally and pale green proximally, and the anthers are golden; No. 53506 is locally known as "sarsilla."

*Ceratostema charianthum* A. C. Sm. sp. nov.

Frutex epiphyticus a speciebus generis adhuc cognitis corolla hypocrateriformi cum tubo cylindrico et lobis patentibus recedit; *C. alato* (Hoer.) Sleumer calycis forma subsimilis, foliis magnis integris, inflorescentia corolla staminibusque brevioribus valde differt.

Epiphytic shrub, glabrous throughout (except filaments), the branchlets very slender (1–1.5 mm. in diameter distally), pale brown; petioles rugulose, 3–5 mm. long, narrowly winged distally; leaf-blades subcoriaceous, brownish green when dried, elliptic-lanceolate, 7–11.5 cm. long, 2–4 cm. broad, acute at base and decurrent on the petiole, gradually tapering distally into a slender acumen 1–2 cm. long, entire and narrowly recurved at margin, pinnate-nerved, the costa slightly elevated or nearly plane above, prominent beneath, the secondary nerves 4–6 per side, spreading, curved and anastomosing toward margin, prominulous on both surfaces, the veinlet-reticulation immersed or faintly prominulous; inflorescences axillary, short-racemose, apparently 2- or 3-flowered, the rachis 5–7 mm. long, the flower-subtending bracts subulate, 2–3 mm. long; pedicels terete, rugulose, 14–18 mm. long at anthesis, articulate with calyx, bibracteolate near base, the bracteoles lanceolate-subulate, 1–2 mm. long, caducous; calyx at anthesis about 9 mm. long and 5 mm. in diameter distally, 5-winged for its entire length to the sinuses, the wings subcarnose, about 0.6 mm. broad, the tube about 6 mm. long, the limb erect, short, papyraceous, 5-lobed, the lobes conspicuously apiculate with a sharp acumen about 1 mm. long, the sinuses flattened; corolla thin-carnose, essentially hypocrateriform, about 30 mm. long, the tube cylindric, about 5 mm. in diameter, the limb flaring, deeply 5-lobed, the lobes deltoid-subulate, 8–9 mm. long, 7–8 mm. broad at base, abruptly narrowed, acute, the sinuses obtuse; stamens 10, nearly as long as corolla, alternately slightly unequal, the filaments free, membranaceous, ligulate, 4–5 mm. long, puberulent distally on both surfaces, the anthers 23–24 mm. long, the thecae coarsely granular, 7–8 mm. long, abruptly narrowed into the very slender tubules, these about twice as long as the thecae, dehiscing by flaring oval pores about 1 mm. long; style filiform, slightly exserted, the stigma minute.

<sup>25</sup> Contr. U. S. Nat. Herb. 28: 349. 1932.

Type in the herbarium of the Chicago Natural History Museum, No. 1255153, collected in dense forest between Campanas and Arenillas, along Río Tintas, 10 leagues southeast of El Pan, Province of Santiago-Zamora, Ecuador, alt. 2,195 meters, July 13, 1943, by J. A. Steyermark (No. 53591).

The collector describes the plant as an epiphyte with subcoriaceous leaves which are deep green above and paler beneath; the corolla is deep red. Although at first glance the species described above does not suggest the genus *Ceratostema* (i. e., *Englerodoxa* of my treatment of 1932),<sup>26</sup> its essential characters point to this position. The species is indubitably new, and I believe that a slightly extended concept of *Ceratostema* will permit its inclusion there. Other species of *Ceratostema* have the corolla apophysate or at least greatly enlarged proximally, with lobes which are comparatively narrow and suberect at anthesis. The cylindrical tube and flaring broad-lobed limb of the corolla of *C. charianthum* are therefore very noteworthy. In calycine characters the new species suggests *C. alatum* (Hoer.) Sleumer, but differences between the two species are numerous and obvious.

In connection with *C. charianthum* mention should be made of another Steyermark collection: ECUADOR: El Oro: Wooded slopes bordering Quebrada Nudillo and Quebrada Tambillo, tributary to Río Luis, and Piedra Grande, 2 leagues northeast of Curtincapa, alt. 1,615–1,890 m., *Steyermark* 53849 (A, Ch), a woody epiphyte hanging from branches, the calyx and pedicels green, the corolla deep red with recurved pale rose lobes, the filaments pale rose. In floral characters this specimen agrees very well with the type of *C. charianthum*, except that its calyx is apparently unwinged. Its leaves are somewhat larger and longer petiolate than those described above, with blades that are rounded at base and have fewer, more proximally oriented, ascending secondary nerves. I believe that No. 53849 represents a new species of this alliance, but more complete material is desired for description.

***Ceratostema macranthum* A. C. Sm. sp. nov.**

Frutex ut videtur scandens vel epiphyticus, *C. calycino* (A. C. Sm.) Sleumer<sup>27</sup> et *C. alberti-smithii* (Sleumer) Sleumer affinis, petiolis

<sup>26</sup> Contr. U. S. Nat. Herb. 28: 350–352. 1932. For corrections of the erroneous concept of *Ceratostema* there expressed, see Sleumer, Notizbl. Bot. Gart. Berlin 12: 278–282. 1935, and A. C. Smith, Bull. Torrey Club 63: 307–308. 1936.

<sup>27</sup> Although the binominal *Ceratostema calycinum* has been accredited to Bentham & Hooker by those who have had occasion to use it, including myself (Bull. Torrey Club 63: 307. 1936), I do not believe that this is the correct authorship. The species was first effectively published by me in 1932 (Contr. U. S. Nat. Herb. 28: 351), as *Englerodoxa calycina*, which I described as a new species with Bentham & Hooker as parenthetical authors. This was incorrect on my part, as the publication of the presumed basonym, *Ceratostema calycinum* Benth. & Hook. (Gen. Pl. 2: 570. 1876), was invalid, having been based merely on a refer-

longioribus, calyce coriaceo majore cum tubo 5-alato non cylindrico nec 10-costato, staminibus multo longioribus distinguendus; a priore foliorum laminis majoribus, rhachi pedicellis et corolla longioribus etiam differt; a posteriore ramulis et inflorescentiae partibus puberulis, foliorum laminis 5-nerviis recedit.

Liana or perhaps epiphytic shrub, the branchlets stout, inconspicuously angled, brownish to cinereous, closely pale-puberulent, becoming glabrescent; stipules intrapetiolar, connate, subulate from a pulvinate base, 4–5 mm. long; petioles rugulose, subterete or angled, (4–) 10–15 mm. long, glabrous or inconspicuously puberulent; leaf-blades coriaceous, brownish when dried, elliptic or ovate-elliptic, (5–) 7–12 cm. long, (2.5–) 3.5–6 cm. broad, acute or obtuse at base and shortly decurrent on the petiole, subacute at apex, entire and recurved at margin, essentially glabrous on both sides or sparsely puberulent beneath when young, 5-nerved from near base, the costa and the ascending secondary nerves impressed above, prominent beneath, the secondaries usually concurrent with the costa for about 1 cm., the veinlets immersed or faintly raised beneath; inflorescences axillary toward apices of branchlets, racemose, 3–12-flowered, the rachis and pedicels closely pale-puberulent, glabrescent after anthesis; rachis stout, striate and irregularly angled, (2–) 8–13 cm. long, the flower-subtending bracts caducous, not seen; pedicels stout, subterete, striate, 13–45 mm. long at anthesis, enlarged to about 3 mm. in diameter distally and obscurely articulate with the calyx, bibracteolate distally, the bracteoles caducous, not seen; calyx coriaceous, large, at anthesis 35–45 mm. long and 15–20 mm. in diameter distally, closely pale-puberulent including both surfaces of limb, at length glabrescent, the tube 8–10 mm. long and in apical diameter, 5-winged, the wings coriaceous, 2–3 mm. broad, narrowed at both ends, the limb suberect, deeply split into 5 lobes but these often partially and irregularly fused, the lobes usually 15–20 mm. long at anthesis, the sinuses acute; corolla thick-carnose, puberulent without, at length glabrescent, at anthesis 45–47 mm. long and 10–12 mm. in diameter proximally, slightly narrowed distally, deeply 5-lobed, the lobes lanceolate, acute, about 20 mm. long and 5 mm. in diameter at base, recurved at anthesis; stamens 10, about as long as the corolla, alternately slightly unequal, the filaments subcoriaceous, 7–12 mm. long, at first firmly coherent laterally, puberulent within, the anthers 40–42 mm. long, the thecae coarsely granular, 16–18 mm. long, rounded at base, the dorsal locules

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ence to the binomial *Anthopterus calycinus*, which was noted on one of Spruce's herbarium labels. Apparently the first reference of this species to *Ceratostema* after its valid publication in 1932 was by Sleumer (Notizbl. Bot. Gart. Berlin 12: 281. 1935). The correct binomial, therefore, appears to be *Ceratostema calycinum* (A. C. Sm.) Sleumer, dating from 1935.

conspicuously (1–3 mm.) longer than the ventral locules, the tubules stiff, longer than the thecae, dehiscing by flaring oblique oval pores about 1 mm. long; style comparatively stout, terete, about as long as corolla, truncate at apex.

Type in the herbarium of the Chicago Natural History Museum, No. 1255133, collected along trail between Pailas and El Pan, Province of Santiago-Zamora, Ecuador, alt. 2,255–3,445 meters, September 10, 1943, by J. A. Steyermark (No. 54311). Duplicate in the herbarium of the Arnold Arboretum.

ADDITIONAL SPECIMEN EXAMINED:

ECUADOR: Loja: Loja district, *André*, Oct. 1876 (US).

Steyermark's notes indicate the plant to be a liana with coriaceous leaves which are deep green above and paler beneath; the calyx-limb is dull red and shining, and the corolla is pale salmon, although noted also as dark red in other specimens seen at higher elevations but not collected. The *André* specimen is unaccompanied by notes. It disagrees slightly with the type in having its leaves somewhat smaller, its rachis shorter, and its inflorescence with more fugacious pubescence. However, the essential characters of the two collections are identical, and I place them together with confidence.

The new species is closely related only to *C. calycinum* (A. C. Sm.) Sleumer and *C. alberti-smithii* Sleumer, probably especially to the latter, but the characters mentioned in the above diagnosis amply differentiate it. *Ceratostema macranthum* is remarkable for its robust inflorescence and, even in *Ceratostema*, for its large coriaceous calyx.

*Ceratostema silvicola* A. C. Sm. sp. nov.

Frutex *C. amplexicauli* A. C. Sm. valde affinis, ramulis foliisque glabris, foliorum laminis majoribus cum nervis secundariis altius orientibus, pedicellis corolla staminibusque longioribus, calycis tubo tereti differt.

Shrub, the branchlets subterete, glabrous (probably puberulent when young); leaves sessile, amplexicaul, the petiole practically indiscernible, the blades subcoriaceous, when dried dark green above and brownish beneath, ovate-oblong, 9–13.5 cm. long, 5–7 cm. broad, conspicuously cordate at base with a sinus 1–1.5 cm. deep and rounded auricles, obtusely short-cuspidate at apex, entire and slightly recurved at margin, glabrous on both surfaces, pinnate-nerved, the costa slightly elevated above, very prominent beneath, the lateral nerves 5 or 6 per side, anastomosing toward margin, slightly impressed above, sharply raised beneath, the basal ones spreading, the distal ones curved-ascending, the veinlet-reticulation subimmersed; inflorescences axillary toward apices of branchlets, racemose, usually 5–7-flowered, the rachis, pedicels, and calyces soft-white-pilose; rachis slender, 1.5–3.5 cm. long, the flower-subtending bracts papyraceous, ovate, subacute,



about 2 mm. long, puberulent without; pedicels terete, 22–32 mm. long at anthesis, swollen distally and articulate with calyx, bibracteolate somewhat below the middle, the bracteoles similar to bracts but smaller; calyx-tube terete, about 3 mm. long and 4 mm. in diameter at anthesis, the limb papyraceous, spreading, 2–3 mm. long including lobes, these broadly deltoid, about 1.5 mm. long and 3.5 mm. broad, acute, the sinuses flattened or broadly obtuse; corolla crimson, carnose, subcylindric, 33–35 mm. long at anthesis and 10–12 mm. in diameter near base, narrowed distally, pilose without but less densely so than the calyx, deeply 5-lobed to near middle, the lobes subulate, acute, about 3 mm. broad at base; stamens 10, alternately slightly unequal, nearly as long as corolla, the filaments ligulate, glabrous, 6–8 mm. long, the anthers 26–28 mm. long, the thecae strongly granular, 10–11 mm. long, mucronulate at base, abruptly narrowed into very slender tubules, these nearly twice as long as the thecae, dehiscing by flaring oval pores about 1 mm. long; style filiform, subequal to corolla, the stigma minute.

Type in the U. S. National Herbarium, No. 1933897, collected among forest trees near Archidona, Canton Napo, Province of Napo-Pastaza, Ecuador, alt. 650 meters, April 20, 1935, by Ynes Mexia (No. 7283). Duplicate in the herbarium of the University of California.

The new species is closely related only to the recently described Colombian *C. amplexicaule* A. C. Smith, like which it has deeply cordate clasping leaves and a small calyx-limb, but from which it is distinguished by the several characters mentioned in the above diagnosis.

***Periclesia pensilis* A. C. Sm. sp. nov.**

Frutex epiphyticus pendulus, a ceteris speciebus generis foliorum laminis late ovatis basi profunde cordatis, rhachi pedicellis et calyce glanduloso-pilosis, pedicellorum bracteolis magnis ovatis subapicalibus conspicue recedit; a *P. flexuosa* A. C. Sm. inflorescentia longiore, floribus 5-meris, calycis tubo majore, antherarum thecis longioribus distinguendus; a *P. lanceolata* (Benth.) A. C. Sm. calycis limbo majore, corolla filamentis antherarum tubulisque longioribus differt; a *P. reginaldii* Sleumer calycis tubo non alato et corolla pilosa etiam facile distinguitur.

Epiphytic shrub, dependent, the branchlets stout, subterete, brownish, puberulent or setulose-pilose when young, soon glabrescent; stipules intrapetiolar, forming an ovoid pulvinate subacute structure about 3 mm. long; petioles stout, inconspicuous, rugulose, 1–3 mm. long, pilose like the branchlets; leaf-blades subcoriaceous, brownish green when dried, ovate, 7–10.5 cm. long, 4–6 cm. broad, deeply cordate at base and probably subamplexicaul, abruptly narrowed distally into a sharp acumen 1–1.5 cm. long, slightly thickened at margin, glabrous on both sides or sparsely setulose on the costa beneath, pinnate-nerved,



the costa nearly plane above, prominent beneath, the lateral nerves about 3 per side, prominulous above and raised beneath, the lower ones spreading, the distal ones concurrent with the costa for 1–2 cm. and then ascending, the veinlet-reticulation prominulous on both surfaces or nearly plane; inflorescences axillary (rachis sometimes, but presumably rarely, branched), apparently 5–10-flowered, the rachis, pedicels, and calyx-tube copiously spreading-pilose with weak pale gland-tipped hairs about 1 mm. long, these interspersed with finer and sometimes shorter eglandular hairs; rachis faintly flexuose, up to 5 cm. long; flower-subtending bracts papyraceous, deltoid to ovate, 5–12 mm. long, glandular-pilose like the pedicels but more sparsely so and also finely puberulent; pedicels 10–18 mm. long at anthesis, conspicuously articulate with the calyx, bibracteolate just below the articulation, the bracteoles papyraceous, broadly ovate, up to 17 mm. long and 10 mm. broad, acuminate, conspicuously veined, pilose like the bracts; calyx large, about 3 cm. long and 2 cm. in apical diameter at anthesis, the tube cupuliform, about 5 mm. long and in diameter, the limb suberect, papyraceous or submembranaceous, conspicuously reticulate-nerved, pilose on both sides like the bracteoles, deeply 5-lobed, the lobes lanceolate, about 20 mm. long, 6–8 mm. broad, acute; corolla thin, cylindrical, about 45 mm. long and 8 mm. in diameter near base, narrowed distally, puberulent without in the lower portion and glandular-pilose like the calyx-tube distally, glabrous within, deeply 5-lobed, the lobes lanceolate, about 10 mm. long; stamens 10, about as long as the corolla, the filaments membranaceous, glabrous, about 8 mm. long, connate in a tube except near apex, the anthers about 40 mm. long, the thecae conspicuously granular, 10–12 mm. long, mucronulate and incurved at base, the tubules nearly three times as long as the thecae, extremely slender, about 0.2 mm. in diameter distally, dehiscing by flaring subapical oval pores about 1 mm. long; disk glabrous, carnose, cupuliform; style filiform, about as long as corolla, the stigma minute.

Type in the herbarium of the Chicago Natural History Museum, No. 1255160, collected along Quebrada de Pampa de Los Cedros, tributary to Río Palma, northeast of San Pablo, Province of El Oro, Ecuador, alt. 2,285 meters, August 12, 1943, by J. A. Steyermark (No. 53798). Duplicate in the herbarium of the Arnold Arboretum.

From the three species which have thus far been referred to *Periclesia* the new species differs in the combination of striking characters mentioned in the above diagnosis. *Periclesia pensilis* has a remarkable habit, as indicated by the collector's field notes, which follow: "Epiphyte hanging from ropelike strands, which end in a globular hard head 6 inches in diameter, hanging from tree; leaves coriaceous; bracteoles and calyx rose-red; corolla pale rose with pale green lines, the lobes pale green within."

***Periclesia nubigena* A. C. Sm. sp. nov.**

Frutex epiphyticus inter congeneros calycis limbo multo minore facile distinguendus; *P. reginaldii* Sleumer affinis, foliorum laminis brevioribus, calycis tubo tereti non alato, antherarum thecis brevioribus recedit.

Epiphytic shrub, the branchlets slender, terete, dark brown, copiously pilose with short pale hairs when young, glabrescent; petioles subterete, rugulose, 2–4 mm. long, essentially glabrous; leaf-blades subcoriaceous, dark green when dried, ovate-oblong, 3.5–5 cm. long, 1.5–3 cm. broad, obtuse at base, acute or short-acuminate at apex, slightly thickened and recurved at margin, short-white-pilose on both sides when young, glabrescent, obscurely pinnate-nerved, the costa impressed above, prominent beneath, the lateral nerves 4 or 5 per side, immersed above, inconspicuously prominulous beneath, the basal pair ascending from the petiole, the veinlets immersed; inflorescences axillary, apparently 5–7-flowered but the flowers readily caducous, the rachis slender, striate, pilose like the branchlets, 4–6 cm. long including the peduncle, this 2–3 cm. long and bearing a few evanescent ovate-deltoid bracts 2–3 mm. long; flower-subtending bracts early caducous, apparently small; pedicels terete, rugulose, 8–20 mm. long, soon glabrescent, enlarging distally and articulate with the pedicel, bibracteolate toward apex, the bracteoles papyraceous, lanceolate, 4–5 mm. long, sparsely puberulent and also margined with a few short gland-tipped hairs, caducous; calyx comparatively small, about 15 mm. long and 12 mm. in apical diameter at anthesis, faintly puberulent, the tube terete, about 5 mm. long and 3 mm. in diameter at anthesis, the limb subspreading, papyraceous, the lobes 5, ovate-deltoid, 5–6 mm. long, 4–5 mm. broad, narrowly acuminate, bearing a few marginal short-stalked glands, the sinuses subacute; corolla thin-carnose, cylindric, about 40 mm. long and 7 mm. in diameter near base, narrowed distally, glabrous except for a few inconspicuous short-stalked glands on the lobes, the lobes 5, lanceolate, about 15 mm. long, acute; stamens 10, subequal to the corolla, the filaments membranaceous, glabrous, firmly connate in a tube about 6 mm. long, the anthers about 38 mm. long, the thecae 8–9 mm. long, slightly narrowed at base, the tubules 3–4 times as long as the thecae, very slender, dehiscent by oblique oval pores about 1 mm. long; style filiform, about as long as corolla, the stigma minute.

Type in the herbarium of the Chicago Natural History Museum, No. 1255121, collected on moist dense cloud-forested slopes of Huagrancha, 1½ leagues south of El Pan, Province of Azuay, Ecuador, alt. 3,140–3,350 meters, July 8,

1943, by J. A. Steyermark (No. 53403). Duplicate in the herbarium of the Arnold Arboretum.

The plant is described as a shrubby epiphyte 5 ft. tall, the leaves dark green above, pale beneath, the pedicel and calyx deep rose, the corolla bright red in the lower half and dull blood-red in the upper half. Although *P. nubigena* has a much smaller calyx-limb than any of the four species already placed in *Periclesia*, its essential characters are those of the genus. In texture of leaves, its elongate inflorescence, and texture of its calyx-limb, the new species is suggestive of *P. pensilis*, described above, but probably a closer relative is *P. reginaldii* Sleumer.

*Macleania tropica* A. C. Sm. Journ. Arn. Arb. 27: 91. 1946.

COLOMBIA: El Valle: Chocó region, Río Calima, right bank, on slopes opposite the Quebrada de la Brea, alt. 30–50 m., *Ouatrecasas* 21200 (A, Ch).

The second collection of this very distinct recently described species, from the same general region as the type, shows a few minor variations. The leaf-blades are sometimes up to 9 cm. long, the pedicels may be only 3–4 mm. long, and the calyx is somewhat smaller throughout than that of the type. On the whole, the available specimens are strikingly alike.

*Macleania sleumeriana* A. C. Sm. nom. nov.

*Anthopterus ericae* Sleumer, Notizbl. Bot. Gart. Berlin 12: 277. 1935. Not *Macleania ericae* Sleumer (1938).

ECUADOR: Pichincha: Cordillera Occidental, Saloya, between Kilometers 50 and 70 of the highway, alt. 1,800 m., *Acosta Solís* 10968 (Ch, US).

The cited specimen agrees very closely with Sleumer's original description, the species being typified by *Erica Heinrichs* 523c (presumably destroyed in the Berlin Herbarium). The type is said to have come from Cerro Tungurahua at about 4,000 meters, an altitude which seems too high for a member of this alliance.

Sleumer soon realized that his species represented *Macleania* rather than *Anthopterus*, and in 1938<sup>28</sup> he reduced it to the synonymy of *Macleania pentaptera* Hoer. without comment. Careful examination of the present specimen in connection with Sleumer's description causes me to disagree with this reduction, although the relationship is doubtless correct. However, *M. sleumeriana* has a large calyx with very broad, membranaceous, obviously nerved wings which are about 3 mm. broad and which project 3–4 mm. beyond the true calyx-lobes. The calyx-wings of *M. pentaptera* Hoer. are fleshy and not conspicu-

<sup>28</sup> Repert. Sp. Nov. Fedde 45: 16. 1938.

ously nerved, rarely if ever more than 1 mm. broad. In this character the specimens I have referred to *M. pentaptera*, especially those from coastal Colombia, are very variable, but I believe that *Anthopterus ericae* is too extreme in regard to its calyx to be included in a reasonable concept of Hoerold's species. Furthermore, Sleumer's species has the corolla soft-pilose or puberulent without, rather than glabrous as in *M. pentaptera*.

The nomenclature of the species of this alliance is somewhat confused by the existence of the name *Macleania ericae* Sleumer (*M. pentaptera* Sleumer, non Hoer.)<sup>29</sup> for a species related to *M. rotundifolia* Sod. & Hoer. Material of *M. ericae* is not available to me, but from the description it is quite different from *M. sleumeriana*.

***Psammisia dolichopoda* A. C. Sm. sp. nov.**

Frutex interdum epiphyticus *P. breviflorae* (Benth.) Kl. et *P. pedunculatae* A. C. Sm. affinis sed foliorum laminis coriaceis, rhachi pedicellisque crassioribus, calyce sub anthesi multo majore recedit, a priore rhachi longiore et corolla latiore, a posteriore inflorescentiae pedunculo brevior et pedicellis corolla antherisque longioribus differt.

Shrub, sometimes epiphytic and scandent, glabrous throughout (except stamens), the branchlets subterete, brownish, with occasional internodal bracts, these papyraceous, lanceolate, 3–7 mm. long, inconspicuous; petioles stout, semiterete, rugulose, 6–10 mm. long; leaf-blades coriaceous, brownish when dried, lanceolate-oblong, (9–) 15–20 cm. long, 3.5–6.5 cm. broad, obtuse or subacute at base and decurrent on the petiole, gradually tapering to a sharp acumen 1–1.5 cm. long, slightly recurved at margin, 5-nerved, the costa narrowly impressed above and prominent beneath, the inner pair of lateral nerves ascending, concurrent with the costa for 0.5–3 cm., conspicuous, the outer pair often short and inconspicuous, the veinlet-reticulation coarse, prominent on both surfaces; inflorescences axillary, racemose, 8–12-flowered, the rachis terete, stout, 6–8 cm. long at anthesis including the peduncle (1–3 cm. long), the flower-subtending bracts papyraceous, oblong-deltoid, subacute, about 2 mm. long; pedicels terete, 16–32 mm. long at anthesis, slender near base, enlarged distally to about 2 mm. in diameter and obscurely articulate with calyx, bibracteolate near base, the bracteoles inconspicuous, lanceolate, acute, 1–1.5 mm. long, scariose-margined, appressed to the pedicel, caducous; calyx coriaceous, cupuliform, at anthesis 6–7 mm. long and 7–8 mm. in apical diameter, the limb suberect, 2.5–3 mm. long including lobes, these 5 (2 sometimes semifused), broadly deltoid, 1.5–2 mm. long,

<sup>29</sup> *Macleania ericae* Sleumer, Repert. Sp. Nov. Fedde 45: 16. 1938, based on *Macleania pentaptera* Sleumer, Repert. Sp. Nov. Fedde 41: 120. 1936. Not *M. pentaptera* Hoer. (1909).

about 4 mm. broad, acute, the sinuses obtuse; corolla carnose, subglobose-urceolate at anthesis, 7–9 mm. long and in diameter, contracted at throat, the lobes 5, oblong-deltoid, acute, about 1.5 mm. long; stamens 10, free, 5–5.5 mm. long, the filaments broad, ligulate, 2–2.5 mm. long, obscurely puberulent distally like the connectives, these bearing inconspicuous obtuse spurs, the anthers 4–4.5 mm. long, the thecae stout, rounded at base, the tubules conical, acute, 1–1.5 mm. long, dehiscing by oval clefts equally long; style stout, terete, 5–6 mm. long, truncate at apex.

Type in the U. S. National Herbarium, No. 1903744, collected in wet forest on western slope of the Cordillera Occidental, west of Tambo, Department of Cauca, Colombia, alt. 2,500 meters, November 6, 1946, by O. Haught (No. 5199).

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: El Valle: Western slope of Western Cordillera, valley of Río Digua, Quebrada del San Juan, ascending to Paragüita from Queremal, alt. 1,570–1,740 m., *Cuatrecasas* 23833 (A, Ch).

Notes on the type specimen indicate it to be from a shrub 1 meter high, with a very showy pendent inflorescence of white flowers on yellow axes. The Cuatrecasas collection is from an epiphytic climbing shrub, with rigid coriaceous leaves, red pedicels and calyces, and yellow-urceolate corollas.

This is another of the peculiar globose-flowered *Psammisiae* which seem to center in the Western Cordillera of Colombia; it is closely related only to *P. breviflora* (Benth.) Kl. and *P. pedunculata* A. C. Sm., as stated above.

*Psammisia orthoneura* A. C. Sm. sp. nov.

Frutex foliis magnis pinnatinerviis floribusque comparate parvis distinguitur; *P. caloneurae* A. C. Sm., *P. multijugae* Sleumer, et *P. fallacis* Sleumer affinis, ab omnibus foliorum laminis basi attenuatis, nervis lateralibus etiam numerosioribus, nervo marginali recto, corolla medio conspicue inflata, connectivorum calcaribus obsoletis recedit; a *P. caloneura* calyce majore, corolla staminibusque longioribus etiam differt; a *P. multijuga* foliorum apice longiore, inflorescentia longiore, corolla antherisque brevioribus dispar; a *P. fallace* ramulis petiolisque glabris, inflorescentia longiore pluriflora, corolla longiore distinguendus.

Epiphytic or terrestrial shrub, glabrous throughout (except filaments), the branchlets terete, brownish; petioles stout, subterete, 8–10 mm. long, leaf-blades subcoriaceous, brownish when dried, narrowly elliptic-oblong, broadest at middle and gradually narrowed toward both ends, 30–35 cm. long, 8–12 cm. broad, attenuate at base and decurrent on the petiole, long-acuminate at apex with a tip about 3 cm. long, narrowly recurved at margin, somewhat bullate, pinnate-veined, the costa broad and slightly raised above, prominent beneath, the

secondary nerves 20–24 per side, subspreading, straight, prominulous in shallow sulcae above, prominent beneath, interspersed with tertiary nerves nearly as prominent, conspicuously anastomosing 2–4 mm. within the margin, the marginal nerve straight or only slightly undulating, very conspicuous, the veinlets immersed; inflorescences arising from defoliate nodes, short-racemose, 4–7-flowered, the rachis slender, 5–13 mm. long; flower-subtending bracts subcoriaceous, deltoid, acute, about 1.5 mm. long; pedicels slender, slightly thickened distally and obscurely articulate or apparently continuous with calyx, bibracteolate near base with caducous bracteoles similar to the bracts but smaller; calyx cupuliform, 7–8 mm. long and in apical diameter at anthesis, the limb erect, subcoriaceous, 2–3 mm. long including the lobes, these broadly deltoid, about 1.5 mm. long and 3 mm. broad, acute, the sinuses rounded; corolla subcarnose, urceolate, 12–13 mm. long at anthesis, conspicuously inflated and 8–10 mm. in diameter at middle, the lobes 5, oblong, obtuse, about 1.5 mm. long; stamens 10, similar, 6–6.5 mm. long, the filaments distinct, membranaceous, ligulate, about 2 mm. long, puberulent within, the connectives with obsolete spurs, the anthers 5–5.5 mm. long, the thecae mucronulate and incurved at base, the tubules about as long as the thecae, dehiscing by elongate oval clefts; style filiform, subequal to the corolla, the stigma minute.

Type in the herbarium of the Arnold Arboretum, collected at Córdoba, valley of Río Dagua, western slope of Western Cordillera, Department of El Valle, Colombia, alt. 39–60 meters, November 14, 1945, by J. Cuatrecasas (No. 19846). Duplicate in the Chicago Natural History Museum.

The collector describes the plant as an epiphytic or terrestrial shrub with rigidly coriaceous leaves which are bright green; the pedicels and calyces are dark purple, and the corolla rosy white.

The plant described above represents another of the remarkable pinnate-veined *Psammisiae* discussed by Sleumer in 1941.<sup>30</sup> From its closest relatives, *P. caloneura* A. C. Sm., *P. multijuga* Sleumer, and *P. fallax* Sleumer, all of which occur in the same general area, it is readily distinguished as pointed out in the above diagnosis.

*Psammisia longicaulis* A. C. Sm. sp. nov.

Frutex epiphyticus *P. macrophyllae* (H. B. K.) Kl. et *P. falcatae* (H. B. K.) Kl. affinis sed foliis minoribus, calyce sub anthesi multo minore, corolla brevioris distinguendus, a priore rhachi elongata, a posteriore foliorum laminis proportione angustioribus etiam recedit; a *P. columbiense* Hoer. corolla brevioris, staminibus brevioribus, filamentis liberis facile distinguitur; a *P. salmonea* Sleumer rhachi pedicellisque elongatis, calycis limbo profunde lobato, corolla staminibusque longioribus valde differt.

<sup>30</sup> Bot. Jahrb. Engler 71: 403–404. 1941.



Epiphytic shrub, the branches elongate and sometimes pendulous, the branchlets terete, sparsely puberulent when young, at length glabrescent and grayish; petioles stout, subterete, faintly puberulent, rugulose, 5–7 mm. long; leaf-blades subcoriaceous, olivaceous when dried, elliptic-oblong, 11–15 cm. long, 4–6.5 cm. broad, broadly obtuse or subrounded at base, obtusely cuspidate or short-acuminate (apex to 1 cm. long) at apex, slightly recurved at margin, glabrous on both sides, 5-nerved, the costa and ascending principal nerves slightly impressed above, prominent beneath, the inner pair of lateral nerves concurrent with the costa for 5–12 mm., the veinlets obscure or faintly raised on both surfaces; inflorescences axillary or arising from efoliate nodes, racemose, 8–15-flowered, the rachis comparatively slender, 3–4.5 cm. long at anthesis, with the pedicels and calyx obscurely puberulent, soon glabrescent; flower-subtending bracts subcoriaceous, ovate, obtuse, about 3 mm. long, caducous; pedicels slender, subterete, 2–3 cm. long at anthesis, conspicuously articulate with calyx and surmounted by a few minute marginal glands, bibracteolate slightly below middle, the bracteoles similar to bracts but smaller; calyx cupuliform, at anthesis 5–7 mm. long, the tube 3–4 mm. long, 2.5–5 mm. in diameter, rugulose, the limb suberect, deeply 4- or 5-lobed, the lobes broadly oblong, 2–3 mm. long, 3–4 mm. broad, slightly thickened at margin, rounded or apiculate at apex; corolla thin-carnose, glabrous, cylindric, at anthesis 17–20 mm. long and 6–9 mm. in diameter, narrowed distally, the lobes 5, deltoid, acute, about 1 mm. long; stamens 10, about half as long as corolla, the filaments free or loosely coherent proximally, ligulate, about 3 mm. long, sparsely puberulent within, the alternate connectives obviously spurred, the spurs obtuse, spreading, the anthers 8–9 mm. long, the thecae narrowed at base, the tubules 2–3 mm. long, dehiscing by elongate oval clefts; style filiform, exerted at anthesis, the stigma obscurely capitate.

Type in the herbarium of the Arnold Arboretum, collected between Aguabonita and Candelaria, valley of Río San José, Moscopán region, eastern slope of Central Cordillera, Department of Cauca, Colombia, alt. 2,280–2,350 meters, January 31, 1947, by J. Cuatrecasas (No. 23580). Duplicate in the Chicago Natural History Museum.

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: Cauca: Moscopán region, valley of Río San José, Aguabonita, in woods, alt. 2,280 m., *Cuatrecasas* 23535 (A, Ch).

The cited specimens come from epiphytic shrubs, sometimes twisting and with hanging branches; the leaves are rigidly coriaceous, bright green above, and yellowish green beneath; the pedicels and calyces are bright red, or the calyces may be paler; the corolla is red with a white tip. No. 23535 agrees with the type in all essential details, but its stamens are slightly shorter and have essentially obsolete connective-spurs; nevertheless I believe that it must be referred to this species.

The only species with which *P. longicaulis* need be compared are those discussed in the above diagnosis, *P. macrophylla* (H. B. K.) Kl., *P. falcata* (H. B. K.) Kl., *P. columbiensis* Hoer., and *P. salmonea* Sleumer, all of which occur in Colombia.

***Psammisia aberrans*** A. C. Sm. Journ. Arn. Arb. 27: 95. 1946.

COLOMBIA: El Valle: Western slope of Western Cordillera, Monte La Guarida, on crest of the cordillera above La Carbonera (between Las Brisas and Albán), alt. 1,950–2,000 m., *Cuatrecasas* 22132 (A, Ch). Antioquia: Nariño, in woods of paramitos, alt. 2,000–2,200 m., *Uribe Uribe* 1860 (US).

The cited specimens are from climbing or epiphytic shrubs, with coriaceous bright green leaves; the pedicels are pinkish red; and the corollas are red or purplish pink in the lower half and white distally. The second and third collections of this recently described species agree in all respects with the type, which was obtained in the same general region of the Pacific slope of El Valle as *Cuatrecasas* 22132, but at a lower elevation of 350–450 meters.

***Psammisia fissilis*** A. C. Sm. sp. nov.

Frutex scandens vel epiphyticus *P. coarctatae* (R. & P.) A. C. Sm. affinis, calycis limbo multo majore in lobos 3 (vel 4) 6–8 mm. longos fisso, antherarum tubulis brevioribus differt.

Liana or epiphytic shrub, glabrous throughout, the branchlets stout, terete, with loose cinereous or pale brown bark; petioles stout, rugulose, semiterete, 4–6 mm. long; leaf-blades coriaceous, brownish green when dried, narrowly elliptic- or lanceolate-oblong, 13–18 cm. long, 4.5–8 cm. broad, obtuse at base and decurrent on the petiole, tapering at apex into an acumen 1.5–2 cm. long, entire at margin, 5-nerved from near base, the secondary nerves concurrent with the costa for 1–2 cm., like the costa slightly impressed above, prominent beneath, the veinlet-reticulation faintly prominulous or immersed on both surfaces; inflorescence axillary, short-racemose, 10–15-flowered, the rachis stout, 1.5–2 cm. long, the flower-subtending bracts subcoriaceous, deltoid-oblong, 2–3 mm. long, acute, scariose-margined, persistent; pedicels striate when dried, curved, 2–3 cm. long, thickening in fruit, bibracteolate near base, the bracteoles similar to the flower-subtending bracts, persistent; calyx obscurely articulate with pedicel, large, at anthesis 10–13 mm. long and 12–15 mm. in apical diameter, the tube cupuliform, 3–4 mm. long and 4–6 mm. in diameter at anthesis, the limb subcoriaceous, spreading, deeply split into 3 (sometimes 4) lobes, these ovate, 6–8 mm. long and broad, slightly thickened at margin, acute and often bidentate at apex (indicating fusion of lobes); corolla carnose, cylindrical, at anthesis 23–32 mm. long and 7–8 mm. in diameter, contracted at base and apex, the lobes 5, deltoid, subacute, about 2 mm. long and broad; stamens 10, rigidly erect, 10–12 mm. long, the filaments discrete,

broadly ligulate, 3.5–5 mm. long, puberulent and ciliolate distally, the connectives blackish, coriaceous, all spurred, the spurs of the alternate stamens conspicuous, spreading or ascending, 0.3–0.8 mm. long, the anthers 9–10 mm. long, the thecae narrowed at base, much longer than the tubules, these 2–3 mm. long, dehiscent by elongate oval clefts; style filiform, exerted at anthesis, the stigma truncate; fruit subglobose, up to 12 mm. in diameter, coriaceous, rugulose, surmounted by the conspicuously cleft calyx-limb, the style caducous.

Type in the herbarium of the Chicago Natural History Museum, No. 1255157, collected between Tambo Cachiyaçu, La Entrada, and Nuda de Sabanillas, Province of Loja, Ecuador, alt. 2,500–3,500 meters, October 7, 1943, by J. A. Steyermark (No. 54408). Duplicate in the herbarium of the Arnold Arboretum.

ADDITIONAL SPECIMENS EXAMINED:

ECUADOR: Loja: Western slopes of Cordillera de Condor and northwest slopes of Nudo de Sabanillas, around Tambo Cachiyaçu, along Río Cachiyaçu, about 2 leagues southeast of Yangana, alt. 2,000–3,000 m., *Steyermark* 54777 (A, Ch).

The collector notes that the calyx is vermilion-red with whitish lobes and the corolla vermilion-red in the lower two-thirds and rose-colored or white distally. From its only close ally, the Peruvian *P. coarctata* (R. & P.) A. C. Sm., *P. fissilis* differs principally in its large and deeply cleft calyx-limb, which splits into large flaring lobes. The recently described Colombian *P. macrocalyx* A. C. Sm. has a calyx suggesting that of the new species, from which it differs obviously in foliage, position of pedicellary bracteoles, its deeply lobed corolla, etc.

*Anthopterus oliganthus* A. C. Sm. sp. nov.

Arbor parva *A. wardii* Ball affinis, habitu caulifloro, ramulis petiolisque validioribus, foliorum laminis majoribus pinnatinerviis, inflorescentia pauciflora, calyce paullo majore, corolla cum alis angustioribus obscure nervatis differt.

Tree about 5 m. high, the branchlets terete, stout, pale brown or cinereous, closely pale-puberulent when young, soon glabrescent, with occasional internodal bracts, these papyraceous, linear, 10–14 mm. long, 2–3 mm. broad, acute, glabrous; petioles stout, subterete, rugulose, 3–4 mm. long; leaf-blades subcoriaceous, olivaceous when dried, narrowly elliptic-oblong, 12–19 cm. long, 4.2–9 cm. broad, narrowly subcordate at base, gradually narrowed to an acuminate apex about 1 cm. long, slightly thickened at margin, glabrous above or sparsely puberulent on the costa, obscurely glandular-pilose beneath with scattered minute brownish hairs, pinnatinerved, the costa nearly plane above, prominent beneath, the secondary nerves 5–7 per side, curved-ascending, plane or impressed above, sharply raised beneath, the veinlet-reticulation plane or prominulous on both surfaces; inflorescence arising from defoliate branches or apparently sometimes axillary, short-racemose, apparently 2–4-flowered, the rachis slender, 1–1.5 cm.

long, glabrous or with a few obscure glandular hairs; flower-subtending bracts papyraceous, oblong, 4–5 mm. long, about 2 mm. broad, obtuse, glabrous; pedicels terete, fleshy, gradually enlarged distally, 15–20 mm. long at anthesis, bearing a few minute scattered blackish glandular hairs, apparently ebracteolate; calyx about 14 mm. long, the tube sparsely glandular like the pedicels, about 5 mm. long and 6–7 mm. in diameter including the wings, these conspicuous, about 2 mm. broad, the limb suberect, longer than the tube, glabrous, the lobes triangular, 5–6 mm. long and broad, acute, conspicuously veined; corolla thin-carnose, cylindric-urceolate, sparsely blackish-glandular distally, 11–12 mm. long, about 5 mm. in diameter including the wings, these comparatively inconspicuous, about 1 mm. broad, obscurely veined, the lobes 5, deltoid, about 1 mm. long and broad; stamens about 9 mm. long, the filaments pale, about 4 mm. long, connate for half their length, sparsely glandular dorsally toward apex, otherwise glabrous, the anthers about 5.5 mm. long, the tubules subequal to the thecae in length, dehiscing by elongate clefts; disk annular-pulvinate, glabrous; style filiform, about as long as corolla, the stigma minute.

Type in the U. S. National Herbarium, No. 1903743, collected in wet forest on the western slope of the Cordillera Occidental, west of Tambo, Department of Cauca, Colombia, alt. 2,400 meters, by O. Haught (No. 5198).

The collector describes the plant as a small tree about 5 meters high, with a tendency toward cauliflory; the flowers are bright red and showy. The new species is closely related only to *A. wardii* Ball, being distinguished by the several obvious characters mentioned in the above diagnosis. In foliage, our plant suggests the Peruvian *A. racemosus* Hook., but that species has elongate many-flowered racemes, short calyx-lobes, and anthers with comparatively elongate tubules.

***Thibaudia pachypoda*** A. C. Sm. Journ. Arn. Arb. 27: 97. 1946.

COLOMBIA: El Valle: Pacific coast, Buenaventura Bay, Quebrada de San Joaquin, alt. 0–10 m., *Cuatrecasas* 19876 (A, Ch).

The third collection of this striking species, from the same general region and elevation as the first two, agrees with them in all respects. The present specimen comes from a large branching liana, with rigid and thick-coriaceous leaves which are bright green above and somewhat duller beneath; the pedicels and bases of calyces are purplish pink, while the tip of the calyx-lobes and the corolla are white with a pinkish tinge.

***Thibaudia paniculata*** A. C. Sm. Contr. U. S. Nat. Herb. 28: 426. 1932.

COLOMBIA: El Valle: Km. 101 on Cali-Buenaventura Highway, alt. about 100 m., *Haught* 5331 (US).

The cited specimen is from a large, scrambling, apparently epiphytic shrub; the inflorescence is very showy, with white flowers on red axes. Apparently it is the second collection of this species, which was based upon *Lehmann* K176, from Timbiquí, presumably at a similarly low elevation. As compared to the type, the Haught specimen has larger leaf-blades (up to 25 by 14 cm.), which are not appreciably bullate. The chief differences between this species and the closely related *T. archeri* A. C. Sm., recently<sup>31</sup> reported from additional material in El Valle, lie in the shape and proportions of the leaf-blades.

***Thibaudia pennellii*** A. C. Sm. Contr. U. S. Nat. Herb. 28: 427. 1932.

COLOMBIA: Antioquia: Near Santa Elena, between Medellín and Río Negro, in woods, alt. 2,300–2,500 m., *C. Rodriguez* P. 9 (US).

The cited collection is the second known to me of this distinctive species; the type is from the Department of Tolima.

***Thibaudia fallax*** A. C. Sm. sp. nov.

Frutex epiphyticus a speciebus typicis *Thibaudiae* valde dispar; *T. anomalae* A. C. Sm. affinis, foliorum laminis basi subcordatis vel rotundatis, inflorescentiae bracteis minoribus inconspicuis, corolla fere triplo longiore, staminibus multo longioribus, antherarum tubulis quam thecis longioribus valde differt.

Epiphytic shrub, the branchlets terete, brownish, slender, spreading-white-pilose, at length glabrescent and with loose cinereous bark; stipules intrapetiolar, paired, subulate from a stout base, 2–4 mm. long, sparsely pilose; petioles slender, semiterete, rugulose, 2–5 mm. long, pilose like the branchlets; leaf-blades coriaceous, dull greenish when dried, narrowly ovate-oblong, 2.5–4 cm. long, (0.8–) 1–2 cm. broad, subcordate or rounded at base, obtuse at apex, thickened and narrowly recurved at margin, undulate or crenulate (teeth about 3 per centimeter, glandular-mucronulate), faintly yellow-glandular-punctate and sometimes pilose above, pilose beneath with lax white hairs about 1 mm. long and also scattered-brown-punctate, at length glabrescent, pinnate-nerved, the costa slightly impressed above, raised beneath, the secondary nerves 2–4 per side, curved-ascending, immersed above, slightly raised beneath, the veinlets obscure; inflorescences subterminal or axillary, racemose, 3–10-flowered, uniformly and copiously pilose (on rachis, bracts and bracteoles, pedicels, calyx, and corolla) with weak spreading whitish hairs 0.5–0.8 mm. long; rachis slender, 3–10 mm. long (rarely to 3 cm. long when subterminal), the flower-subtending bracts subfoliaceous or papyraceous, lanceolate or oblong, 3–10 mm. long; pedicels slender, striate, 10–15 mm. long, articulate with calyx, bibracteolate near base, the bracteoles submembranaceous.

<sup>31</sup> Journ. Agr. Arb. 27: 98. 1946.



lanceolate, 3–7 mm. long; calyx 11–12 mm. long at anthesis, the tube cupuliform, 4–5 mm. long and about 3 mm. in diameter, the limb suberect, papyraceous, 7–8 mm. long and in apical diameter, 5-lobed, the lobes deltoid, subacute, 3–5 mm. long and about 3 mm. broad, with a conspicuous midrib and a few irregular lateral nerves, glabrous within, the sinuses obtuse or narrowly rounded; corolla thin-carnose, cylindrical, 27–29 mm. long, 5–6 mm. in diameter, narrowed at throat, puberulent distally but otherwise glabrous within, the lobes 5, broadly deltoid, obtuse, about 1.5 mm. long and 2 mm. broad; stamens 10, much shorter than corolla, 15–17 mm. long, the filaments membranaceous, firmly connate to apices in a tube, this 5–6 mm. long, distally strigose without and puberulent within, the anthers 11–13 mm. long, the thecae 5–6 mm. long, obtuse at base, the tubules slightly longer than the thecae, dehiscing by elongate clefts; style exerted at anthesis, filiform, the stigma minutely capitate; calyx-tube greatly enlarging after anthesis, subglobose, up to 12 mm. in diameter, rugulose, subpersistently pilose, surmounted by the persistent limb.

Type in the U. S. National Herbarium, No. 1951711, collected on páramo along Quebrada de las Vegas, headwaters of Río Tuluá, western slope of Central Cordillera, Department of El Valle, Colombia, alt. 3,400–3,500 meters, March 23, 1946, by J. Cuatrecasas (No. 20372). Duplicates in the herbaria of the Chicago Natural History Museum and the Arnold Arboretum.

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: El Valle: Western slope of Central Cordillera, valley of Río Bugalagrande, Barragán, Páramo de Bavaya, Corrales, alt. 3,450–3,520 m., Cuatrecasas 20158 (A, Ch).

The plant described above is said to be an epiphytic shrub, sometimes arising from a tubercle; the leaves are thick-coriaceous, rigid, and bright green or lead-green; the calyx is red and the corolla pinkish.

Because of its general habit, stipules, and large calyx-limb, the plant here described is remarkably suggestive of the genus *Plutarchia*, and especially of *P. guascensis* (Cuatr.) A. C. Sm., but its fundamental characters are those of *Thibaudia*. With *T. anomala* A. C. Sm. it forms an isolated group in the genus; the two species are readily differentiated as noted in the above diagnosis.

*Thibaudia diphylla* Dun. in DC. Prodr. 7: 562. 1839.

*Vaccinium leucostomum* Lindl. Gard. Chron. 1848: 7. 1848.

*Eurygania ovata* Hook. f. Bot. Mag. Curtis 104: pl. 6393. 1878.

*Thibaudia ovata* Hoer. Bot. Jahrb. Engler 42: 275. 1909.

*Thibaudia graebneriana* Hoer. Bot. Jahrb. Engler 42: 313. 1909.

*Thibaudia leucostoma* Sleumer, Notizbl. Bot. Gart. Berlin 12: 291. 1935.

In 1935 Sleumer showed that the specific epithet *ovata*, accepted in my previous revision,<sup>32</sup> was antedated by *Vaccinium leucostomum*

<sup>32</sup> Contr. U. S. Nat. Herb. 28: 433. 1932.



Lindl. However, a still older name, *Thibaudia diphylla* Dun., must be utilized for this concept, as indicated by examination of the type (*Dombey*, in the Paris Herbarium). I had reached this conclusion while in Paris in 1932 but have neglected to publish the reduction to synonymy of *Thibaudia ovata*; a photograph of the type is now available through the kindness of the Chicago Natural History Museum.

*Thibaudia steyermarkii* A. C. Sm. sp. nov.

Frutex epiphyticus habitu gracili piloso, foliorum laminis parvis ovatis, inflorescentia axillari uniflora bracteis numerosis angustis subtenta, floribus sessilibus, calycis lobis elongatis, antherarum tubulis angustis facile distinguitur; *T. aurantiae* A. C. Sm. et *T. mundulae* A. C. Sm. colombiensibus affinis, inflorescentiae bracteis, floribus sessilibus, corolla breviora valde differt.

Epiphytic shrub, the branchlets elongate, slender, copiously pilose with pale yellowish or whitish spreading hairs about 1 mm. long, at length glabrescent; petioles semiterete, 2–3 mm. long, pilose; leaf-blades subcoriaceous, ovate, 2–3 cm. long, 1.5–2.5 cm. broad, rounded or faintly subcordate at base, subacute and callose-apiculate at apex, entire and thickened at the recurved margin, copiously soft-pilose on both sides like the branchlets, at length glabrescent above, 5- or 7-nerved from near base, the costa prominulous above, slightly raised beneath, the secondary nerves arcuate-ascending, often inconspicuous, the veinlets subimmersed; inflorescences axillary, apparently 1-flowered, subtended by very numerous imbricate bracts, these papyraceous, ligulate or lanceolate, the largest ones 8–10 mm. long and 1–3 mm. broad, narrowed at base, acute at apex, copiously spreading-pilose like the leaves, concealing the calyx; flowers essentially sessile, the calyx 6–7 mm. long at anthesis, the tube obconical, tapering at base, faintly puberulent, the limb suberect, 5-lobed nearly to base, the lobes faintly nerved, elongate-deltoid, about 3 mm. long and 1.5 mm. broad, acute, pilose at margins, the sinuses acute; corolla thin-carnose, subcylindric, about 10 mm. long and 3 mm. in diameter at anthesis, slightly narrowed distally, faintly puberulent without, the lobes 5, deltoid, obtuse, about 1 mm. long; stamens 10, slightly shorter than the corolla, the filaments firmly connate into a tube about 2.5 mm. long, sparsely pilose distally, the anthers 5–6 mm. long, the tubules subequal to the thecae in length but somewhat narrower, dehiscing by elongate clefts; disk pulvinate, glabrous; style filiform, nearly as long as the corolla, truncate at apex.

Type in the herbarium of the Chicago Natural History Museum, No. 1255120, collected on wooded slopes along Río Valladolid, between Quebrada Honda and Tambo Valladolid, Province of Santiago-Zamora, Ecuador, alt. 2,000–3,000 meters, October 12, 1943, by J. A. Steyermark (No. 54589). Duplicate in the herbarium of the Arnold Arboretum.

The collector notes that the plant occurred as an epiphyte with his No. 54588, and that it had a pale green calyx and dull red corolla. Many unusual features characterize this plant, such as the numerous narrow bracts subtending the inflorescence, which appears to be reduced to a single essentially sessile flower, but I can place it only in the genus *Thibaudia*. Its alliance is probably with the two recently described Colombian species<sup>33</sup> mentioned in the above diagnosis, but differentiating characters are several and obvious.

*Thibaudia crenulata* Remy, Ann. Sci. Nat. III. Bot. 8: 234. 1847.

*Hornemannia boliviensis* Kuntze, Rev. Gen. Pl. 3<sup>2</sup>: 191. 1898.

*Thibaudia boliviensis* Hoer. Bot. Jahrb. Engler 42: 275. 1909.

*Thibaudia neo-herreræ* Sleumer, Notizbl. Bot. Gart. Berlin 12: 136. 1934.

In 1932<sup>34</sup> I was unable to place *T. crenulata* Remy, but a photograph of the type (*d'Orbigny*, from Chupi, Yungas, Bolivia, in the Paris Herbarium) indicates beyond question that Remy's binomial must replace *T. boliviensis* (Kuntze) Hoer. Since my discussion of the latter entity (op. cit. 437) I have seen specimens of it from the Department of Cuzco, Peru (*West* 6437 and *Vargas* 1564, both in the Gray Herbarium).

Two specimens in the U. S. National Herbarium (*Herrera* 3279 and 3317, from Machupicchu, Cuzco, Peru) apparently also represent *T. crenulata*. It is probable that one of these is a type duplicate of *Thibaudia neo-herreræ* Sleumer, based upon a collection of Herrera in the Berlin Herbarium from Cuzco but without number or other data. A fragment of the actual type of Sleumer's species is available and could have come from either of the Herrera numbers mentioned above.

*Plutarchia coronaria* (Hook. f.) A. C. Sm. Bull. Torrey Club 63: 311. 1936.<sup>35</sup>

COLOMBIA: Norte de Santander: Páramo de Fontibón, alt. 2,600-2,750 m., *Cuatrecasas*, *Schultes*, & *E. Smith* 12282 (A, US). Valley of Río Chitagá at Vega Colombia, alt. 2,880 m., *Cuatrecasas* 13461 (US).

The cited collections indicate that *P. coronaria* is sometimes more robust throughout and more variable in shape and size of leaves than indicated in my previous description of it.<sup>36</sup> The following emendation seems desirable:

<sup>33</sup> Journ. Arn. Arb. 27: 98-100. 1946.

<sup>34</sup> Contr. U. S. Nat. Herb. 28: 438. 1932.

<sup>35</sup> In proposing this combination in 1936 I mentioned the parenthetical author as Linden. However, the original description of the basonym, *Thibaudia coronaria*, was by Hooker (Bot. Mag. Curtis 92: pl. 5575. 1866); there the binomial "*Ceratostemma coronaria*" Linden was published only in synonymy and therefore invalidly.

<sup>36</sup> As *Ceratostema coronarium*; Contr. U. S. Nat. Herb. 28: 344. 1932.

Leaf-blades sometimes narrowly oblong or oblong-ovate, up to 22 mm. long; flowers sometimes aggregated in fascicles of 3–5, the pedicels up to 12 mm. long, sometimes conspicuously pilose, the bracteoles up to 3 mm. in length, bearing a few stalked marginal glands and also pale-ciliolate; calyx up to 7 or 8 mm. long at anthesis, the tube narrowly 5-winged to sinuses with inconspicuous wings 1 mm. broad or less, the limb up to 5 mm. long, with lobes often 3 mm. long and broad and margined with small stalked glands; corolla up to 16 mm. long and 6 mm. in diameter, often subpersistently pilose; stamens up to 14 mm. long, the filaments up to 3 mm. long and often conspicuously pilose distally, the anthers 10–12 mm. long, the tubules 7–8 mm. long.

*Plutarchia dasyphylla* A. C. Sm. sp. nov.

Frutex copiose foliatus *P. coronariae* (Hook. f.) A. C. Sm. affinis, habitu glabro, foliorum laminis praecipue latitudine majoribus, pedicellorum bracteolis et calycis lobis longioribus et dense glanduloso-marginatis, calycis tubo inconspicue angulato, antherarum tubulis proportione brevioribus differt.

Shrub 1–3 m. high, densely foliate, glabrous throughout (except for glandular-ciliolate bracts and bracteoles and pilose filaments), the branchlets stout, rugulose, brownish or distally purpurascens; stipules intrapetiolar, pulvinate, connate, about 1 mm. long; petioles subterete, rugulose, 2–4 mm. long; leaf-blades coriaceous, pale brown when dried, ovate-elliptic, 15–30 mm. long, 10–16 mm. broad, rounded or broadly obtuse at base and apex, entire at margin, punctate beneath with scattered brown glands, pinnate-nerved, the costa slightly impressed above and raised beneath, the secondary nerves 2 or 3 per side, ascending, often obscure, the veinlets immersed; inflorescences axillary, essentially fasciculate (rachis stout, irregular, less than 3 mm. long), 4–8-flowered, circumscribed by numerous bracts, these papyraceous, obovate-oblong, rounded at apex, sometimes obscurely glandular-margined, caducous, the largest ones up to 10 mm. long and 5 mm. broad, the flower-subtending bracts similar but smaller; pedicels stout, rugulose, 4–8 mm. long at anthesis, clearly articulate with calyx, bibracteolate proximally and often also with another 1 or 2 bracteoles near apex, the bracteoles submembranaceous, linear-lanceolate, 4–5 mm. long, 0.5–1 mm. broad, acute, conspicuously glandular-ciliolate; calyx at anthesis 7–8 mm. long and in apical diameter, the tube inconspicuously 5-angled, about 3 mm. long and in diameter, the limb subspreading, deeply 5-lobed, the lobes ovate-lanceolate, 3–4.5 mm. long, about 2 mm. broad, acute, copiously margined with minute glandular hairs, these sometimes partially confluent to form an apparently scarioso border, the sinuses acute; corolla thin-carnose, cylindric or cylindric-urceolate, at anthesis 12–13 mm. long and about 5 mm. in diameter, the lobes 5, deltoid, subacute, 1.5–2 mm. long; stamens 10, alternately

slightly unequal, 8–10 mm. long, the filaments ligulate, 2–3 mm. long, copiously short-pilose on both surfaces, the anthers 6.5–9 mm. long, the thecae nearly smooth, the tubules 4–6 mm. long, dehiscing by elongate clefts; style slightly shorter than corolla, filiform, the stigma inconspicuously capitate.

Type in the U. S. National Herbarium, No. 1951890, collected in wet dense forest in the mountains in the vicinity of Bucaramanga, Department of Santander, Colombia, alt. about 2,500 meters, August 27, 1948, by F. A. Barkley and J. Araque M. (No. 18S123).

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: Santander: In open savannas, pastures, and woods, in humid and stony places near the Páramo de Santurbán, alt. about 3,000 m., *Barkley & Araque* 18S144 (US), 18S147 (US).

The cited collections are described as erect shrubs up to 3 meters in height, with red flowers and green fruits. From *P. coronaria* (Hook. f.) A. C. Sm., its only close ally, *P. dasyphylla* is readily differentiated as mentioned in the above diagnosis.

*Plutarchia minor* A. C. Sm. sp. nov.

Frutex dense foliatus *P. rigidae* (Benth.) A. C. Sm. et *P. pubiflorae* (Wedd.) A. C. Sm. affinis, foliorum laminis multo minoribus, calycis lobis corolla staminibusque brevioribus facile distinguitur; a priore floribus solitariis vel binis et pedicellis brevioribus, a posteriore habitu et corolla glabris etiam recedit.

Epiphytic shrub, densely foliate, essentially glabrous throughout, the branchlets inconspicuously angled, cinereous or distally pale brown; stipules intrapetiolar, connate, pulvinate, rounded, about 1 mm. long; petioles swollen, 2–4 mm. long; leaf-blades coriaceous, olivaceous when dried, suborbicular-ovate, 10–16 mm. long, 8–13 mm. broad, lightly cordate at base, rounded at apex, entire and obviously thickened at margin, glabrous above, scattered-brown-pilose beneath with appressed hairs about 0.5 mm. long, obscurely nerved, the costa faintly impressed above and elevated beneath, the secondary nerves usually 2 per side, ascending from near base, inconspicuous or immersed, the veinlets immersed; flowers axillary, solitary or paired, subtended by several imbricate papyraceous bracts, the largest (innermost) of these oblong-obovate, about 9 mm. long and 5 mm. broad, caducous, the outer ones sometimes faintly puberulent and glandular-ciliolate-margined; pedicels striate, 3–5 mm. long, inconspicuously puberulent, glabrescent, conspicuously articulate with calyx, apparently ebracteolate; calyx at anthesis about 9 mm. long and in apical diameter, the tube furrowed, subapophysate or truncate at base, about 2.5 mm. long and 3–4 mm. in diameter, the limb papyraceous, suberect, deeply 5-lobed, the lobes ovate-lanceolate, about 6 mm. long and 3 mm. broad, acute, with slender irregular veins not reaching the margins, ciliolate with short slen-

der glandular hairs; corolla thin-carnose, glabrous, cylindric, about 20 mm. long and 5 mm. in diameter near middle, broadened distally, the lobes 5, broadly deltoid, about 2 mm. long and 4 mm. broad; stamens 10, shorter than corolla, alternately slightly unequal, the filaments free, ligulate, 1.5–2 mm. long, ciliolate-margined distally with whitish hairs about 1 mm. long, the stamens about 14 mm. long, the thecae about 3 mm. long, the tubules 3–4 times as long as the thecae, dehiscing by short clefts; style filiform, subequal to corolla, the stigma minutely capitate.

Type in the herbarium of the Arnold Arboretum, collected on páramo along Quebrada de Las Vegas, headwaters of Río Tuluá, western slope of Central Cordillera, Department of El Valle, Colombia, alt. 3,400–3,500 meters, March 23, 1946, by J. Cuatrecasas (No. 20387). Duplicate in the Chicago Natural History Museum.

This attractive small-leaved plant is clearly distinguished from its only close allies, *P. rigida* (Benth.) A. C. Sm. and *P. pubiflora* (Wedd.) A. C. Sm., by the reduced size of its parts. The collector notes that the new species is an epiphytic shrub with rigidly coriaceous bright green leaves; the corolla is red with a yellow margin.

*Plutarchia miranda* A. C. Sm. sp. nov.

Frutex epiphyticus gracilis *P. angulatae* A. C. Sm. valde affinis, foliorum laminis glabris basi profunde cordatis, floribus solitariis vel binis, rhachi subnulla, pedicellis gracilibus longioribus, calyce multo majore cum lobis lanceolatis longitudine corollam subaequantibus facile distinguitur.

Small epiphytic shrub, the branchlets slender, subterete or striate, cinereous or purpurascens, pale-puberulent, glabrescent; leaves essentially sessile and probably amplexicaul, the petioles 1–2 mm. long, glabrous, the blades subcoriaceous, drying greenish, suborbicular-ovate, (2.5–) 3–5 cm. long and broad, deeply cordate at base, broadly obtuse or rounded at apex, slightly thickened and recurved at margin, faintly puberulent when young on both surfaces, soon glabrous, 7- or 9-nerved from base, the secondary nerves spreading, curved, like the costa slightly elevated on both surfaces, the veinlet-reticulation often prominulous on both surfaces; flowers axillary, solitary or paired, the rachis if present 1–2 mm. long, the flower-subtending bracts lanceolate, 1–1.5 mm. long, puberulent, caducous; pedicels slender, striate, 22–30 mm. long at anthesis, pale-puberulent, bibracteolate near base, the bracteoles similar to the bracts, caducous; calyx articulate with pedicel, about 25 mm. long at anthesis, sparsely white-puberulent, the tube obviously 4-winged to sinuses, about 5 mm. long and 8 mm. in diameter including the wings, these papyraceous or subcoriaceous, 2–3 mm. broad, the limb 4-lobed to base, the lobes stiff, suberect, nearly as long as corolla, lanceolate, 18–20 mm. long, 5–6 mm.

broad, acute, glabrous within, copiously parallel-veined; corolla thin-carnose, cylindrical, at anthesis 17–20 mm. long and 4–5 mm. in diameter, slightly narrowed distally, copiously pilose without with weak spreading whitish hairs 0.5–1 mm. long, glabrous within, the lobes 4, oblong-deltoid, subacute, about 1.5 mm. long; stamens 8, equal, nearly as long as corolla, the filaments ligulate, about 2 mm. long, free, glabrous, narrowed distally, the anthers 16–18 mm. long, the thecae nearly smooth, 6–7 mm. long, the tubules longer than the thecae, dehiscing by elongate clefts; style filiform, subequal to the corolla, truncate at apex.

Type in the herbarium of the Arnold Arboretum, collected in woods at Agua-bonita, valley of Río San José, Moscopán region, eastern slope of Central Cordillera, Department of Cauca, Colombia, alt. 2,280 meters, January 31, 1947, by J. Cuatrecasas (No. 23545).

The plant described above, remarkable for the extraordinarily long calyx-lobes, is readily distinguished from its only close ally, *P. angulata* A. C. Sm., by the characters mentioned in the above diagnosis. The collector notes it as a small epiphytic shrub with rigidly coriaceous bright green leaves; the calyx is pale green, rosy at the base, and the corolla is greenish white.

**Cavendishia tenella** A. C. Sm. Journ. Arn. Arb. 27: 106. 1946.

COLOMBIA: El Valle: Chocó region, Río Calima, right bank, beaches at Pailón, alt. 60 m., *Cuatrecasas* 21237 (A, Ch).

The second collection of this very distinct species, from the same general region as the type, agrees closely with it. The plant is noted as an epiphytic shrub with rigidly coriaceous leaves which are shining grayish green above and bright green beneath; the bracts are white, the calyx is bright green, and the corolla dirty white.

**Cavendishia splachnoides** A. C. Sm. Contr. U. S. Nat. Herb. 28: 471. 1932.

COLOMBIA: Chocó: Río San Juan, right bank, Quebrada del Taparal, alt. 5–20 m., *Cuatrecasas* 21506 (A, Ch). El Valle: Chocó region, Río Calima, right bank, beaches at Pailón, alt. 60 m., *Cuatrecasas* 21233 (A, Ch). Km. 101 on Cali-Buenaventura highway, alt. about 100 m., *Haught* 5332 (US).

The cited specimens are interesting additions to a species previously known from two Panama specimens and one from Chocó;<sup>37</sup> the specimens from El Valle represent a southern extension of the known range.

**Cavendishia purdiei** A. C. Sm. Contr. U. S. Nat. Herb. 28: 472. 1932.

COLOMBIA: Caldas: La Selva, western slope of Western Cordillera, alt. 1,600–1,900 m., *von Sneider* 5272 (Ch), 5369 (Ch, US).

This species has previously been known only from the type, collected by Purdie in Colombia without precise data. The cited col-

<sup>37</sup> Cited in Amer. Journ. Bot. 27: 543. 1940.



lections from Caldas agree excellently with the type and permit the following slight additions to the original description:

Leaf-blades sometimes only 4 cm. long and 0.8 cm. broad; inflorescence with as many as 13 flowers, the rachis up to 1 cm. in length; pedicels up to 7 mm. long, minutely bibracteolate near base, the bracteoles lanceolate, about 1.5 mm. long; stamens up to 13 mm. in length, the filaments alternately about 2 mm. and 5 mm. long, the anthers alternately about 12 mm. and 10 mm. long, the thecae 2–3 mm. long.

**Cavendishia porphyrea** A. C. Sm. sp. nov.

Species *C. coccineae* A. C. Sm. et *C. urophyllae* A. C. Sm. affinis, pedicellis longioribus bracteolas suborbiculari-ovatas gerentibus, calycis tubo valde apophysato, lobis conspicue calloso-incrassatis non margine glandulosis, corolla longiore distinguitur; a *C. coccinea* etiam inflorescentia brevior et pauciflora, bracteis floriferis multo minoribus et apice rotundatis, antheris longioribus distinguenda; a *C. urophylla* foliis brevioribus, inflorescentia longiore, bracteis basilibus inconspicuis, bracteis floriferis suborbiculari-ovatis minoribus, antherarum tubulis quam thecis multo longioribus valde differt.

Shrub, probably epiphytic, glabrous throughout, the branchlets slender, terete, brownish; petioles rugulose, slender, 4–5 mm. long; leaf-blades coriaceous, dull olivaceous when dried, elliptic-ovate, 3–5 cm. long, 1.3–2.3 cm. broad, obtuse at base, abruptly and conspicuously caudate-acuminate at apex (acumen 12–20 mm. long, very slender), narrowly recurved at margin, sparsely punctate beneath with small reddish glands, 3-nerved from base (fourth and fifth nerves sometimes present, then short and obscure), the costa sharply impressed above, elevated beneath, the second and third nerves less conspicuous, the veinlets immersed; inflorescence terminal, racemose, 2–4-flowered (but probably sometimes with more flowers, as indicated by additional bracts), circumscribed at base by a few papyraceous deltoid bracts about 1 mm. long, the rachis slender, striate, 2.5–3.5 cm. long, bearing a few sessile scattered but obvious globose glands; flower-subtending bracts papyraceous, suborbicular-ovate, 6–9 mm. in diameter, rounded at apex, copiously margined with sessile subglobose glands; pedicels stout, subterete, 10–12 mm. long at anthesis, glandular like the rachis, bibracteolate near middle, the bracteoles similar to the bracts but smaller, 3–4 mm. in diameter; calyx about 8 mm. long and in apical diameter at anthesis, the tube strongly apophysate, rugose, truncate at base, the limb suberect, about 5 mm. long, subcoriaceous, the lobes 5, triangular, about 3 mm. long and 4 mm. broad, subacute, conspicuously callose-thickened at the apical margins but otherwise eglandular, the sinuses rounded; corolla cylindric,

37–40 mm. long at anthesis and 6–7 mm. in diameter, the lobes 5, oblong, 2–3 mm. long, subacute; stamens nearly as long as the corolla, free, the filaments ligulate, obscurely puberulent within, alternately 2–3 mm. and 7–8 mm. long, the anthers alternately about 30 mm. and 23 mm. long, the thecae 6–7 mm. long, the tubules much longer than the thecae, dehiscing by elongate clefts; style slender, about as long as the corolla, truncate at apex.

Type in the U. S. National Herbarium, No. 1903795, collected in wet forest near Chuare, Department of Cauca, Colombia, alt. about 100 meters, December 23, 1946, by O. Haught (No. 5372).

The specimen is said to be from a slender scrambling shrub, probably epiphytic, with shoots to about 1 meter long; the rachises and bracts of the inflorescence are red, and the corollas are dark purple and showy.

Although the affinity of this new species would be indicated by my published key<sup>38</sup> to be with *C. splachnoides* A. C. Sm., it is actually more closely allied to *C. coccinea* and *C. urophylla*, being readily distinguished as mentioned in the above diagnosis. These last two species and *C. porphyrea* are easily recognized by their small caudate-acuminate leaf-blades and their glandular-margined flower-subtending bracts and pedicellary bracteoles.

*Cavendishia micayensis* A. C. Sm. Journ. Arn. Arb. 27: 114. 1946.

COLOMBIA: El Valle: Western slope of Western Cordillera, valley of Río Dígua, Río San Juan, below Queremal to the right of the river between kilometers 52 and 53, alt. 1,300–1,500 m., *Cuatrecasas* 23872 (A, Ch).

The specimen is said to be from an epiphytic shrub with thick rigidly coriaceous leaves which are pale bright green; the bracts are vinous red and the corolla yellowish white. In the same paper in which the present species was described I also proposed *C. chlamydantha* (op. cit. 113. fig. 4), based on a specimen from lower elevation on the Pacific coast. At first glance, No. 23872 could be referred to either *C. micayensis* or *C. chlamydantha*, the two species being very similar in general aspect and foliage. However, their calyces are very different, and in this respect our plant definitely belongs with *C. micayensis*. No. 23872 has the corolla about 25 mm. long at anthesis, whereas the type of *C. micayensis* has it only 12–14 mm. long; the corolla of *C. chlamydantha* is about 37 mm. long. In this character, therefore, our specimen is intermediate.

*Cavendishia tryphera* A. C. Sm. sp. nov.

Frutex epiphyticus *C. roseae* A. C. Sm. affinis, foliorum laminis basi rotundatis vel late obtusis et apice caudato-acuminatis, pedicellis

<sup>38</sup> Contr. U. S. Nat. Herb. 28: 463–467. 1932.

multo brevioribus apice conspicue glandulosis bracteolas minutas gerentibus, calycis lobis margine conspicue glandulosis, corolla antherisque longioribus valde differt.

Robust epiphytic shrub, glabrous throughout, the branchlets terete, slender, pale brown when dried; petioles slender, rugulose, 5–9 mm. long; leaf-blades coriaceous, olivaceous when dried, ovate-oblong, (4.5–) 8–13 cm. long, (2.5–) 3–6.5 cm. broad, rounded or broadly obtuse at base, caudate-acuminate at apex (acumen 1.5–2.5 cm. long, slender), narrowly recurved at margin, 7- or indistinctly 9-nerved from base, the costa and principal nerves slightly impressed above, elevated beneath, the outer nerves short and inconspicuous, the veinlet-reticulation coarse, scarcely visible; inflorescence terminal, racemose, 12–25-flowered (lower flowers often caducous), the rachis up to 9 cm. long at anthesis, stout (about 3 mm. in diameter), conspicuously swollen at bases of pedicels, circumscribed at base by a few minute bracts, marked toward base by the scars of fallen (and perhaps larger) bracts; flowers subtended by involute enveloping bracts, these papyraceous, ovate-elliptic, 23–26 mm. long, about 15 mm. broad, rounded at apex, scarious toward margin, dorsally glandular; pedicels terete, 3–4.5 mm. long, stout (about 1.8 mm. in diameter), conspicuously glandular at the calyx-articulation with large crowded pale sessile oblong glands, inconspicuously bibracteolate near middle, the bracteoles oblong-deltoid, about 1 mm. long, broadly glandular at margin; calyx obconical, 4.5–6 mm. long, the tube smooth, the limb suberect, membranaceous, translucent, 2–3 mm. long, 5-lobed, the lobes broadly deltoid, apiculate, each flanked by two thick oblong glands about 1.5 mm. long, the sinuses rounded; corolla thin-carnose, cylindrical, at anthesis about 22 mm. long and 4–5 mm. in diameter, the lobes 5, oblong-deltoid, 1–2 mm. long; stamens nearly as long as the corolla, the filaments slender, ligulate, obscurely puberulent distally within, alternately 2–3 mm. and 5–8 mm. long, the anthers alternately 17–18 mm. and 13–15 mm. long, the thecae 4–7 mm. long, the tubules much longer than the thecae, dehiscing by elongate clefts; style subequal to corolla, filiform, truncate at apex.

Type in the herbarium of the Arnold Arboretum, collected at quebradita at Kilometer 51, left side of Río San Juan in the region of Queremal, valley of Río Digua, western slope of Western Cordillera, Department of El Valle, Colombia, alt. 1,540–1,650 meters, February 25, 1947, by J. Cuatrecasas (No. 23720). Duplicate in the Chicago Natural History Museum.

**ADDITIONAL SPECIMENS EXAMINED:**

COLOMBIA: El Valle: Valley of Río Digua, Quebrada of Río San Juan, above Queremal, Las Colonias, alt. 1,950–2,050 m., *Cuatrecasas* 23926 (A, Ch).

The specimens are said to be from robust epiphytic shrubs with coriaceous light green leaves and red bracts and corollas. Although at first glance the new species, in its stout rachis, its involute bracts in-

vesting the flowers, and its short pedicels, suggests such species as *C. compacta* A. C. Sm., examination of the calyx indicates that this is not its relationship. Actually its closest ally seems to be *C. rosea* A. C. Sm., known only from Antioquia, but the differences between that species and *C. tryphera* are conspicuous, as mentioned in the above diagnosis. The new specific name refers to the delicate transparent texture of the calyx-limb.

**Cavendishia chocoensis** A. C. Sm. Amer. Journ. Bot. 27: 543. 1940.

COLOMBIA: El Valle: Río San Juan, left bank, quebradita opposite Palestina, alt. 0-5 m., *Cuatrecasas* 21236 (Ch).

The cited collection, although in fruit, precisely matches the type of this very distinct species, of which it is the second known collection. The fruits are said to be dark blue and 8-10 mm. in diameter, although on the dried specimen they appear to be only half that size.

**Cavendishia dichroa** A. C. Sm. sp. nov.

Arbor parva *C. pubescenti* (H. B. K.) Hemsl. affinis, habitu subglabro, petiolis brevioribus, foliorum laminis oblongo-lanceolatis angustioribus glabris vel subglabris paucinerviis basi truncatis vel rotundatis, inflorescentiae bracteis et rhachi glabris, calycis lobis angustioribus et sinibus rotundatis differt.

Small tree, the branchlets slender, obtusely angled, pale-puberulent, soon glabrescent; petioles rugulose, 3-6 mm. long, sparsely puberulent or short-pilose and glabrescent; leaf-blades coriaceous, oblong-lanceolate, 9-13 cm. long, 2-3 cm. broad, truncate or rounded at base, gradually narrowed to a sharp acumen 1-2 cm. long, narrowly revolute at margin, glabrous on both sides or faintly pilose along the costa proximally, scattered-glandular-punctate beneath with minute brownish hairs, 5-nerved, the costa impressed above, prominent beneath, the inner pair of secondary nerves concurrent with costa for 0.5-2 cm., ascending, comparatively inconspicuous, the outer pair short and indistinct, the veinlets usually immersed; inflorescence axillary or terminal, compact, short-racemose, many-flowered, enveloped by numerous imbricate circumscribing and flower-subtending bracts, these papyraceous, glabrous (or the outermost ones sparsely puberulent dorsally), scariose-margined, the largest (innermost) ones elliptic, about 25 mm. long and 15 mm. broad; rachis hardly 1 cm. long at anthesis, glabrous; pedicels terete, glabrous or sparsely puberulent, about 1 cm. long at anthesis, deciduously bibracteolate near base (bracteoles oblong, about 2 mm. long, essentially glabrous); calyx cupuliform, about 6 mm. long, the tube densely pilose with spreading white hairs about 0.3 mm. long, the limb erect, about 3 mm. long including lobes, less densely pilose than the tube, the lobes narrowly deltoid, 1-1.5 mm. long, margined by linear glands, the sinuses

rounded; corolla cylindric, 22–24 mm. long at anthesis, slender (about 4 mm. in diameter), copiously pilose like the calyx, the lobes deltoid, obtuse, about 1.5 mm. long; stamens about 17 mm. long, the filaments loosely coherent at base, distally pilose, alternately about 3 mm. and 6 mm. long, the anthers alternately about 15 mm. and 12 mm. long, the thecae 4–5 mm. long, the tubules about twice as long as the thecae; style filiform, exerted at anthesis, the stigma subcapitate.

Type in the U. S. National Herbarium, No. 1952284, collected on creek margin, Alto de Santa Elena, near Medellín, Department of Antioquia, Colombia, alt. 2,500 meters, in December 1948, by L. Uribe Uribe (No. 1855).

Although *C. pubescens* (H. B. K.) Hemsl. is usually construed as a highly variable species, it can hardly be interpreted to include such a narrow-leaved and inconspicuously pilose entity as described above. In its foliage and in details of its calyx, *C. dichroa* seems sufficiently different from typical *C. pubescens* to merit specific recognition. According to the collector, *C. dichroa* is a densely foliated small tree, with highly colored bracts and a bicolored white and rose corolla. The leaves have the texture and sometimes the metallic sheen often found in *C. pubescens*.

***Cavendishia durifolia*** A. C. Sm. Contr. U. S. Nat. Herb. 28: 493. 1932.

COLOMBIA: Tolima: Between El Libano and Murillo (kilometers 11 to 22 of the highway), subpáramo at Alto de Peñones, alt. 2,200–2,950 m., *García-Barriga* 12280 (US), 12284 (US).

The cited specimens, the second and third of the species known to me, are from essentially the type locality. They differ from the type only in minor characters; for instance, the pedicels are shorter, being only about 2 mm. in length, and the calyx-tube, so peculiarly elongated in the type, is here more nearly normal for the genus, being often 4–5 mm. long but still more variable than usual in *Cavendishia*. In leaf shape, inflorescence pubescence, flower size, etc., the new material agrees closely with the type.

***Cavendishia cryptantha*** A. C. Sm. sp. nov.

Frutex *C. guatapeensi* Mansf. affinis, foliorum laminis majoribus apice obtusioribus, nervis secundariis cum costa altius concurrentibus, inflorescentia longiore, pedicellis minus manifestis, calyce paullo majore, staminibus brevioribus, antherarum tubulis quam thecis plus minusve duplo longioribus differt.

Shrub, up to 2 m. high, glabrous throughout; branchlets brownish, striate, bluntly angled; petioles subterete, rugulose, often inconspicuous, 2–6 mm. long; leaf-blades coriaceous, olivaceous when dried, (4.5–) 7–9.5 cm. long, 2–4 cm. broad, narrowly subcordate or rounded at base, obtuse or obtusely cuspidate at apex, entire and narrowly recurved at margin, sometimes obscurely brownish-punctate beneath, 5–7-nerved, the costa slightly impressed above (raised proximally)



and elevated beneath, the inner pair of secondary nerves concurrent with costa for 1-3 cm., sharply ascending, nearly as prominent as the costa, the outer secondary nerves shorter, less conspicuous, the veinlet-reticulation coarse, slightly prominulous or immersed on both surfaces; inflorescences axillary, congested toward apices of branchlets, short-racemose, apparently 10-20-flowered (but the flowers crowded, the lower ones maturing and falling while the upper ones are in bud), circumscribed at base by a few small deltoid coriaceous bracts, the rachis stout, 2-4 cm. long (at or after full anthesis); flower-subtending bracts subcoriaceous, obovate-elliptic, 10-15 mm. long, 8-12 mm. broad, scarious at margin, involute and closely investing the individual flowers; flowers (pedicels, calyx, and corolla) minutely glandular when young with scattered superficial brownish glands; pedicels minute, stout, 1-2 mm. long, bibracteolate near middle, the bracteoles papyraceous, oblong, 5-6 mm. long, 2-3 mm. broad, subacute, margined with a few minute fine glandular hairs, closely appressed to calyx, caducous; calyx 6-7 mm. long, the tube cupuliform, the limb erect, papyraceous, about 3 mm. long, 5-lobed, the lobes deltoid, acute, 1-2 mm. long, the sinuses acute; corolla thin-carnose, cylindric-urceolate, at anthesis 9-10 mm. long and 3-4 mm. in diameter near middle, the lobes 5, minute, deltoid, subacute; stamens alternately about 5.5 mm. and 6.5 mm. long, the filaments ligulate, alternately about 1 mm. and 3 mm. long, the thecae nearly smooth, 1.5-2 mm. long, the tubules about twice as long as the thecae, dehiscing by elongate clefts; style filiform, about as long as the corolla, slightly swollen at apex; young fruit subglobose, 4-5 mm. in diameter, surmounted by the persistent calyx-limb and style.

Type in the U. S. National Herbarium, No. 1903202, collected in woods below the crest near Las Palmas, road between Medellín and El Retiro, Department of Antioquia, Colombia, alt. about 2,500 meters, October 18, 1946, by G. Gutiérrez V. (No. 1118).

ADDITIONAL SPECIMENS EXAMINED:

COLOMBIA: Antioquia: From precise type locality, *P. Falla B.* 14 (US).

Woods below the crest near Santa Elena, road between Medellín and Río Negro, alt. about 2,300-2,500 m., *A. Gärtner N.* 63 (US). San Pedro, *Bro. Tomás* 762 (US).

The plant is described by its collectors as a shrub up to 2 meters in height, with purplish bracts and red flowers; Tomás records the local name "uvito." In its crowded flowers enveloped by subcoriaceous subpersistent bracts and other floral characters, *C. cryptantha* is closely related only to *C. guatapeensis* Mansf., differing as noted in the above diagnosis. The new specific name refers to the fact that the flowers are closely enveloped and hidden by the bracts, which persist after the corollas have fallen.



*Cavendishia amoena* A. C. Sm. sp. nov.

Frutex epiphyticus foliis parvis, inflorescentia compacta bracteis involuta, inflorescentiae partibus textura subtilibus distinguendus; a *C. angustifolia* Mansf. foliorum laminis lanceolato-ellipticis brevioribus pro portione latioribus apice rotundatis vel obtusis, floribus paulo majoribus, corolla puberula differt; a *C. dugandiana* A. C. Sm. foliorum forma et nervatione, floribus pluribus, pedicellis longioribus cum bracteolis eglandulosis, calyce glabro, corolla staminibusque longioribus facile distinguitur.

Epiphytic shrub, the branchlets slender, spreading, subterete, minutely but densely puberulent, glabrescent; petioles subterete, slender, rugulose, 2–3 mm. long, puberulent like the branchlets; leaf-blades subcoriaceous, olivaceous when dried, lanceolate-elliptic, (1.5–) 2–4 cm. long, (0.7–) 1–1.5 cm. broad, obtuse or narrowly rounded at base, rounded or obtuse and obscurely callose-apiculate at apex, narrowly recurved at margin, minutely puberulent on the costa above, obscurely dark-punctate beneath, 5-nerved from near base, the costa faintly impressed above and raised beneath, the inner pair of secondary nerves ascending, the outer pair short, obscure, the veinlet-reticulation prominent above, nearly plane beneath; inflorescences axillary or subterminal, short-racemose, apparently 6–10-flowered, glabrous throughout (except corolla and filaments), bracteate at base, the outer bracts the smallest, papyraceous, broadly ovate, the inner bracts increasingly larger, membranaceous, translucent, broadly elliptic, up to 22 mm. long and 15 mm. broad, enveloping the inflorescence; rachis slender, elongating during anthesis and eventually 1–2 cm. long; pedicels slender, at anthesis 5–6 mm. long, swollen at apex, obscurely bibracteolate near base, the bracteoles elliptic, about 2 mm. long, evanescent; calyx about 3.5 mm. long and in apical diameter at anthesis, the tube about 1.5 mm. long, truncate and faintly apophysate at base, the limb erect, submembranaceous, 5-lobed, the lobes triangular, about 1 mm. long, thickened at apex and distally margined by pale linear glands; corolla submembranaceous, cylindric, about 15 mm. long and 4 mm. in diameter at anthesis, densely but very minutely white-puberulent without in the distal half, the lobes deltoid-oblong, subacute; stamens nearly as long as corolla, the filaments delicate, pale, alternately about 2 mm. and 3.5 mm. long, obscurely puberulent distally within, the anthers alternately about 13 mm. and 11 mm. long, the thecae nearly smooth, 3–4 mm. long, the tubules 2–3 times as long as the thecae, dehiscent by elongate clefts; style pale, filiform, subequal to corolla, the stigma obscurely peltate.

Type in the herbarium of the Arnold Arboretum, collected at quebradita at Kilometer 51, left side of Río San Juan in the region of Queremal, valley of Río Digua, western slope of Western Cordillera, Department of El Valle, Colombia,

alt. 1,540–1,650 meters, February 25, 1947, by J. Cuatrecasas (No. 23713). Duplicate in the Chicago Natural History Museum.

The plant is said to be a spreading, branching, epiphytic shrub, with thin-coriaceous leaves which are dull dark green above and delicate bright green beneath; the bracts are dark violet and the corolla bright violet.

This attractive small-leaved species suggests only *C. angustifolia* Mansf. and *C. dugandiana* A. C. Sm., being readily distinguished from both by characters mentioned above.

***Cavendishia strobilifera*** (H. B. K.) Hoer. Bot. Jahrb. Engler 42: 279. 1909.

*Thibaudia ? acuminata* Dun. in DC. Prodr. 7: 565. 1839.

A photograph of the type of Dunal's species (*Joseph de Jussieu*, Peru, in the Paris Herbarium) makes it possible to place this questioned entity, which clearly represents *C. strobilifera*. Dunal's binomial is both a later homonym and a synonym of *Thibaudia acuminata* Hook. (1837), the basonym of *Cavendishia acuminata* (Hook.) Hemsl., more correctly known as *C. strobilifera*, as discussed by the writer.<sup>39</sup>

***Cavendishia haughtii*** A. C. Sm. sp. nov.

Frutex gracilis inflorescentiae bracteis caducis, floribus subviridibus, staminibus subisomorphis distinguitur; *C. strobiliferae* (H. B. K.) Hoer. et *C. splendens* (Kl.) Hoer. affinis, foliorum forma, laminis in petiolum longe decurrentibus apice obtusis vel obtuse cuspidatis, bracteis floriferis obovatis angustioribus, corolla staminibusque brevioribus valde differt.

Slender shrub, about 2 m. high, the branchlets terete, glabrous; petioles rugulose, stout, 5–10 mm. long; leaf-blades subcoriaceous, dark-olivaceous when dried, elliptic, 7.5–9.5 cm. long, 4–5 cm. broad, narrowed at base and abruptly long-decurrent on the petiole, obtuse or obtusely short-cuspidate at apex, inconspicuously recurved at margin, glabrous above, inconspicuously glandular beneath with minute appressed brownish hairs, 5- or obscurely 7-nerved, the secondary nerves ascending (inner ones concurrent with costa for about 1 cm.), like the costa prominulous above and conspicuously elevated beneath, the veinlet-reticulation obscurely raised on both surfaces; inflorescences axillary, glabrous throughout, short-racemose, about 8-flowered, marked at base by the scars of a few caducous bracts, the rachis slender, rugulose, about 1.5 cm. long; flower-subtending bracts membranaceous, narrowly obovate, 13–20 mm. long, 5–7 mm. broad, rounded at apex, gradually narrowed toward base, sparsely ciliolate at margin, inconspicuously nerved, soon caducous; pedicels terete, at anthesis

<sup>39</sup> Bull. Torrey Club 63: 313. 1936.

7–11 mm. long, enlarged distally, bearing toward the base two membranaceous lanceolate ciliolate bracteoles 2–2.5 mm. long, these readily caducous; calyx 4.5–5 mm. long and about 5 mm. in apical diameter, the tube short-cylindric, 2–2.5 mm. long, 2.5–3.5 mm. in diameter, truncate at base, rugulose when dried, the limb submembranaceous, suberect, slightly longer than the tube, the lobes 5, deltoid, about 1.5 mm. long and 2–3 mm. broad, acute and slightly thickened at apex, the sinuses rounded; corolla thin-carnose or submembranaceous, cylindric, slightly before anthesis about 12 mm. long and 5 mm. in diameter, contracted at both ends, the lobes 5, small, oblong-deltoid, obtuse; stamens 10, subsimilar, nearly as long as the corolla, the filaments membranaceous, alternately about 2.5 mm. and 3 mm. long, slightly connate at base, minutely ciliolate distally, the anthers 9.5–10 mm. long, the thecae 2.5–3 mm. long, incurved at base, the tubules 2–3 times longer than the thecae, with elongate clefts; style filiform, subequal to the corolla, the stigma minutely peltate.

Type in the U. S. National Herbarium, No. 1709073, collected in forest along a sharp ridge 25 km. southwest of Carraipia, Comisaría Guajira, Colombia, alt. 750 meters, August 26, 1944, by O. Haught (No. 4333).

The collector notes that only one plant was seen, this being apparently a slender arching shrub 2 m. high, with greenish flowers. The specimen described above is the first member of the genus from the Comisaría Guajira, in extreme northeastern Colombia, which has come to my attention. It represents an obviously undescribed species without close allies, being unusual in *Cavendishia* because of its nearly isomorphic stamens. In all other characters it is typical of the genus, and upon careful examination one may observe that the alternate filaments are slightly different in respect to their length and breadth.

*Orthaea peregrina* A. C. Sm. sp. nov.

Planta ab omnibus speciebus generis calycis limbo irregulariter fisso, corolla pilis longis glanduliferis dense induta, filamentis connatis valde differt.

Large shrub, the vegetative parts glabrous, the branchlets stout, striate, brownish; petioles rugulose, deeply sulcate above, 4–6 mm. long; leaf-blades coriaceous, brownish green when dried, oblong-lanceolate, 6–8 cm. long, 2–3 cm. broad, obtuse at base and decurrent on the petiole, tapering to an acuminate apex 1–1.5 cm. long, entire and slightly recurved at margins, inconspicuously scattered-reddish-glandular beneath, 5-nerved from base (outermost nerves obscure), the costa and inner pair of nerves faintly impressed above, elevated beneath, the veinlets immersed; inflorescences axillary toward apices of branchlets, racemose, 10–15-flowered, circumscribed at base by a few papyraceous suborbicular bracts, the largest (innermost) bracts about 8 mm. long,

the outer ones much smaller; rachis rugulose, 3.5–4.5 cm. long, floriferous to base, bearing scattered reddish gland-tipped hairs 0.3–0.5 mm. long; flower-subtending bracts submembranaceous, oblong-lanceolate, about 10 mm. long and 2 mm. broad, sparsely margined with stalked glandular hairs, readily caducous; pedicels similar to rachis in texture and indument, stout, 18–34 mm. long, conspicuously enlarged upward and nearly pulvinate below the conspicuous calyx-articulation, bibracteolate near base, the bracteoles similar to the flower-subtending bracts but about 5 mm. long; calyx subcampanulate, at anthesis 12–13 mm. long and about 10 mm. in apical diameter, the tube about 3 mm. long, the limb apparently thin-carnose, much longer than the tube, sparsely glandular-hispidulous without like the pedicels, irregularly cleft into 5 lobes, these deltoid, 2–6 mm. long, 3–4 mm. broad, often partially united in pairs, acute, slightly thickened at margins, the sinuses acute; corolla thin-carnose, cylindric, 19–21 mm. long and about 7 mm. in diameter at anthesis, distally narrowed, densely covered without in the distal two-thirds with spreading stout pale gland-tipped hairs 2–3 mm. long, glabrous within, the lobes 5, deltoid-oblong, subacute, about 2 mm. long; stamens 10, about half as long as the corolla, alternately unequal, the filaments membranaceous, laterally connate for nearly their entire length, alternately 5–6 mm. and 6–7 mm. long, densely puberulent distally within, the anthers similar, 4–4.5 mm. long, the thecae finely granular, the tubules about as long as the thecae, dehiscing by introrse-apical oval pores about 1 mm. long; style nearly as long as corolla, slender, the stigma obscurely peltate.

**Type** in the herbarium of the Arnold Arboretum, collected at Mina El Diamante, Quebrada del Ratón, northwestern slope of Los Farallones, Western Cordillera, Department of El Valle, Colombia, alt. 2,950–3,000 meters, July 30, 1946, by J. Cuatrecasas (No. 21771). Duplicate in the Chicago Natural History Museum.

The plant is said to be a very large shrub, more or less epiphytic, with climbing branches; the leaves are rigidly coriaceous, dark green above and bright yellowish green beneath; the pedicels and calyces are shining red, and the corolla whitish pink.

As a result of Dr. Cuatrecasas's collections from the Western Cordillera of Colombia, many spectacular new species have been discovered. The present plant is one of the most striking which has come to my attention, presenting combinations of characters not otherwise found in the Vacciniaceae. Consequently I refer it to a genus with hesitation. Its basic characters, such as the alternately unequal filaments and the short isomorphic anthers with subapically dehiscing tubules, point to *Orthaea*; but the described species of that genus have the filaments distinct or essentially so. Other striking characters of the new species are the irregularly splitting calyx-limb and the extraordinary pubescence of the corolla. The corolla-hairs are of a type which

I have not previously noted in the tropical American Vacciniaceae; they are thin-walled, distally tapering, and multicellular, with the cells in 2–4 longitudinal rows, and with large ellipsoid apical glands.

***Satyria latifolia*** A. C. Sm. Contr. U. S. Nat. Herb. 28: 527. 1932.

COLOMBIA: Norte de Santander: Sarare region, Alto de Santa Inés, alt. 2,150–2,250 m., *Cuatrecasas, Schultes, & E. Smith* 12422 (Ch, US).

This species has previously been known only from the type, collected in the Department of Bolívar. Although both collections are incomplete and not entirely satisfactory, in foliage and floral characters they are essentially identical. The inflorescence and pedicels of No. 12422 (lacking in the type) may be described as follows:

Inflorescences borne on the stout branchlets below leaves, short-racemose, 4–15-flowered, the rachis stout, 8–17 mm. long, glabrous, the flowers subtended by deltoid bracts about 2 mm. long; pedicels stout, apparently subcarnose and flattening under pressure, 20–40 mm. long at anthesis, obscurely and deciduously bibracteolate near middle.

***Satyria leptantha*** A. C. Sm. Journ. Arn. Arb. 27: 119. 1946.

COLOMBIA: El Valle: Western slope of Western Cordillera, valley of Río Digua, left side of Río San Juan in the region of Queremal, quebradita of Kilometer 51, alt. 1,350–1,400 m., *Cuatrecasas* 23706 (A, Ch).

The second collection of the species, from the same region as the type, agrees with it precisely. The plant is a large epiphytic shrub with rigidly coriaceous bright green leaves; the pedicels, calyces, and lower two-thirds of the corolla are red, while the apex of the corolla is white.