

NEW GENERA AND SPECIES OF GESNERIACEAE  
FROM THE NEOTROPICS

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The preparation of a new classification of the New World Gesneriaceae, preliminary work for the floras of Panama, Colombia, and Ecuador, and field work by fellow workers and myself have accumulated a wealth of new species to be described, and also necessitate the establishment of four new genera. The many novelties recently collected are foremost an indication that the Gesneriaceae (and most other tropical plant families) have not received due attention in botanical field surveys in the past, even though the neotropical cloud forests and rain forests are disappearing at an ever increasing, now alarming rate. Of the more than 120 new species of Gesneriaceae currently awaiting description at the greenhouses of the Marie Selby Botanical Gardens, 48 are published in this account. Others will follow in the next issues of Selbyana. Many of these species have horticultural value and will be distributed to commercial growers and gesneriad societies.

I. THE GESNERIACEAE OF THE RÍO PALENQUE  
SCIENCE CENTER IN ECUADOR

Plates 19-26

The flora of this field station on the western slopes of the Ecuadorian Andes will be published in volume 4 of Selbyana. Among the more than 1100 species of vascular plants occurring in the small territory (70 hectares) of the Science Center, there are 14 flowering plant families which are represented by over 20 species each. The 32 species of Gesneriaceae found at the Center and in the surrounding area attest to the abundance of gesneriads in the Andean flora. Thirteen of the 32 species are new to science. This is about the average percentage of novelties in recent, intense collections of neotropical Gesneriaceae. Almost all the species listed below were described and illustrated from live material growing at SEL. Since most of the 'old' species from the Science Center have never been depicted before, they are included here among the plates of drawings by Wendy Zomlefer, our resident illustrator. The same plates will be used in volume 4 of Selbyana, together with brief descriptions in English and a key.

*Alloplectus dodsonii* Wiehler, sp. nov.

(Plate 19:A).

A *Alloplecto teuscheri* (Raymond) Wiehler lamina grandi plana, lobis calycis ciliatis trichomatibus glanduliferis, et corolla pilosa hispidaque differt.

Terrestrial (rarely epiphytic), perennial, suffrutescent herb to 2.3 m tall, with square, succulent stems up to 3 cm in diam., yellow-green, puberulous (hispid in some localities); petioles fleshy, 3-12 cm long, lamina broadly ovate, 10-28 by 17-42 cm, acuminate, cordate or oblique, crenate, chartaceous or submembranaceous, flat, green (or suffused with red below), sparsely strigose. Inflorescence an axillary, congested cyme of 4-6 flowers, a common peduncle absent, prophylls 1 by 0.3 cm, pedicels 0.8-2 cm long; calyx lobes bright red, 2.8 by 1.2 cm, hispid outside, nearly glabrous inside, with long, ciliate, glandular hairs on the serrate margins; corolla 2.8 cm long, spurred, ventricose, pouched, yellow, the tube pilose, hispid near the limb, the lobes subequal, red, glabrous inside; filaments adnate for 3 mm to the base of the corolla tube, 1.9 cm long, glabrous, anthers 2 by 1.4 mm; ovary superior, 8 mm long, red, puberulous, style 7 mm long, white, glabrous, the stigma

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bilabiate; nectary a connate double, dorsal gland. Mature fruit a fleshy, bivalved display capsule, with the recoiled, whitish valves topped by a cone-shaped, orange-yellow mass of placentae and seeds; seeds striate, light tan, 1 mm long, with a funiculus 3 mm long.

TYPE: *ECUADOR*: LOS RÍOS: Río Palenque Science Center, km 56 between Quevedo and Santo Domingo, tropical wet forest, ca. 200 m alt., 19 July 1971, *Wiehler & Dodson 7105* (HOLOTYPE: SEL; ISOTYPES: BR, K, MO, NY, QCA, S, US).

DISTRIBUTION: At lower altitudes of the western slope of the Andes in Ecuador (El Oro, Azuay, Guayas, Los Ríos, Manabí, Pichincha, Carchi) and Colombia (Nariño).

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: LOS RÍOS: at type locality: 15 Dec. 1971, *Dodson & McMahon 4284* (SEL); same area, *Dodson 4313* (SEL); 5 Sept. 1972, *Dodson & McMahon 5095* (RPSC, SEL); Hacienda Clementina, between Quevedo and Babahoyo, 30 m alt., 15 March 1947, *Harling 456* (S); MANABÍ: wet forest just inland from La Tuna on coast, 30 June 1942, *Haught 3367* (US); GUAYAS: Cerro Cimalon, on Hacienda Vainillo, ca. 200 m alt., 7 Oct. 1939, *Haught 2896* (US); Teresita, 3 km W of Bucay, 270 m alt., 5-7 July 1923, *Hitchcock 20544* (GH, NY, US); AZUAY: Chacanceo on Río Putucay, ca. 1450 m, 22 May 1943, *Steyermark 52678* (F, US); along Río Patul near Sanagüin, 850 m alt., *Steyermark 52742* (F, US); on ridge at Mirador (Buena Vista), above Rio Gamotal, 1675 m alt., 9 June 1943, *Steyermark 52901* (F); EL ORO: between Santa Rosa and La Chorita, 0-100 m alt., 27 Aug. 1923, *Hitchcock 21115* (US); trail from Sambotambo to Portovelo, 1000-1800 m alt., 29 Aug. 1943, *Steyermark 54201* (F, US); PICHINCHA: Los Alpes, bosque Andino de El Corazón, lado N, Cord. Occ., 2800-3000 m alt., *Acosta Solis 7050* (F); near El Volante, on old road from Chiriboga to Santo Domingo, wet thicket, ca. 1700 m alt., 28 Oct. 1955, *Asplund 18219* (S); below confluence of Río Blanco with Río Toachi, 300 m alt., 16-18 March 1959, *Harling 4476* (S); CARCHI: vicinity of Maldonado, wet forest, 1600-1900 m alt. 13-15 April 1977, *Madison 3950* (SEL); COLOMBIA: NARIÑO: Guaiquer, via de Barbacoas, 980 m alt., 1851-57, *Triana s.n.* (P); Barbacoas, near Rio Telembi, 840-200 m alt., *García-Barriga 13165* (US); between Altaquer and Paramo, May 1876, *André 3318* (K, NY); Altaquer, ca. 1200 m alt., 10 Nov. 1946, *M. B. & R. Foster 2106* (A); rainforest along road between Altaquer and Junín, ca. 800 m alt., 9 May 1972, *Wiehler & N. H. Williams 72198* (SEL, US); same area, ca. 700 m alt., 10 May 1972, *Wiehler & Williams 72203* (SEL).

*Alloplectus dodsonii* is closely related to *A. teuscheri* (Raymond) Wiehler which occurs in about the same area at higher altitudes. Clones of the holotypes of both species are cultivated at the Marie Selby Botanical Gardens. The leaves in populations of *A. teuscheri* are elliptic, rugose, and bullate, the lamina never exceeding 22 by 8 cm; the lobes of the calyx are without ciliate glandular trichomes, and the corolla is minutely hirsute below the limb. There appears to be introgressive hybridization between both species at several localities in Colombia and Ecuador. *Alloplectus dodsonii* and the following species are named for Calaway H. Dodson in recognition of his keen interest in the Gesneriaceae and in the neotropical flora.

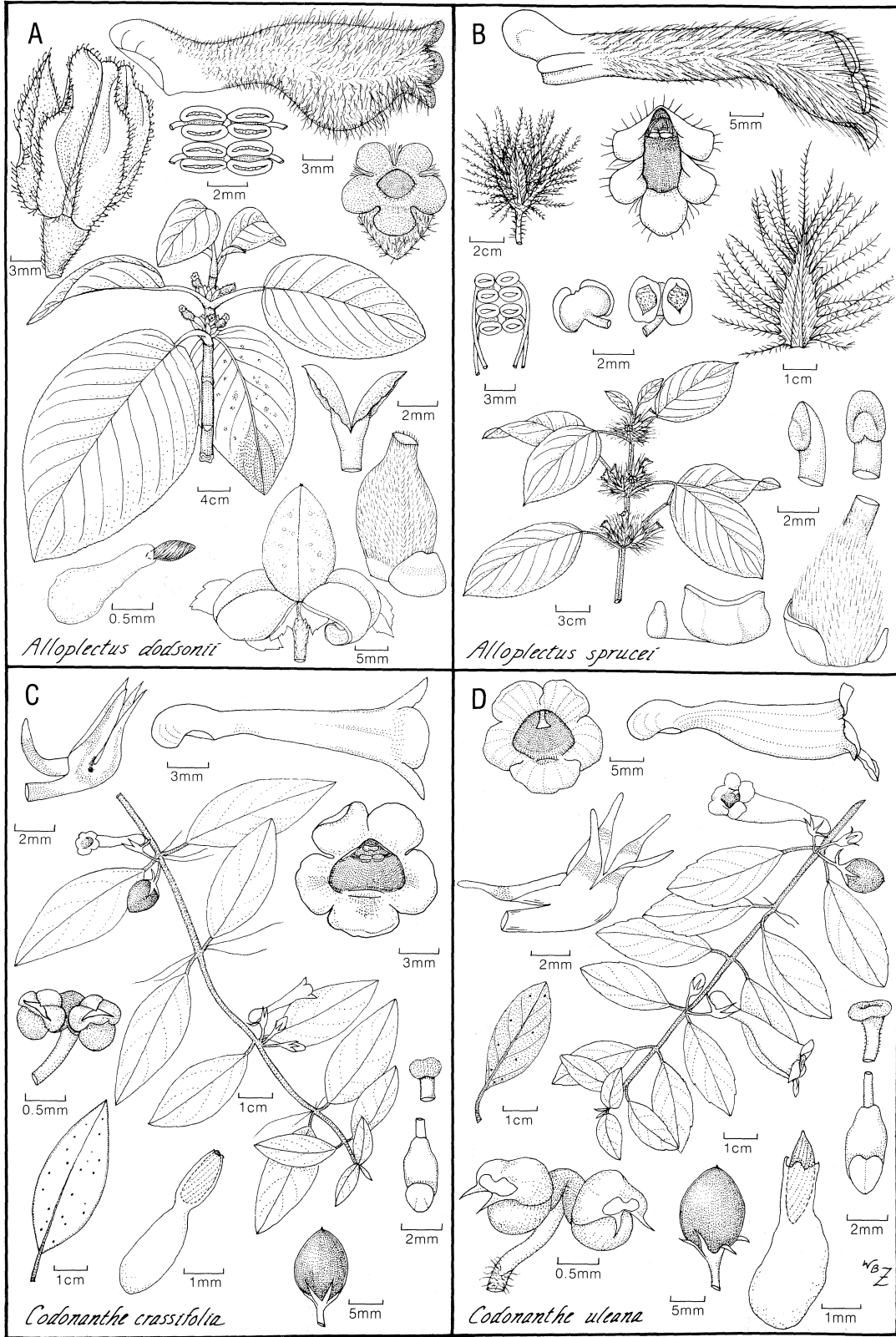


Plate 19

***Columnnea dodsonii* Wiehler, sp. nov.**

(Plate 20:A).

*Columnneae kienastianae* Regel affinis, sed foliis late ovatis, calycum lobis integris, et corollis parvioribus notabilis.

Epiphytic, perennial herb with thin, pendent stems to 1 m long, 3 mm in diam., sparsely pilose; leaf pairs of equal size, the petiole 2-3 mm long, the lamina 2 by 1.4 cm, broadly ovoid, acuminate, entire, cordate, glabrescent above, weakly pilose below, green, the margins suffused with red. Inflorescence reduced to a single axillary flower from alternating nodes; pedicel 1.2 cm long, sparsely pilose; calyx lobes subequal, 1.5 by 0.6 cm, ovoid, long-acuminate, entire, light green at anthesis, weakly pilose; corolla 3.8 cm long, with a yellow spur and an orange-red tube faintly striped yellow ventrally, externally pilose; filaments adnate for 1 mm to the base of the corolla tube, 2.9 cm long, anthers 1 by 0.8 mm; ovary superior, 2 mm long, densely pilose, the style 2.9 cm long, distally sparsely pilose with glandular hairs, the stigma bilabiate; nectary a double-connate, dorsal, white gland. Fruit a globoid, white, pilose berry, up to 1.2 cm in diam., surrounded by enlarged, rose-pink calyx lobes; seeds 1.4 mm long, striate, off-white, with a funiculus 3 mm long.

TYPE: *ECUADOR*: MANABI: Road to Chone, 15 km W of Santo Domingo, epiphyte in old cacao shade trees (sterile material, pressed and live: 23 July 1971, *Wiehler & Dodson 7108*, SEL). Live material cultivated at Selby Botanical Gardens, acc. no W-1500, 10 June 1977, *Wiehler 77108* (HOLOTYPE: SEL; ISOTYPES: B, BH, BM, BR, C, COL, F, G, GH, HBG, K, L, LE, M, MO, NY, P, QCA, RPSC, S, SEL, U, UC, WAG).

DISTRIBUTION: Endemic to Ecuador, known only from the Provinces of Esmeraldas, Manabi, and Los Ríos. Probably also occurring in Pichincha. This is the southernmost species of *Columnnea*, and the only one native to Ecuador.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: ESMERALDAS: Parroquia de Concepcion: Playa Rica; 105 m alt., on forest tree, 11 Dec. 1936, *Mexia 8436a* (BM, K, NY, U, US); MANABI: El Tambo Grande, *André 4271* (K); LOS RÍOS: Río Palenque Science Center, km 56, road Quevedo to Santo Domingo, 150-220 m alt., 12 Sept. 1972, *Dodson 5144* (RPSC, SEL).

*Columnnea dodsonii* is a close relative of *C. kienastiana* Regel from the Provinces of Cauca, Valle, and Choco in Colombia. The latter has larger, lanceolate leaves, strongly serrated calyx lobes, and a larger corolla, 5 cm long. I have studied the following collections: CAUCAS: *v. Sneidern 748, 827, 870, 940* (all S); VALLE: *Wiehler et al. 71134* (SEL, and to be distributed); CHOCO: *Robinson 228* (US); *Cuatrecasas 16927* (Herb. Cuatrec., US). Both species are grown at the Marie Selby Botanical Gardens and have been distributed to commercial growers and members of the gesneriad societies.

***Dalbergaria asteroloma* Wiehler, sp. nov.**

(Plate 20:B).

Herbae perennes epiphyticae suffrutescentes, caules erecti vel ascendentes, parce ramosi, ad 1 m longi, 1 cm in diam., virides, indumento dense piloso rubro, internodiis 2.5-5 cm longis; folia per paria valde inaequalia, sessilia, majora oblanceolato-lineararia, 15-30 cm longa, 5-7 cm lata, subfalcata, longi acuminata, basi obliqua, margine aliquantum serrulata, supra atrovirentia, puberula, subtus viridia rubro-maculata, sericea; folia minora simili-

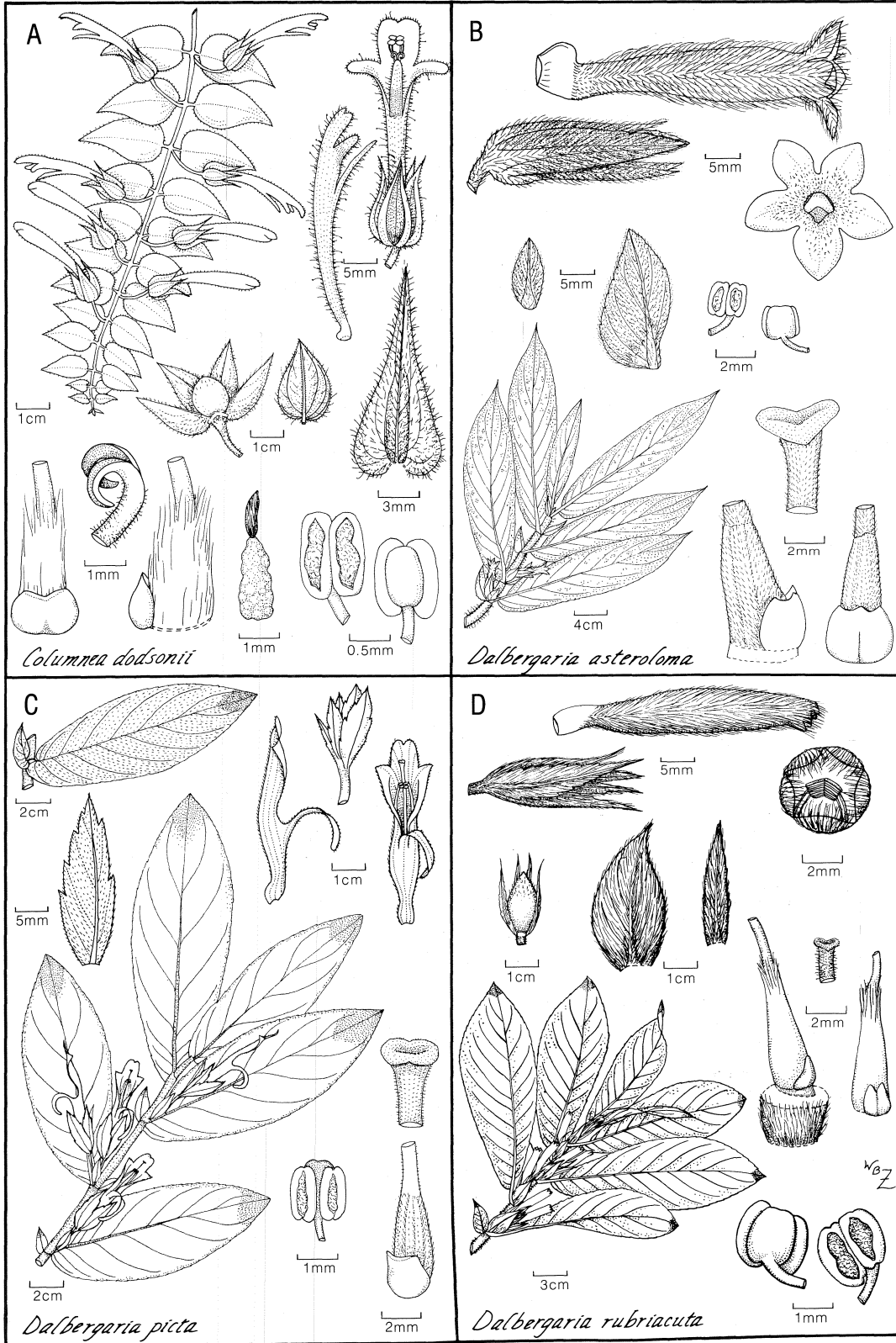


Plate 20

ter, stipuliformia, 2.5 cm longa, 0.5 cm lata. Inflorescentia cyma axillaris redacta, 1-4-flora; prophylla, bracteae subtenentes et calyx ruber vel aurantiacus rubro-maculatus, sericeus, prophylla  $2.4 \times 1.1$  cm, bracteae subtenentes  $1.5 \times 1$  cm, uterque ovato-lanceolatae; pedicellus 0.8 cm longus, lobi calycis subaequales, lanceolato-elliptici,  $3 \times 0.6$  cm, lobo dorsale 0.9 cm lato; corolla in calyce erecta, 4.8 cm longa, calcarata, citrea, longe sericea, limbo asteriformi trichomatibus glanduliferis, lobis 7 mm longis, 6 mm latis; stamina 4, inclusa, filamentis 4.2 cm longis, basi 1 mm cum tubo corollae adnatis, in tubum incisum 7 mm longum connatis, deinde discretis pilosis, antheris  $3.5 \times 2.5$  mm; ovarium superum, 7 mm longum, sericeum, stylo 3.8 cm longo, pubescenti, stigmate bilabiato-stomatomorpha; nectarium glandula duplo-connata, dorsalis, glabra, alba. Fructus bacca tamen non visa.

TYPE: *ECUADOR*: LOS RÍOS: Montañas de Ila, at km 12 on road from Patricia Pilar to village of 24 de Mayo, 540 m alt., cloud forest on western slope (sterile material, 30 May 1976, *Dodson 6100*, brought into cultivation at SEL), 10 June 1977, *Wiehler 77109* (HOLOTYPE: SEL; ISOTYPES: K, NY, QCA, RPSC, US).

DISTRIBUTION: Endemic to western Ecuador, known only from the Provinces of Los Ríos and Pichincha.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: PICHINCHA: road Aloag-Santo Domingo, at confluence of Río Pilatón and Río Toachi, rain forest, ca. 850 m alt., 2 Jan. 1967, *Sparre 17813* (S).

*Dalbergaria rubriacuta* Wiehler, sp. nov.

(Plate 20:D).

A *D. asteroloma* Wiehler foliis subtus rubriacutis, prophyllis vinaceis, corolla angustata et limbis parvis recedit.

Epiphytic, perennial, suffrutescent herb, the stems erect or ascending, sparsely branching, to 1 m long, 0.7 cm in diam., green, pilose, the upper internodes 1-3 cm long; leaf pairs very unequal, the larger leaf with a petiole 0.8 cm long, the lamina oblanceolate, 18-25 cm long, 8-10 cm wide, acute or acuminate, serrate, oblique, puberulous above, sericeous below, green on both sides, with a distinct red tip below, the smaller leaf similar, 2-3.5 cm long, 1.2-2.9 cm wide. Inflorescence an axillary, reduced cyme, 1-4-flowered; prophylls, subtending bracts, and calyx wine-red, sericeous, the prophylls 4 by 2 cm, the subtending bracts 2.8 by 0.5 cm, both lanceolate; pedicel 0.9 cm long; calyx lobes subequal, lanceolate, 2 cm long, 0.4 cm wide, the dorsal lobe shorter, 1.7 cm long; corolla erect in the calyx, 4.2 cm long, spurred, yellow, long-sericeous, the lobes small, 2 by 2 mm, acute, glabrous inside; stamens 4, included, the filaments 3.9 cm long, adnate for 1.5 mm to the base of the corolla tube, forming a slit tube 7 mm long, the free filaments weakly sericeous, anthers 1.5 by 1.7 mm; ovary superior, 8 mm long, sericeous, the style 2.3 cm long, pubescent, with glandular hairs distally, the stigma stomatomorphic-bilabiate; nectary a double-connate, dorsal, glabrous gland. Fruit an oblong, pointed, yellow berry, 1.9 cm long, 0.7 cm wide, sparsely sericeous; seeds 0.7 mm long, striate, brown.

TYPE: *ECUADOR*: LOS RÍOS: Río Palenque Science Center, km 56 between Quevedo and Santo Domingo, tropical wet forest, ca. 200 m alt., growing on the same tree with *Dalbergaria picta*, 19 July 1971, *Wiehler & Dodson 7102* (HOLOTYPE: SEL; ISOTYPES: K, NY, QCA, S, US).

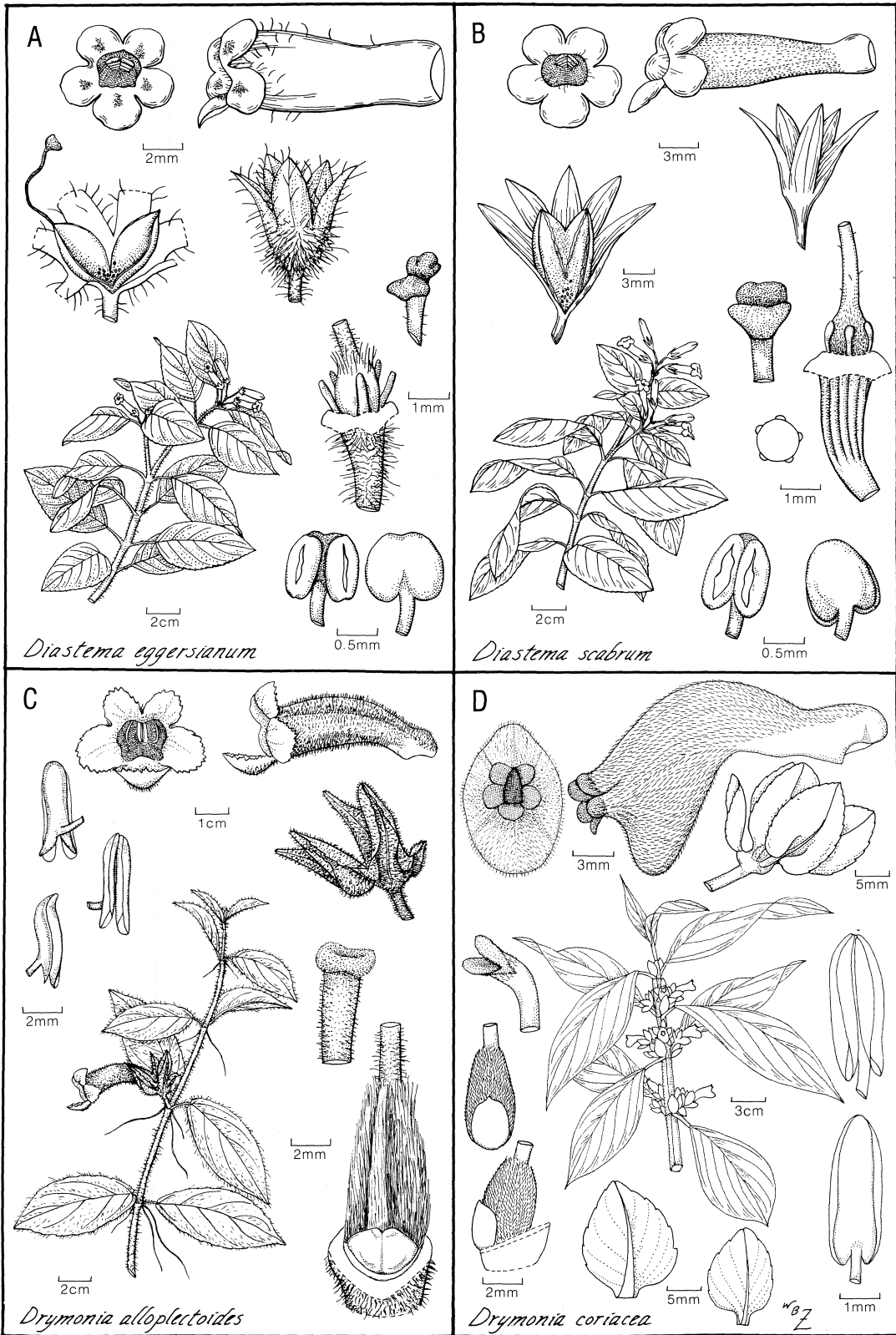


Plate 21

DISTRIBUTION: Endemic to western Ecuador, *Dalbergaria rubriacuta* is known only from two nearby localities in the Provinces of Los Ríos and Pichincha.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: LOS RÍOS: at type locality, epiphyte high up in tree, 2 Oct. 1976, *Dodson & Gentry 6454* (RPSC, SEL); PICHINCHA: N at km 7 on road from Santo Domingo to Quevedo, along Río Baba (= Río Quevedo, = Río Palenque), wet and humid forest along streamlet, 22 July 1971, *Wiehler & Dodson 7121* (SEL).

*Drymonia ecuadorensis* Wiehler, sp. nov. (Plate 22:A).

Frutices perennes, epiphytici, raro terrestres, vel lianiformes; caules ad 4.5 m longes, 1.2 cm in diam., virides vel vinosi, glabri, nitidi, internodiis 2-7 cm longis; folia aliquantum vel valde inaequalia, glabra, petiolis 3-6 cm longis, laminis majoribus ovatis, ellipticis, vel lanceolatis, 10-21 cm longis, 5-9 cm latis, acuminatis, integris, cuneatis, coriaceis, supra viridibus, subtus viridibus vel vinosis, laminis minoribus magnitudine variantibus. Inflorescentia cyma axillaris vel cauliflora, redacta, 1-4-flora, prophyllis et bracteis subtenentibus minutis, 3 × 1 mm, vel caducis, pedicellus 1-1.5 cm longus, lobi calycis inaequales, lanceolati, parce pilosi, virides rubro-suffusi vel vinosi, lobo dorsale 1.7 × 0.7 cm, lobis lateralibus 2.6 × 1 cm, lobis ventralibus 2.1 × 0.7 cm; corolla 5 cm longa, eburnea, glabra, limbo interno citreo, tubo introrsum ventraliter non sulcato, citreo, rubro-vittato, dorsaliter trichomatibus longis; stamina 4, inclusa, filamentis 2.5 cm longis, basi 7 mm cum tubo corollae adnatis, glabris, antheris syngensis, oblongis, 5 × 2 mm, basi sagittatis, thecis dehiscentibus poris basalibus; ovarium superum, 6 mm longum, parce sericeum, stylo 2.3 cm longo, glabro, stigmatate stomatomorpho; nectarium glandula duplo-connata, dorsalis, alba, glabra. Fructus capsula carnosae bivalvis, lateraliter compressa, ostendens massam conicam mollem constantem ex placentis et seminibus; semina nigra, striata, 0.7 mm longa, funiculis carnosis, albis, 2 mm longis.

TYPE: *ECUADOR*: LOS RÍOS: Río Palenque Science Center, km 56 between Quevedo and Santo Domingo, tropical wet forest, ca. 200 m alt., epiphyte on fallen tree trunk, 19 July 1971, *Wiehler 7106* (HOLOTYPE: SEL; ISOTYPES: K, NY, QCA, S, US).

DISTRIBUTION: Endemic to western Ecuador, in the Provinces of Azuay, Guayas, Los Ríos, Manabi, and Pichincha.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: LOS RÍOS: at type locality: 6 Sept. 1972, *Dodson & McMahon 5121* (SEL, RPSC); 16 Sept. 1973, *Dodson & Tan 5314* (SEL); epiphyte in *Pithecelobium* tree, back of leaves bright red, 23 July 1975, *Dodson 5878* (MO, RPSC, SEL, US); PICHINCHA: Hacienda Gloria Maria, vicinity of Santo Domingo, 18 May 1955, *Asplund 16408* (S); MANABI: Cerro Montecristi, cloud forest, 11 Oct. 1952, *Fagerlind & Wibom 596* (S); GUAYAS: E of Manglar Alto, in wet forest, 100-500 m alt., 26 June 1941, *Haught 3104* (US); AZUAY: road between Chacanceo and Molleturo, dense rich jungle between Río Blanco and Río Norcay, 1520 m alt., *Steyermark 52828* (US).

*Drymonia ecuadorensis* shows relationships to *D. stenophylla* (Donn. Smith) H. E. Moore from Panama and Costa Rica. The type plant was pollinated by males and females of *Euglossa gibbosa* Dressler in search of nectar.



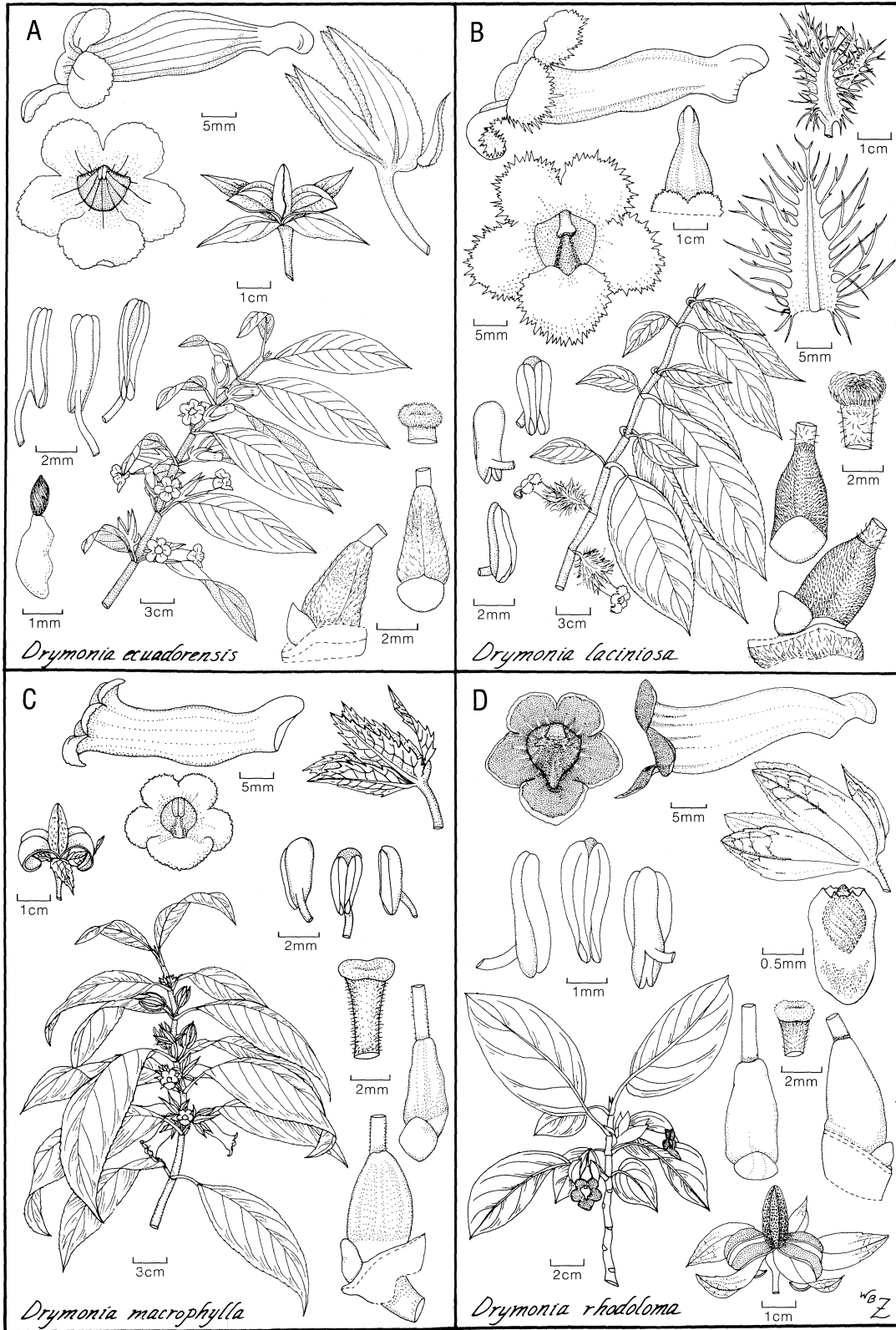


Plate 22

*Drymonia laciniosa* Wiehler, sp. nov.

(Plate 22:B).

A *Drymonia ecuadorensi* Wiehler foliis serratis sericeis et calycibus laciniosa statim dignoscenda.

Perennial, epiphytic, or rarely terrestrial shrub; branches about 3 m long, 1 cm in diam., mature stems light brown, glabrous, with internodes 3-6 cm long; leaf pairs either somewhat or strongly unequal, sparsely sericeous, the petioles 1-2 cm long, the lamina of the larger leaf ovate to elliptic, 12-15 by 5-8 cm, acuminate, serrate, obtuse at the base, coriaceous, green on both sides, the lamina of the smaller leaf varying in size from subequal to 6 by 3 cm. Inflorescence a reduced cyme in the leaf axils or on bare stems, 1-4-flowered, prophylls and subtending bracts minute, 3 by 1 mm, or caducous; pedicels 4-6 mm long; calyx lobes subequal, lanceolate, 2 cm long, strongly lacinate, light green, puberulous; corolla oblique in the calyx, 4.6 cm long, spurred, light yellow, pubescent, the limb lemon yellow, the tube inside ventrally with a longitudinal groove lined on each side with orange-red stripes, the dorsal interior of the tube with glandular trichomes; anthers 4, included, filaments 2.7 cm long, adnate for 7 mm to the base of the corolla tube, glabrous, the anthers syngenesous, oblong, 5 by 2 mm, sagittate at the base, the cells dehiscing by basal pores; ovary superior, 7 mm long, pubescent, the style 1.5 cm long, pilose, the stigma stomatomorphic; nectary a double-conate, dorsal, white gland. Fruit a fleshy, bivalved, laterally compressed capsule, splitting at maturity to display the maroon and yellow inside of the carpel walls and a gray, cone-shaped, soft mass of placentae, fleshy funiculi, and subglobose, striate, maroon seeds, 0.5 mm long.

TYPE: *ECUADOR*: LOS RÍOS: Río Palenque Science Center, km 56 between Quevedo and Santo Domingo, tropical wet forest, ca. 200 m alt., shrub along creek, 24 July 1971, *Wiehler & Dodson 71309* (HOLOTYPE: SEL; ISOTYPES: K, NY, QCA, S, US).

DISTRIBUTION: Endemic to Ecuador, known only from the type locality.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: LOS RÍOS: at type locality: woody, epiphytic shrub in deep forest along creek, cauliflorous, 3 Sept. 1972, *Dodson & McMahon 5054* (RPSC, SEL).

*Drymonia laciniosa* is distinct from its over 100 congeners in South America by its deeply fringed calyx lobes. It is, however, closely allied to *D. fimbriata* Morton from Costa Rica and western Panama. It differs as follows:

Character:	<i>D. fimbriata</i>	<i>D. laciniosa</i>
leaf pairs	equal	strongly unequal
leaf lamina	oblique at base	obtuse at base
filiform teeth of calyx lobes	unbranched	branched
corolla color	white, with limb strongly red-veined	light yellow, with limb lemon yellow
nectar guide and ventral groove	absent	present

**Drymonia rhodoloma** Wiehler, sp. nov.

(Plate 22:D).

*Drymoniae ecuadorensi* Wiehler aemulans, differt foliis carnosis coriaceis, forma loborum calycum, rubro-nervatorum, forma corollae, limbo rubro, et sulco ventraliter tubi corollae.

Perennial epiphytic subshrub; branches ascending, to 1 m long, 0.8 cm in diam., mature stems light brown, glabrous, with internodes 3-5 cm long; leaf pairs unequal, very sparsely sericeous, the petioles 2-8 cm long, the lamina of the larger leaf elliptic, 10-14 by 6-8 cm, acuminate, entire, oblique or obtuse at the base, fleshy-coriaceous, green on both sides, the smaller leaf similar. Inflorescence a reduced axillary cyme, 1-4-flowered, the prophylls and subtending bracts minute, 3 by 1 mm, or caducous, the pedicels 0.5-2.1 cm long; lateral and ventral calyx lobes equal, 2 by 1 cm, dorsal lobe 1.3 by 0.5 cm, all lobes lanceolate-elliptic or oblanceolate, yellow-green with the upper veins maroon, sparsely sericeous, with ciliate glandular trichomes; corolla oblique in the calyx, 3.3 cm long, spurred, the tube ivory-white, puberulous, the limb rose-red, the throat inside ventrally with a short groove, the dorsal interior of the tube with glandular trichomes; anthers 4, included, the filaments 1.6 cm long, adnate for 2.5 mm to the base of the corolla tube, glabrous, the anthers syngenesous, oblong, 3 by 1.2 mm, sagittate at the base, the cells dehiscing by basal pores; ovary superior, 7 mm long, pubescent with short glandular trichomes, the style 1 cm long, sericeous, the stigma stomatomorphic; nectary a double-connate, dorsal, white gland. Fruit a fleshy, bivalved, laterally compressed capsule, splitting and recoiling at maturity to display the greenish-brown inside of the carpel and a maroon, cone-shaped, soft mass of placentae, fleshy, globoid funiculi 2 mm in diam., and elliptic, pointed, yellow seeds 1 mm long.

TYPE: *ECUADOR*: LOS RÍOS: Río Palenque Science Center, km 56 between Quevedo and Santo Domingo, tropical wet forest, ca. 200 m alt., epiphyte on tree overhanging creek, sympatric with and in close proximity to *Drymonia coriacea*, *D. laciniosa*, and *D. macrophylla*, 24 July 1971, *Wiehler & Dodson 71311* (HOLOTYPE: SEL; ISOTYPES: K, NY, QCA, S, US).

DISTRIBUTION: Apparently endemic to western Ecuador, known only from three collections in Los Ríos and one collection in Esmeraldas.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: LOS RÍOS: at type locality: epiphyte on tree in cleared area, 19 Sept. 1973, *Dodson & Tan 5391* (SEL); same area, epiphyte in small tree in deep forest, 3 m from ground; frequent, 22 June 1974, *Dodson 5617* (RPSC, SEL); *ESMERALDAS*: San Lorenzo, primary rain forest, 18 Aug. 1967, *Sparre 18158* (S).

*Drymonia rhodoloma* is distinct by its maroon-veined calyx lobes and rose-red corolla lobes.

**Gasteranthus carinatus** Wiehler, sp. nov.

(Plate 23:D).

Herba terrestris perennis suffrutescens; caulis erectus, parce ramosus, ad 50 cm longus, 5-8 mm in diam., viridis, glabrescens, internodiis 3-6 cm longis. Folia per paria aequalia; petioli 2-3 cm longi, glabrescentes; lamina elliptica, 16-26 × 7-12 cm, acuminata, serrata, cuneata, obtusa vel obliqua, viridis, supra glabra, subtus glabrescens (laminis juvenibus puberulis), nervis secundariis 12-15. Inflorescentia cyma axillaris, composita, subumbellata, 10-26-flora, pedunculo communi 12 cm longo, glabro, prophylla bracteisque sub-

tenentibus destitutis, pedicellis 1 cm longis, glabris; lobi calycis subaequales, ovati,  $9 \times 6$  cm, obtusi, integri, aurantiaci, glabri; corolla in calyce horizontalis, tubulosa, 2.2 cm longa, calcarata, aurantiaca, glabra, in fauce contracta, limbo terminali parvo, lobis aequalibus, rotundatis,  $1.5 \times 1.5$  mm, dorso tubae carina 1.3 cm longa, 1.2 mm alta; stamina 4, inclusa, filamentis 8 mm longis, glabris, tubo corollae 4 mm adnatis, antheris syngenesi,  $1.5 \times 1.5$  mm, thecis confluentibus; ovarium superum, 3 mm longum, late compressum, aurantiacum, glabrum, stylo 9 mm longo, glabro, stigmatate bilabiato; nectarium glandula una dorsalis glabra. Fructus capsula bivalvis carnosa aurantiaca; semina non visa.

TYPE: *ECUADOR*: LOS RÍOS: Montañas de Ila, 12 km E of Río Palenque Science Center (located at km 56 on road between Quevedo and Santo Domingo), 650 m alt., forested hills on ridge of range, 9 April 1977, *Madison 3802* (HOLOTYPE: SEL).

DISTRIBUTION: Endemic to western Ecuador, only known from the Provinces of Los Rios and Cotopaxi.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: LOS RÍOS: Río Waija, ca. 6 km E of Río Palenque Science Center, plants in wet, open area along creek, 24 July 1971, *Wiehler 7128* (SEL, sterile); *COTOPAXI*: Río Guapara, about 20 km NW El Corazón, monsoon forest, about 250 m alt., 20 June 1967, *Sparre 17180* (S).

*Gasteranthus carinatus* has a comparatively small, tubular, non-gibbous, bright orange corolla. It is distinct from its congeners by the long, solid keel (carina) on the back of the corolla. The function of this structure in hummingbird pollination is unknown.

***Gasteranthus macrocalyx* Wiehler, sp. nov.**

(Plate 24:B).

Differt a *G. carinato* Wiehler caule, petiolo, pedunculo, calyceque villosa, flore grandi, sepalis longilanceolatis, corolla gibbosa, non-carinata, nectario pubescenti.

Terrestrial, perennial, suffrutescent herb, with erect, sparsely branching stem, to 50 cm tall, the young shoots green, villous; leaf pairs equal, the petioles 0.9-1.2 cm long, villous, the lamina elliptic, 10-15 by 4.5-7 cm, acuminate, serrate, cuneate, green, the young leaves sericeous-villous on both surfaces, the older leaves glabrescent above, the secondary veins 7-9. Inflorescence an axillary, ebracteate, pair-flowered, subumbellate cyme with 4 flowers, the peduncle 6-8 cm long, villous, the pedicels 8-10 mm long, villous; calyx lobes subequal, long-lanceolate, 2.5-3.5 cm long, sharply acuminate to subulate, subentire, green, villous; corolla horizontal in the calyx, 4.2 cm long, spurred, gradually expanding, with a distally protruding pouch and a narrow throat with a short limb, the lobes subequal, 4 by 6 mm, orange, sericeous; stamens 4, included, the filaments 1.3 cm long, glabrous, basally adnate to the tube of the corolla, the anthers syngenesous, 1.5 by 2 mm, the cells confluent; ovary superior, 5 mm long, laterally compressed, lanate, the style 1.3 cm long, sericeous, the stigma stomatomorphic-bilobed; nectary a dorsal, bilobed, pubescent gland. Fruit a bivalved, fleshy capsule; seeds not seen.

TYPE: *ECUADOR*: LOS RÍOS: Montañas de Ila, 12 km E of Patricia Pilar and Río Palenque Science Center, km 56 on road between Quevedo and Santo

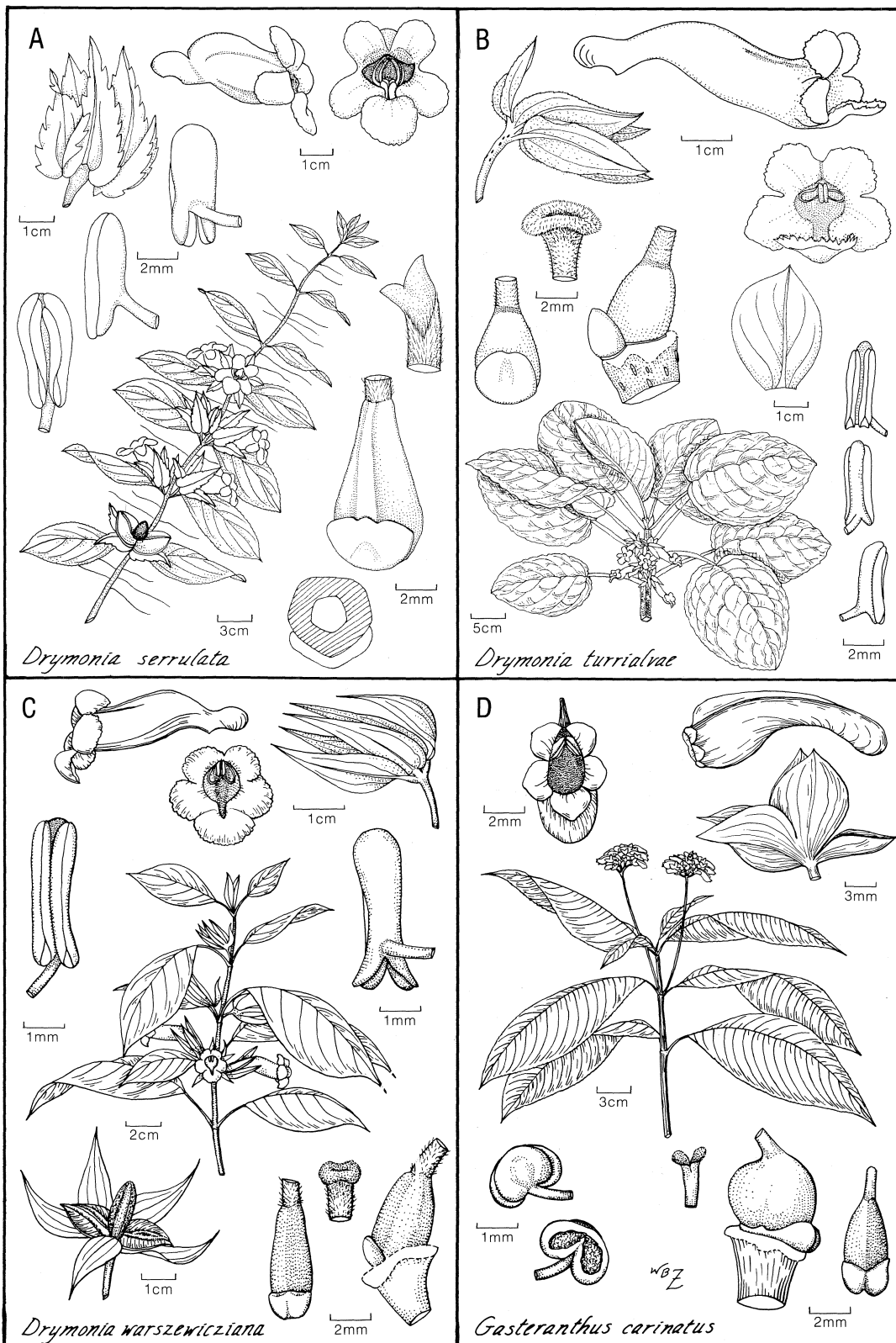


Plate 23

Domingo, forested hills on ridge of range, 9 April 1977, *Madison 3806* (HOLOTYPE: SEL).

DISTRIBUTION: Endemic to Ecuador, only known from the type locality.

*Gasteranthus macrocalyx* has a large, pouched corolla similar to other species of the genus, but differs from its congeners by its large and pointed calyx lobes.

*Gloxinia dodsonii* Wiehler, sp. nov.

(Plate 24:D).

Herba perennis, terrestris, humilis, sine rhizomatibus subterrestribus; caules erecti vel repentes, ad 15 cm longis, 3-5 mm in diam., virides, sericei, internodiis 2-8 cm longis; folia aequalia vel subaequalia, petiolis 1-3 cm longis, sericeis, laminis ovatis, 3.5-10 × 3-5 cm, apice acutis vel obtusis, crenatis, basi obtusis, bullatis, sericeis, supra viridibus, aliquando albo-nervatis, subtus viridibus vel purpureis. Inflorescentia cyma axillaris, redacta, uniflora, sine prophyllis et bracteis subtenentibus; pedicellus 3-4 cm longus, sericeus; hypanthium 7 mm longum, 10-porcatum, dense sericeum; lobi calycum aequales, elliptici, 10 × 4 cm, integri, virides, pubescentes; corolla obliqua, 2.5 cm longa, campanulata, tubo albo, sericeo, limbo interno violaceo, lilacino, vel raro albo, tubo introrsum ventraliter citreo, dorsaliter trichomatibus glanduliferis; stamina 4, inclusa, filamentis 5 mm longis, trichomatibus glanduliferis distaliter, antheris 2.5 × 1.5 mm; ovarium inferum, 6 mm longum, stylo 4 mm longo, rubro, trichomatibus glanduliferis, stigmatate stomatomorpho; nectarium annulus parvus, 5-lobatus, non-fungens. Fructus capsula seca, 12 mm longa, 5 mm in diam.; semina minuta, rugosa, brunnea, 0.3 mm in diam.

TYPE: *ECUADOR*: PICHINCHA: along Río Baba (= Río Quevedo), 28 km S of Santo Domingo de los Colorados, 350 m alt., 3 Nov. 1961, *Dodson & Thien 1173* (HOLOTYPE: SEL; ISOTYPES: BH, K, US, WIS).

DISTRIBUTION: Endemic to northwestern Ecuador, in the Provinces of Los Ríos, Pichincha, and Esmeraldas.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: LOS RÍOS: Río Palenque Science Center, km 56 between Quevedo and Santo Domingo, tropical wet forest, ca. 200 m alt., on forest floor in deep virgin forest in very scattered colonies, 1 March 1973, *Dodson 5244* (RPSC, SEL); Montañas de Ila, km 12 road from Patricia Pilar to 24 de Mayo, 540 m alt., cloud forest on western slope, area of virgin forest just being logged, frequent, 30 May 1976, *Dodson 6125* (SEL); same area, 650 m alt., *Madison 3797* (SEL); Hacienda Clementina, between Quevedo and Babahoyo, 30 m alt., 30 March 1953, *Fagerlind & Wibom 2624* (S); *ESMERALDAS*: Parroquia Concepcion: Playa Rica, 100 m alt., colonies, wet depression in dense forest, 21 Dec. 1936, *Mexia 8480* (BM, GH, NY, K, U); Río Mataje near San Lorenzo, 4 Sept. 1878, *F. C. Lehmann 211* (W).

The absence of a functional nectary indicates that *Gloxinia dodsonii* may be pollinated by male Euglossine bees in search of fragrance compounds, similar to the pollination syndrome in *G. perennis* (L.) Fritsch and many species of *Monopyle* with which the new species shares the shape and coloration of the corolla.

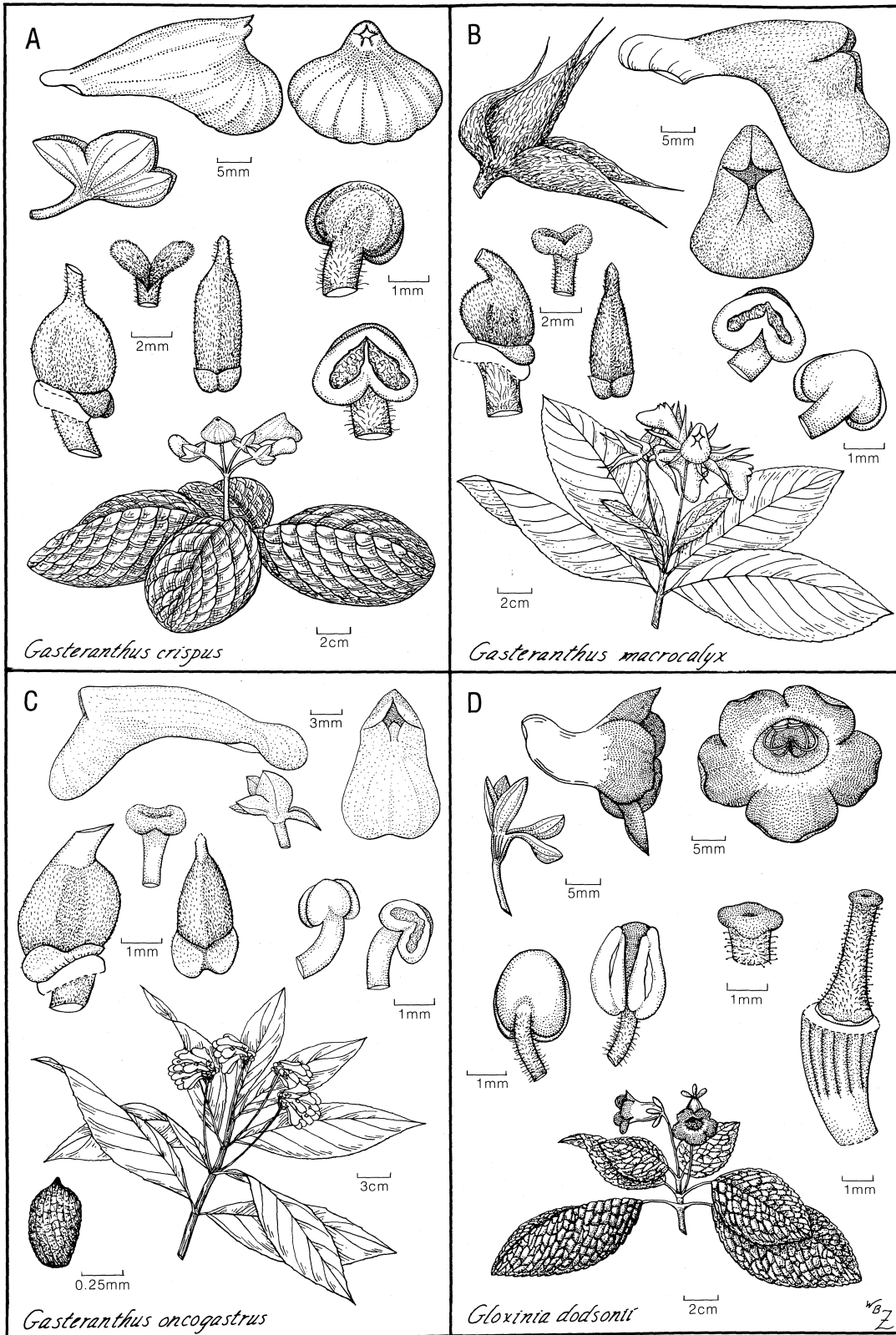


Plate 24

**Paradrymonia hypocyrta** Wiehler, sp. nov.

(Plate 25:C).

Differt a congeneris omnibus forma corollae saccata.

Perennial, epiphytic or terrestrial, suffrutescent plant with erect stem up to 30 cm tall, 2 cm in diam., light brown, sericeous; leaves equal or subequal, forming a rosette distally, the petioles fleshy, 8-20 cm long, 0.6-1 cm in diam., green or suffused with red, sericeous-hirsute, the lamina lanceolate-elliptic, 25-35 cm long 10-13 cm wide, acuminate, serrate, decurrent, coriaceous, blue-green and glabrous above, light green or flushed with rose-purple and hirsute below. Inflorescence an axillary, pair-flowered cyme of 4-10 or more flowers, the peduncle 1-3 cm long, bracts, pedicels and calyces fiery orange-red, the prophylls lanceolate, 3 by 1 cm, the subtending bracts narrowly lanceolate, 2-4 by 0.5 cm, the pedicels 3.6 cm long, sparsely hirsute; calyx 3.5 cm long, the lobes free for two-thirds the length of the calyx, lanceolate, serrate, with subulate teeth distally 5 mm long; corolla insertion into the calyx oblique, the tube 3 cm long, white, glabrous near the base, distally pilose, ventrally saccate, the limb constricted to a narrow opening with equal, rounded lobes, each 3 by 3 mm; anthers 4, included, the filaments 2.5 cm long, partially adnate to the corolla tube, glabrous, the anthers 2 by 2 mm, the cells dehiscing by longitudinal slits; ovary superior, 5 mm long, red, sericeous, the style 2.1 cm long, with pilose glandular trichomes, the stigma bilobed; nectary a double-connate, dorsal gland 3 mm tall. Fruit a fleshy, bivalved capsule like in *Episcia*, globose, 1.2 cm in diam.; seeds oblong, 1 by 0.4 mm, brown, striate, with a funicle 3 mm long.

TYPE: *ECUADOR*: LOS RÍOS: Montañas de Ila, km 12, road from Patricia Pilar to 24 de Mayo, 540 m alt., cloud forest on western slope, area of virgin forest just being logged, epiphyte low on small trees at 1 m level, common, 30 May 1976, *Dodson 6092* (HOLOTYPE: SEL: ISOTYPES: K, NY, QCA, S, US).

DISTRIBUTION: Endemic to Ecuador, known only from the region near the type locality.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: LOS RÍOS: near type locality, on ridge of range, terrestrial, or low epiphyte, locally abundant, 9 April 1977, *Madison 3819* (SEL).

The large, fiery orange-red calyces and the odd-shaped pure white corollas make *Paradrymonia hypocyrta* a showy species both in its native habitat and in cultivation. Among the over 40 species of *Paradrymonia* presently known to the author, this is the only species with a pouch-shaped corolla. The specific epithet refers to the now defunct genus *Hypocyrta* Martius in which the pouched corolla was the key character (from the Greek words *hypo*, below, under, and *cyrtos*, pouched, gibbose, saccate). The same type of corolla, pollinated by hummingbirds, is now known to occur in several gesneriaceous tribes and genera [cf. *Drymonia coriacea* (Oersted) Wiehler, Plate 21:D].

**Pentadenia ecuadorana** Wiehler, sp. nov.

(Plate 25:D).

*Columnnea sericea* Mansf., Biblioth. Bot. 116-145. 1937, nom. illegit.; non *C. sericea* (Hanst.) Kuntze, Rev. Gen. Pl. 2:472. 1891 [*Hypocyrta sericea* Hanst., in Mart., Flora Brasiliensis 8(1):412. 1864].

*Pentadenia sericea* (Mansf.) Wiehler, Phytologia 27(5):315. 1973. comb. illegit.



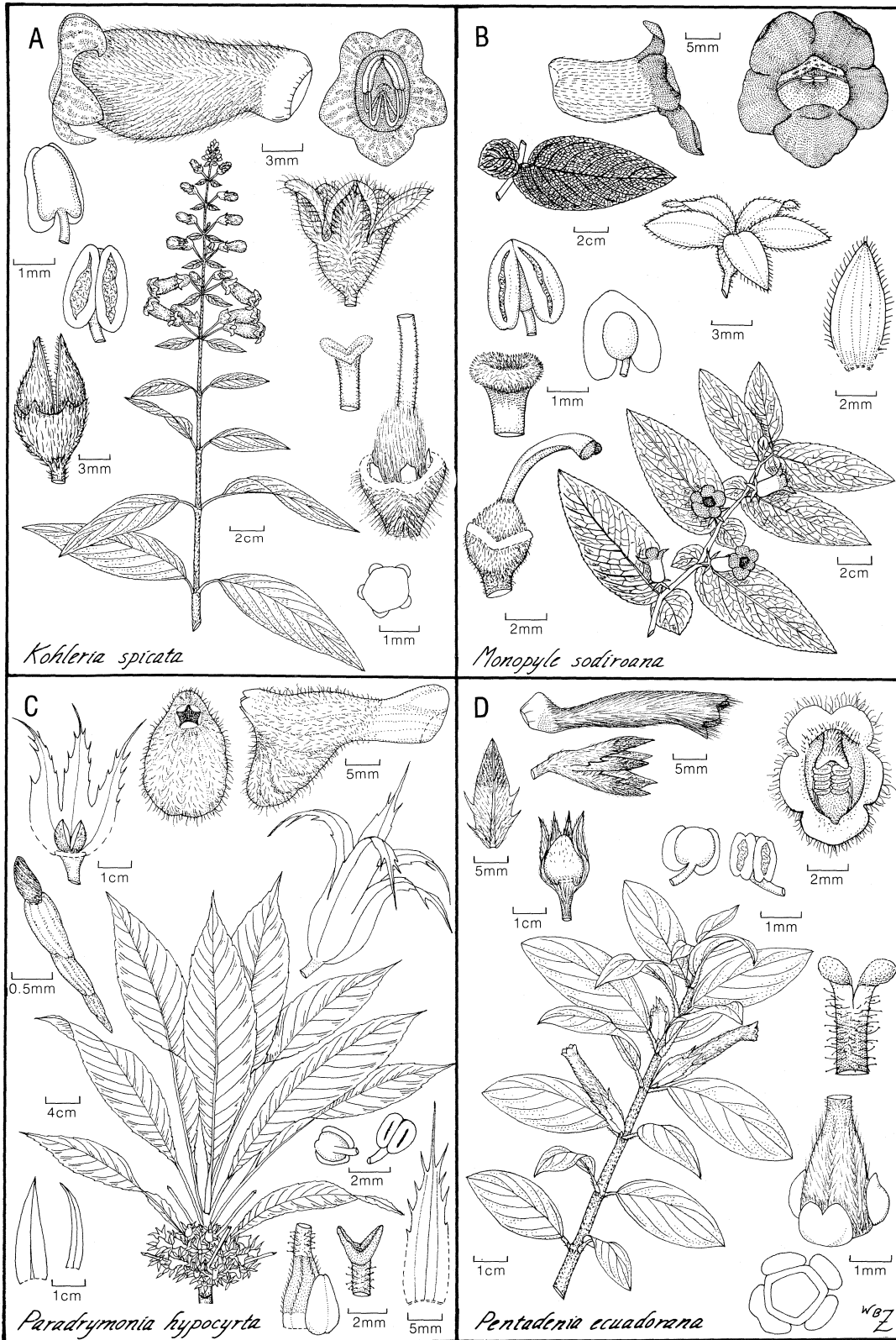


Plate 25

The holotype of *Columnea sericea* Mansf., *Diels 878*, was destroyed at B in 1943, as verified by my visit to Berlin-Dahlem in 1975; isotypes were not found in any other European herbarium. In compliance with the International Code of Botanical Nomenclature, (cf. Recommendation 72A), I select a new name, with a new type, for the taxon first described by Mansfeld in *Columnea* with the illegitimate epithet *sericea*. The combination *Pentadenia sericea* (Mansf.) Wiehler, 1973, is here considered as illegitimate, since it was not intended to be a new name, *Pentadenia sericea* Wiehler, especially in the absence of a type citation.

Herba perennis, epiphytica, suffrutescens, caules erecti, ascendentes, patentes, vel decedentes, parce ramosi, ad 60 cm longi, 4-6 mm in diam., virides vel fulvi, pubescentes, internodiis 3-5 cm longis; folia per paria aequalia sed inaequalia caulibus patentibus vel decedentibus, petioli 0.8-2.1 cm longi, sericei, lamina elliptica vel oblanceolata, 5-7.5 × 2-4 cm, acuminata, integra, cuneata, viridi, sericea. Inflorescentia cyma axillaris redacta, prophyllis ovatis vel lanceolatis, 3-5 × 2-2.5 mm, pedicello 5 mm longo, sericeo vel villosa, vinoso vel viridi; lobi calycis subaequales, lanceolati, 1.3 × 0.5 cm, serrati, sericei vel villosi, vinosi vel virides; corolla in calyce erecta, tubulosa, 3.4 cm longa, calcarata, cinnabarina, salmonea, vel raro lutea, sericea, lobis parvis subaequalis, 2 × 2 mm, tubo introrsum trichomatibus glanduliferis; stamina 4, inclusa, filamentis 3 cm longis, basi tubo corollae adnatis, trichomatibus glanduliferis pilosis, antheris syngenesi, 0.8 × 0.8 mm; ovarium superum, 4 mm longum, dense sericeum, stylo 3 cm longo, trichomatibus glanduliferis pilosis, stigmatibus bifido; nectarium 5 glandulae, 2 dorsalibus partialiter connatis vel discretis. Fructus bacca subglobosa, alba, pilosa, 1.2 cm in diam.; semina fusiformia, striata, lutea, 1.3 mm longa, funiculis carnosissimis, albis, 3 mm longis.

TYPE: *ECUADOR*: PASTAZA: Puyo, 1000 m alt., epiphyte on trees surrounding Hotel Turingia, abundant; also common in wet forest; corolla salmon-red, 30 July 1971, *Wiehler 7163* (HOLOTYPE: SEL; ISOTYPES: B, GH, K, MO, NY, QCA, S, U, US).

DISTRIBUTION: Endemic to central Ecuador, on both the eastern and western slopes of the Andes, in the Provinces of Pastaza, Napo, Tungurahua, Chimborazo, Morona-Santiago, Bolivar, Cotopaxi, Pichincha, Los Ríos, and Manabi. This is a remarkable pattern of dissemination, for the high Andes act usually as barriers for the distribution of species.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: PASTAZA: Mera, 1160 m alt., 26 Nov. 1958, *Harling 3371* (S); NAPO: Tena, woods E of town, near Evangelical Mission, corolla orange-red, 3 Aug. 1971, *Wiehler 71124* (SEL); TUNGURAHUA: Río Negro, 12250 m alt., (type locality of *Columnea sericea* Mansf., *Diels 989*), corolla dark salmon, 25 Aug. 1939, *Asplund 8554* (US); between Baños and Cashurco, 1300-1800 m alt., corolla salmon, 25 Sept. 1923, *Hitchcock 21769* (US); vic. of Río Margaritas, along Canelos trail, 1225 m alt., 19 March 1939, *Penland & Summers 145* (US); CHIMBORAZO: S of Naranjapata, on Río Chanchan, 550 m alt., corolla dark red, 27 Nov. 1933, *Schimpff 523* (B, fide Mansfeld; destroyed 1943, but worth citing); MORONA-SANTIAGO: Cordillera de Cutucú, western slope, trail from Logroño to Yaupi, 1200-1300 m alt., sprawling epiphyte, corolla salmon pink, calyx green with white hairs, Nov. 1976, *Madison, Bush & Davis 3192, 3322* (both SEL); BOLIVAR: Río San Antonio, foot hills of

Mount Chimborazo, 2600 m alt., Sept. 1860, *Spruce 6209* (BM, K); COTOPAXI: Río Guapara, about 20 km NW of El Corzón, ca. 250 (?) m alt., rain forest, 19 June 1967, *Sparre 17099* (S); PICHINCHA: Santo Domingo de los Colorados, calyx green with white sericeous hairs, corolla orange-red, 1 Dec. 1952, *Fagerlind & Wibom 1647* (S); same loc., Hacienda Zaracay, rain forest, ca. 500 m alt., 29 March 1967, *Sparre 15144* (S); LOS RÍOS: Río Palenque Science Center, km 56 between Quevedo and Santo Domingo, tropical wet forest, ca. 200 m alt., calyx green with white villous hairs, corolla cinnabar red, 20 July 1971, *Wiehler & Dodson 7107* (S, SEL, US); same loc., 12 Sept. 1972, *Dodson 5145* (QCA, SEL); same locality, 26 Oct. 1974, *Dodson 5667* (SEL); Río Waija, ca. 6 km N from Patricia Pilar and Science Center, 24 July 1971, *Wiehler 7129* (SEL); Montañas de Ila, ca. 12 km N of Science Center, cloud forest on western slope, 540 m alt., epiphyte in tree top, 30 May 1976, *Dodson 6102* (RPSC, SEL); MANABI: cloud forest on Montecristi, 450 m alt., calyx wine-red, sericeous, corolla yellow, 27 Dec. 1962, *Dodson & Thien 1736* (US).

*Pentadenia ecuadorana* is the most frequent and the most widely distributed species of *Pentadenia* in Ecuador. At the Río Palenque Science Center it is pollinated by the Little Hermit hummingbird *Phaethornis longuemareus* (Dodson, pers. comm.).

***Pentadenia zapotalana* Wiehler, sp. nov.**

(Plate 26:B).

A *Pentadenia ecuadorana* Wiehler foliis per paria valde inaequalibus, lamina obliqua subtus rubro-maculata, corolla flexa luteola distinguenda.

Epiphytic, perennial, suffrutescent herb with erect, ascending, spreading, or descending, sparsely branching stems, to 80 cm long, 0.4-1.2 cm in diam., green or tawny, weakly sericeous, with internodes 2-3 cm long; leaf pairs very unequal (but subequal in seedlings and erect branches), the petiole 3-9 mm long, sericeous, the larger lamina elliptic or oblanceolate, 6-12 by 2-5 cm, acuminate, usually entire (rarely serrulate or serrate), oblique, green and sericeous on both surfaces, below with prominent, apical, red tips (sometimes red spots throughout), the smaller lamina similar, 1.8 by 1.2 cm. Inflorescence a reduced, axillary cyme of 1-4 flowers, the prophylls, pedicels, and calyces light yellow-green, sericeous, with the oblanceolate prophylls 1-1.5 by 0.6 cm, the subtending bracts minute, 2 by 1 mm, the pedicel 0.5-1.1 cm long; calyx lobes subequal, lanceolate, entire (rarely serrate); corolla erect in the calyx, tubular, light yellow, long-sericeous, 2.8-3.2 cm long, constricted above the spur, bent downwards near the middle, the small lobes 1 by 2 mm; stamens 4, included, the pubescent filaments 2.6 cm long, adnate to the base of the corolla for 7 mm, the anthers syngenesous, 1.5 by 1.5 mm; ovary superior, 3 mm long, sericeous, the pubescent style 2.2 cm long, the stigma bifid; nectary consisting of 5 white glands, with the 2 dorsal ones partially connate. Fruit a globose, white, pilose berry, 1.5 cm in diam.; seed fusiform, striate, yellow, 1.2 mm long, with a fleshy funiculus 2.5 mm long.

TYPE: ECUADOR: LOS RÍOS: Nuevo Zapotal, 2 km N of Ventanas, ca. 20 km S of Quevedo, epiphyte on large, old mimosoid trees (*Pithecellobium saman*) used formerly for shade in coffee plantation, 20 June 1971, *Wiehler, Dodson, & Rich 71312* (HOLOTYPE: SEL; ISOTYPES: K, MO, NY, QCA, S, U, US).

DISTRIBUTION: Endemic to the western slope of the Ecuadorian Andes, in the Provinces of Pichincha, Los Ríos, Cotopaxi, Azuay, and Loja.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: PICHINCHA: Tandapi (Cornejo Astorga), road from Aloag to Santo Domingo, at confluence of Río Tandapi and Río Pilaton, 1500 m, 23 July 1967, *Sparre 17761* (S); LOS RÍOS: at km 21, road from Quevedo to Santo Domingo, near Buena Fé, 150 m alt., 15 Jan. 1976, *Dodson 5974* (SEL); COTOPAXI: along road between Quevedo to El Corazón, 150 m alt., 18 July 1975, *Dodson s.n.* (SEL, S, US); AZUAY: road between Chacanceo and Molleturo, dense rich jungle between Río Blanco and Río Norcay, 1520 m alt., epiphyte on lower branches of tree, 4 June 1943, *Steyermark 52825* (F); LOJA: Chiguango, ca. 70 km W of Loja, ca. 1600 m alt., 8 Feb. 1947, *Espinosa 1216* (US); without locality, Ecuador, 2800 m alt., 1974, *Bogner 944* (M).

In the vicinity of the Río Palenque Science Center, each of the three species of *Pentadenia* present grows epiphytically at different elevations. Thus they appear to be indicators of Holdridge's life zones, at least for western Ecuador (Dodson, pers. comm.). *Pentadenia zapotalana* occurs at about 150 m in tropical moist forest, and *P. ecuadorana* is abundant between 200-300 m in tropical wet forest, and *P. spathulata* is found only at elevations above 300 m in premontane forest. All three species, however, grow vigorously side by side in cultivation under glass at SEL.

The following 19 species of Gesneriaceae, already described, occur in the area of the Río Palenque Science Center. Herbarium specimens have been deposited at SEL, QCA, and RPSC. Many of the species are illustrated for the first time.

***Alloplectus sprucei*** (Kuntze) Wiehler (Plate 19:B).

*Phytologia* 27(5):327. 1973.

DISTRIBUTION: Ecuador: El Oro, Azuay, Chimborazo, Cotopaxi, Los Ríos, Pichincha, Esmeraldas; Colombia: Cauca.

***Codonanthe crassifolia*** (Focke) Morton (Plate 19:C).

*Fiediana*, Bot. 18:1159. 1938.

DISTRIBUTION: Peru to Colombia and the Guianas, and north to Guatemala.

***Codonanthe uleana*** Fritsch (Plate 19:D).

*Bot. Jahrb. Syst.* 37:492. 1906; *Selbyana* 1(2):162. 1975.

DISTRIBUTION: Upper Amazon Basin in Bolivia, Peru, Brazil, Ecuador, and Colombia, and from western Ecuador and Colombia north to southern Mexico. This is the first report from western Ecuador.

***Dalbergaria picta*** (Karsten) Wiehler (Plate 20:C).

*Phytologia* 27(5):318. 1973.

DISTRIBUTION: Eastern and western Ecuador, Colombia.

***Diastema eggersianum*** Fritsch (Plate 21:A).

*Bot. Jahrb. Syst.* 50:405. 1913.

DISTRIBUTION: Eastern and western Ecuador, Colombia, Panama.

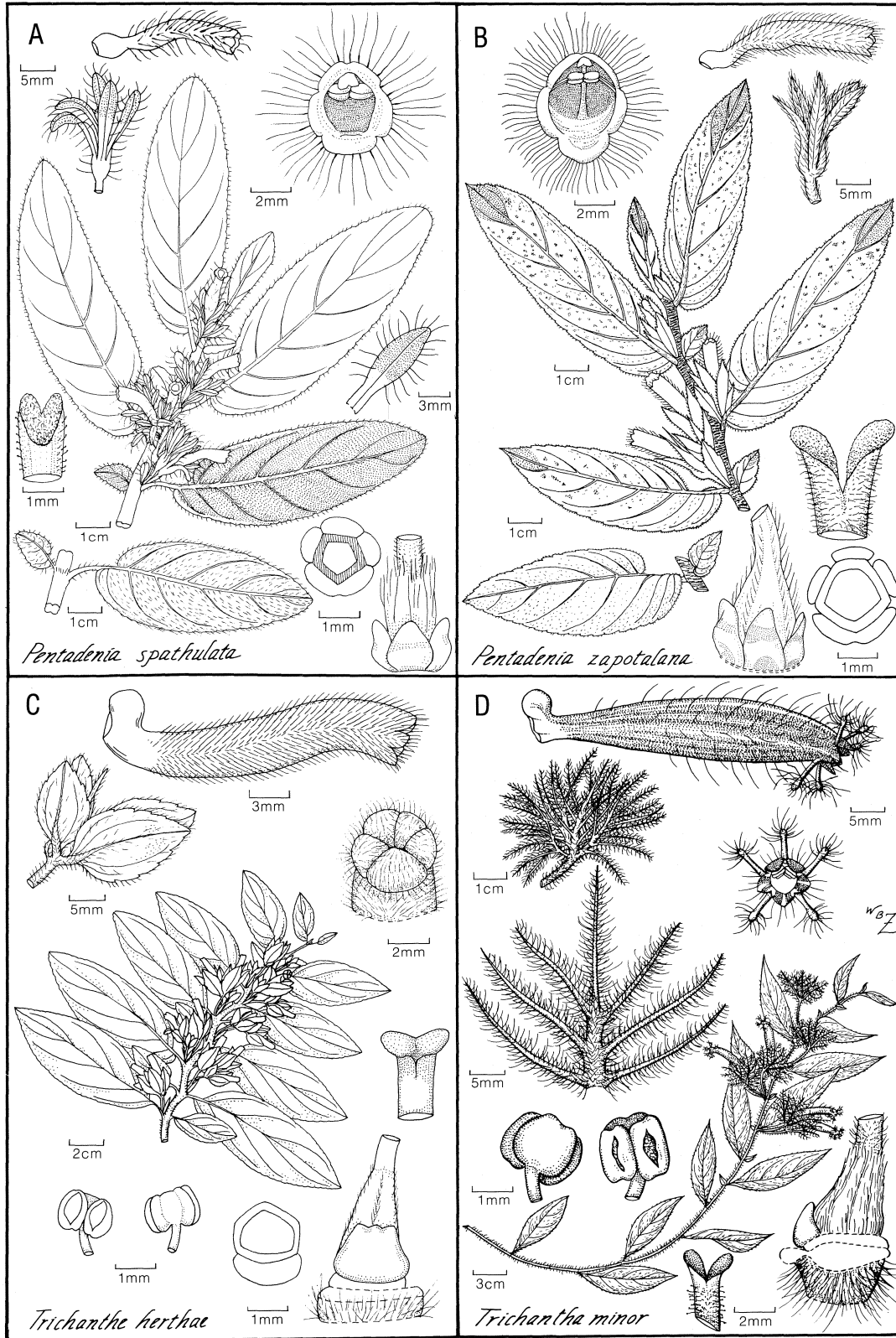


Plate 26

- Diastema scabrum** (Poeppig) Walpers (Plate 21:B).  
Repert. Bot. Syst. 6:401. 1847.  
DISTRIBUTION: Peru, western Ecuador, Colombia, Panama.
- Drymonia alloplectoides** Hanst. (Plate 21:C).  
Linnaea 34:358. 1865.  
DISTRIBUTION: Pacific slope of the Andes from Peru to Colombia, and north to Guatemala.
- Drymonia coriacea** (Oersted) Wiehler (Plate 21:D).  
Phytologia 27(5):325. 1973.  
DISTRIBUTION: Pacific slope of the Andes from Peru to Colombia, and north to Costa Rica.
- Drymonia macrophylla** (Oersted) H. E. Moore (Plate 22:C).  
Baileya 3(3):109. 1955.  
DISTRIBUTION: Peru to Colombia and Venezuela, Panama to Guatemala.
- Drymonia serrulata** (Jacq.) Mart. (Plate 23:A).  
Nov. Gen. & Sp. Pl. 3:59, 192 (= Index). 1829.  
DISTRIBUTION: The most widely distributed species of the genus from Bolivia and central Brazil north to Colombia, the Guianas, and Lesser Antilles, and from Panama to Mexico.
- Drymonia turrialvae** Hanst. (Plate 23:B).  
Linnaea 34:358. 1865.  
DISTRIBUTION: Western Ecuador, Colombia (including Antioquia and Santander), and from Panama to Costa Rica. The populations at the Río Palenque Science Center and near Santo Domingo in Pichincha represent the southernmost extension of this species.
- Drymonia warszewicziana** Hanst. (Plate 23:D).  
Linnaea 34:352. 1865.  
DISTRIBUTION: From Amazonian Peru, eastern and western Ecuador, most of Colombia and western Venezuela north to Panama and Costa Rica.
- Gasteranthus crispus** (Mansf.) Wiehler (Plate 24:A).  
Selbyana 1(2):154. 1975.  
DISTRIBUTION: Endemic to the Provinces of Pichincha and Los Ríos in western Ecuador, found mostly in the area east of Santo Domingo.
- Gasteranthus oncogastrus** (Hanst.) Wiehler (Plate 24:C).  
Selbyana 1(2):155. 1975.  
DISTRIBUTION: Endemic to western Ecuador, in the Provinces of El Oro, Azuay, Guayas, Los Ríos, Manabi, and Pichincha, at 100-600 m alt.

*Kohleria spicata* (Kunth) Oersted (Plate 25:A).

Centralameric Gesneraceer 27. 1858.

DISTRIBUTION: Peru to Colombia and Venezuela, and north from Panama to Mexico.

*Monopyle sodiroana* Fritsch (Plate 25:B).

Bot. Jahrb. Syst. 50:394. 1913.

DISTRIBUTION: Endemic to western Ecuador, in the Provinces of Los Ríos and Pichincha.

*Pentadenia spathulata* (Mansf.) Wiehler (Plate 26:A).

Phytologia 27(5):315. 1973.

DISTRIBUTION: Endemic to western Ecuador, in the Provinces of Los Ríos, Pichincha, and Cotopaxi.

*Trichantha herthae* (Mansf.) Wiehler (Plate 26:C).

Selbyana 1(1):34. 1975.

DISTRIBUTION: Endemic to western Ecuador, in the Provinces of Los Ríos, Pichincha, and Esmeraldas.

*Trichantha minor* Hooker (Plate 26:D).

Ic. Pl. 7:6, t. 660. 1844.

DISTRIBUTION: Western Andes of Ecuador (El Oro, Azuay, Guayas, Chimborazo, Los Ríos, Pichincha), and western Colombia (Nariño, Cauca, El Valle).

## II. NEW GENERA AND SPECIES FROM CENTRAL AND SOUTH AMERICA

(Plates 27-36)

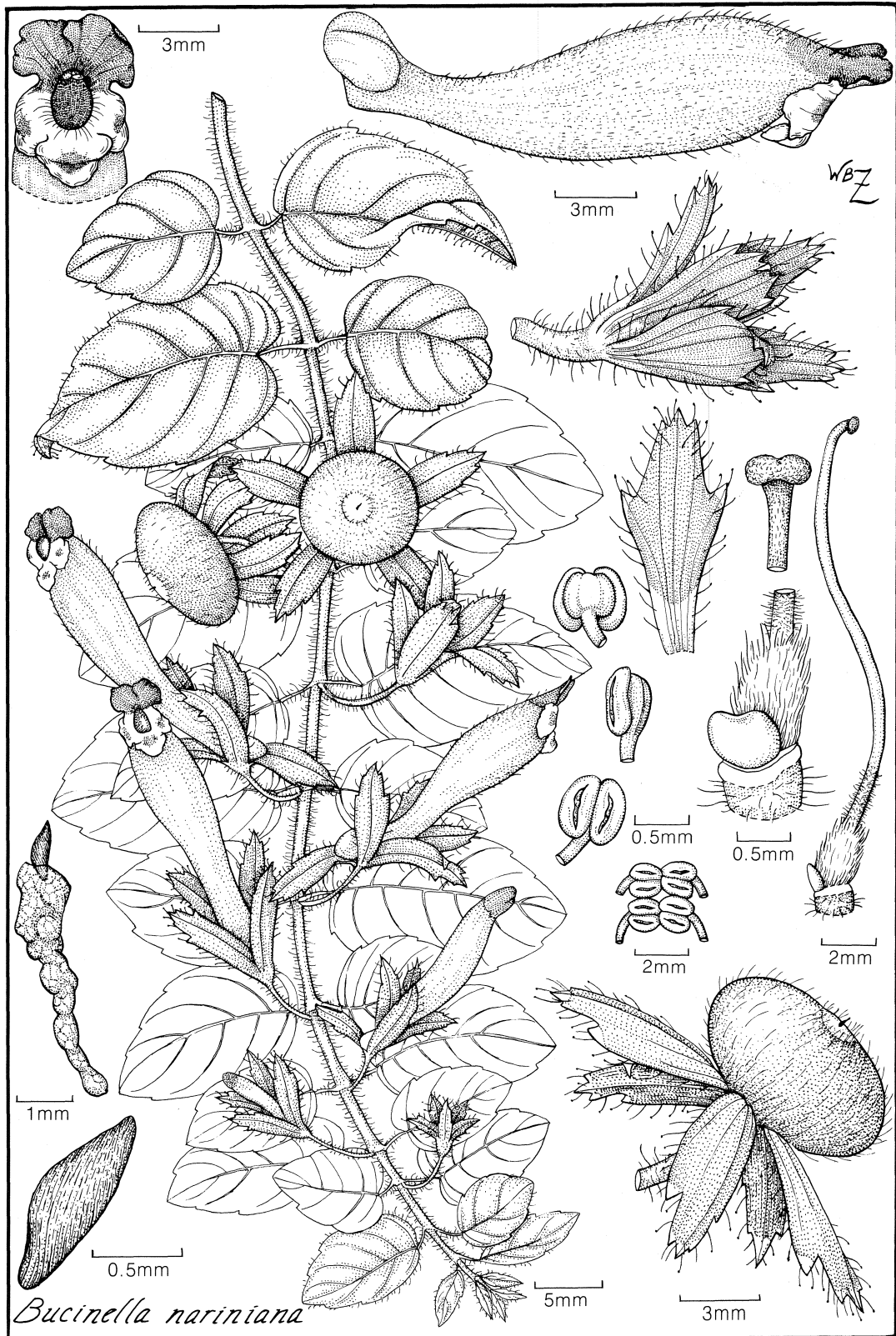
### *Bucinella* Wiehler, gen. nov.

Tribus Episcieae Endlicher. Herbae epiphyticae, perennes, foliis oppositis, per paria inaequalibus, inflorescentia axillari, calyce 5-lobato, corolla in calyce horizontali, tubo leviter sigmoideo, inflato, limbo valde obliquo, pollinibus granis oblatis, fructu bacca globosa, depressa.

*Bucinella* belongs in the alliance of the columneoid genera *Trichantha*, *Pentadenia*, *Dalbergaria*, and *Columnnea*. It is distinct from these in the shape of the corolla (see illustrations, Plates 27, 28:A), in the shape of the pollen grains, and in the shape of the flattened, depressed, lavender berry. A pollen study by N. H. Williams, to be published in the following issue of SELBYANA, shows that the pollen grains in the two species of *Bucinella* are definitely oblate, those of *Trichantha* and *Pentadenia* oblate spheroidal, in *Columnnea* prolate, and in *Dalbergaria* prolate spheroidal.

TYPE: *Bucinella nariniana* Wiehler.

ETYMOLOGY: From the Latin *bucina*, strongly curved trumpet, and the diminutive *-ella*, little, in allusion to the peculiar, curved shape of the corolla.



*Bucinella nariniana*



***Bucinella nariniana* Wiehler, sp. nov.**

(Plate 27).

Caules graciles, pendentes vel repentes vel scandentes, 1.5 mm in diam., basiramiferi, internodiis 1 cm longis, primo viridibus, demum griseis, sericeis; folia opposita-decussata, per paria conformia sed inaequalia; petioli 3-5 mm longi, sericei; lamina ovata, 1.5-2.3 × 0.8-1.5 cm, acuta vel obtusa, serrata, basi obliqua vel obtusa, supra glabra, subtus pilosa trichomatibus glanduliferis, nervis secundariis 4-6. Inflorescentia cyma axillaris, redacta, ebracteata, uniflora, pedunculo destituto, pedicello 0.8-1.2 cm longo, viridi, piloso-sericeo; lobi calyce subaequales lanceolati vel oblanceolati, 7 × 2-3 mm, serrati, virides vel vinoso-suffusi, pilosi trichomatibus glanduliferis; corolla in calyce obliqua, tubo 2.2 cm longa, calcarata, curvata, leviter inflata, lutea, sericea, limbo parvo, obliquo, lobis subaequalibus, 3 × 3 mm, lobis dorsalibus vinosis; stamina 4, inclusa, filamentis 1.8 cm longis, glabratis, tubo corollae 1 mm adnatis, deinde 8 mm connatis, antheris syngenesi, 1 × 1 mm, thecis parallelis; ovarium superum, 3 mm longum, album, sericeum, stylo 1.8 mm longo, basaliter piloso, apicem versus glabro, stigmatum stomatomorpho; nectarium glandula duplo-connata, dorsalis, alba, glabra. Fructus bacca subglobosa, depressa, 0.6 × 1.1 cm, lavendulacea, pilosa; semina fusiformia, 1.4 mm longa, striata, brunnea, funiculo carnosio, 4-5 mm longo.

TYPE: *COLOMBIA*: NARIÑO: at km 140, road between Altaquer and Junín, ca. 1100 m alt., rainforest, small epiphyte rambling over lower branches of trees, 10 May 1972, *Wiehler & N. H. Williams 72201* (HOLOTYPE: SEL; ISOTYPES: COL, GH, K, MO, NY, P, S, U, US, W).

DISTRIBUTION: Endemic to the Province Nariño in Colombia, on the Pacific slope of the Andes, at about 1000 m elevation.

ADDITIONAL MATERIAL EXAMINED: *COLOMBIA*: NARIÑO: El Páramo (= Junín), 1000 m alt., 1854-1857, *Triana 2479* (K, P); without locality, *Lobb 172* (K).

Note: The above two collections, *Triana 2479* ("s. n.") and *Lobb 172*, both presently on loan at SEL, were cited by B. Morley (Proc. Roy. Irish Acad. 74B:420, 1974) as identical with *Columnnea repens* (Hooker) Hanst. and as evidence that *C. repens* occurs in Colombia. My herbarium research indicates that there are no collections of *C. repens* from Colombia. This species is, in fact, endemic to Jamaica. Purdie collected the type there, as clearly indicated on the lectotype sheet of *C. repens* at K. Hooker erred in his description of this species by citing the Santa Marta mountains in Colombia as the place of origin. The type illustration (Bot. Mag. 72: t. 4250, 1846) is an exact match for the plant material from Jamaica, cultivated at SEL. Urban's later name, *C. jamaicensis* (1901), is thus a synonym of *C. repens*. A third Colombian collection cited by Morley in the same context as *C. repens*, *André 3375* (K), proved to be *Neomortonia rosea* Wiehler and was thus annotated on my visit to K in 1976.

*Bucinella nariniana* has horticultural value as hanging basket plant. Clones of the type material have been distributed by the Marie Selby Botanical Gardens to commercial growers and to the gesneriad societies.

***Bucinella paramicola* Wiehler, sp. nov.**

(Plate 28:A).

A *Bucinella nariniana* Wiehler foliis magnis lanceolatis et calyce grandi folioso differt.

Stems patent, scandent, or rambling, thin, 3-4 mm in diam., sparsely branching, the internodes 3-6 cm long, young stems green, older stems cinnamon brown, sericeous; leaf pairs very unequal, the petiole 0.5-0.9 mm long,

the lamina of the larger leaf lanceolate, 6-11 by 2.5-4.5 cm, acuminate, subentire, oblique or obtuse, coriaceous, bluish green and scabrous above, matted with long, silky, golden-yellow, or white sericeous hairs below, with 5-7 pairs of secondary veins, the lamina of the smaller leaf similar, 1-3 by 0.7-1.1 cm. Inflorescence an axillary, pair-flowered cyme with 4-8 flowers, borne above the leaves, the peduncle 6-9 mm long, sericeous, the prophylls broadly ovate, acute, 6 by 6 mm, white-suffused with wine-red, the subtending bracts similar, 4 by 4 mm, the pedicels 0.6-1 cm, sericeous; calyx lobes subequal, pleated, ovate, 1.5 by 1 cm, acute, serrate, ciliate, auriculate, white suffused with wine-red, externally covered with glandular hairs; corolla oblique in the calyx, the tube 2.4 cm long, spurred, curved, inflated, white near the base, orange above, sericeous, the limb small, oblique, the equal lobes 1.5 by 1.5 mm, with the dorsal lobes red; stamens 4, included, the filaments 1.9 cm long, glabrous, adnate for 1 mm to the base of the corolla tube, then connate for 8 mm, anthers syngenesous, 1 by 1 mm, with parallel cells dehiscent by longitudinal slits; ovary superior, 3 mm long, sericeous, the style 1.8 cm long, pilose near the base, glabrous above, the stigma stomatomorphic; nectary a double-connate, dorsal, white, glabrous gland. Fruit a subglobose, depressed, lavender-purple, pilose berry, 0.7 by 1.2 cm; seeds fusiform, 1.4 mm long, striate, brown, with fleshy funicles 4-5 mm long.

TYPE: *COLOMBIA*: NARIÑO: near Altaquer, ca. 1100 m alt. by waterfall, epiphyte on low tree branches and rambling over fallen, mossy tree trunks, stumps, and bushes, 10 May 1972, *Wiehler & N. H. Williams 72221a* (HOLOTYPE: SEL; ISOTYPES: COL, GH, K, MO, NY, P, S, U, US, W).

DISTRIBUTION: Endemic to the Pacific slope of the Colombian Andes in the Province of Nariño, at about 800-1200 m altitude. Both species occur in the same area and habitat, but sympatric populations were not observed.

ADDITIONAL MATERIAL EXAMINED: *COLOMBIA*: NARIÑO: at km 144, on road between Altaquer and Junín, epiphyte in rainforest, growing together with *Trichantha minor* cv. 'Firebird' (no. 72211), 10 May 1972, *Wiehler & Williams 72209* (SEL); El Páramo (= Junín), 1200 m alt., 1854-1857, *Triana 2492* (P); "near páramo," 1000 m alt., climbing in scrub, 7 July 1939, *Alston 8452* (S); near Buenavista, region of Barbacoas, slope towards Río Telembi, 840-200 m alt., 3-5 Aug. 1948, *Garcia-Barriga 13127* (US).

The plant habit, elegant leaves, and showy white, maroon, and orange flowers make *Bucinella paramicola* a worthwhile addition to the cultivated Gesneriaceae. The type collection, grown at the Marie Selby Botanical Gardens, does not have as showy leaves as the herbarium collections of Alston and Garcia-Barriga. This species will therefore be introduced to the public when better plant material becomes available.

### Cobananthus Wiehler

The reconstruction of generic delimitation within the neotropical Gesneriaceae, resulting in a new system of classification, necessitates the establishment of a new genus for a single species. It has become clear that this species does not fit into any of the existing, now more clearly defined genera. This species from the area of Cobán in Guatemala was described by Donnell Smith in 1899 as *Alloplectus calochlamys*. The large genus *Alloplectus* Martius contained until recently rather discordant elements. It was, in fact, a waste basket genus with rather vague delimitation, because one of the essen-



tial characters, the fruit, remained unknown. Herbarium specimens of Gesneriaceae usually do not reveal this kind of information. In 1962 Conrad Morton transferred *Alloplectus calochlamys* to the genus *Columnnea* which was at that time similarly ill-defined.

In 1963 this species was brought into cultivation from Guatemala by Dr. Robert E. Lee of Cornell University (acc. no. G-830). Since it did not set fruit on its own, I hand-pollinated plants of this species at Cornell in 1967. The fruit, recorded for the first time in 1968, is a bivalved capsule with rather thin carpel walls, similar to the capsule in *Chrysothemis*, *Episcia*, and *Nautilocalyx*. It is totally unlike the soft, white berry-fruit in *Columnnea* and *Trichantha*, and the fleshy display fruit in *Alloplectus* (as well as is *Codonanthopsis*, *Drymonia*, and *Nematanthus*) which has spreading or reflexed carpel walls exposing a colorful cone-shaped, soft mass consisting of placental tissue, large funiculi, and seeds (see Plates 19:A, 22:D). After a photo of the fruit of the Guatemalan species was sent to the Smithsonian Institution, Morton agreed with me in 1968 that this species does not belong in the genus *Columnnea* (pers. comm.).

The structure of the actinomorphic, star-shaped, bright orange calyx, the narrow tubular shape of the lemon-yellow corolla, and the papyraceous, capsular fruit place this handsome species outside all the genera cited above. The only solution appears to be the erection of a monotypic genus. The name *Cobananthus*, flower of Cobán, refers to the town of Cobán, capital city of the Province of Alta Verapaz in Guatemala. This species is endemic to the territory surrounding this picturesque town, where I found another specimen in 1975, now in cultivation at SEL (acc. no. W-2016). *Cobananthus calochlamys* grows both epiphytic and saxicolous in the hilly rain forest and along wooded creek banks.

**Cobananthus** Wiehler, gen. nov.

(Plate 28:B).

Ex affinitate *Alloplecti* Mart., *Trichanthae* Hooker, *Episciae* Mart., et *Nautilocalycis* Hanst., sed a genere primo secundoque capsula bivalvi papyracea, a tertio quartoque florum forma distinctus.

TYPE: *Alloplectus calochlamys* Donn. Smith; HOLOTYPE: von Tuerckheim 456 (US), May 1879, on cliffs near Sacoyoju (= 18 km NE of Cobán), 1200 m alt., Alta Verapaz, Guatemala.

**Cobananthus calochlamys** (Donn. Smith) Wiehler, comb. nov. (Plate 28:B).

*Alloplectus calochlamys* Donn. Smith, Bot. Gaz. (Crawfordsville) 26:437. 1899.

*Columnnea calochlamys* (Donn. Smith) Morton, Bol. Soc. Venez. Cienc. Nat. 23(101):78. 1962.

ADDITIONAL MATERIAL EXAMINED: GUATEMALA: ALTA VERAPAZ: Pansamá, 1100 m alt., July 1886, von Tuerckheim "456" [= PARATYPE: K, US (left side of holotype sheet)]; 1903, von Tuerckheim 8543 (K); on Guatemala road 5, 45 km NE of Cobán, on sides of 7 m rocky road cut, projecting slabs wet with seepage, 18 June 1970, Stone 2766 (DUKE); Cobán, cultivated at Pension Mona Blanca, 1963, R. E. Lee 6320, Cornell acc. no. G-830 (BH, SEL); road from San Pedro Carchá SE towards Senahú, about 50 km from Cobán, epiphyte near creek coming out of a cave, 4 March 1975, Wiehler & Kunkel 7559, SEL greenhouse acc. no. W-2016 (SEL, to be distributed).

**Codonanthe chiricana** Wiehler, sp. nov.

(Plate 28:C).

*C. luteolae* Wiehler affinis, sed caulibus crassis ascendentibus, internodiis brevibus, lobis calycum crassis brevibusque, corolla brevi et lata, calcare magno, nectario grandi, filamentis pilosis, et stylo pubescenti notabilis.

Perennial, epiphytic or saxicolous herb with ascending branches, to 15 cm long (in cultivation), freely branching, with internodes 0.5-2.2 cm long, 3-5 mm in diam., the young stems reddish, the older stems gray. Leaves opposite-decussate, equal, sparsely pubescent but appearing glabrous, the petiole 0.5-1.2 cm long, the lamina broadly ovate, acute, subentire to weakly crenate, decurrent, succulent, green, with red margins, and with about 24 dot-like extrafloral nectary glands on the abaxial surface, the secondary veins invisible. Inflorescence a reduced axillary cyme of 1 flower, the peduncle 0.5 mm long, the prophylls minute, 1 by 0.3 mm, the pedicel 3-4 mm long, red, pubescent; calyx 1 cm long, the lobes subequal, lanceolate, thick, 5-7 mm long, pubescent, green, with red tips; corolla oblique in the calyx, tubular, 3.5 cm long, white, pubescent, with a large, red-spotted spur, the tube gradually expanding, 1 cm in diam. near the limb, the lobes patent, subequal, 0.9-1.1 cm long, erose, the tube inside with glandular hairs; stamens 4, included, the filaments 2.0-2.2 cm long, adnate to the base of the corolla tube for 6 mm, proximally glabrous, distally short-pilose, the anthers syngeneous in pairs, white, 2 by 2 mm, the thecae dehiscent by a central pore; ovary superior, 9 mm long, green, pubescent, the style 2.1 cm long, white, pilose, the stigma stomatomorphic, densely covered with short glandular hairs; nectary consisting of 4 connate dorsal and lateral glands and 1 free ventral gland, white, glabrous. Fruit (immature) a pointed, fleshy berry or capsule, 1.6 cm long, 7 mm in diam., red, pubescent; seeds fusiform, striate, wine-red, 3 mm long, almost covered by a fleshy funiculus 3 mm long.

TYPE: PANAMA: CHIRIQUÍ: near Valle Hornito and Cerro Hornito, Fortuna Dam site, 82° 15' W, 8° 44' N, 1000-1400 m alt., cuttings collected by Dressler s.n., August 1976, cultivated at SEL, acc. no. W-2267, 1 July 1977, *Wiehler 77110* (HOLOTYPE: SEL; ISOTYPES: K, MO, PMA, US).

DISTRIBUTION: Apparently endemic to Panama, only known from the type locality in Chiriquí.

*Codonanthe chiricana* with its large white corollas is a second species endemic to Panama. It shows some relationship to the yellow-flowered *C. luteola* from Cerro Jefe and the Cartí area in the Province of Panamá. The new species differs from the latter in many details, but most strikingly in the compact and upright habit. It will be a valuable addition to the showy gesneriads in horticulture.

**Codonanthe corniculata** Wiehler, sp. nov.

(Plate 28:D).

Habitu plantae et aspectu floris *C. crassifoliae* (Focke) Morton similis, praecipue differt calyce non rubro-punctato, corollae tubo inflato, staminum filamentis pubescentibus, antherarum thecis corniculatis, ovario pubescenti, et bacca rosea.

Perennial, epiphytic herb with thin, pendent stems (in cultivation) to 1 m long, freely branching, with the internodes 2-3 cm long, 1-2 mm in diam., green; stems, leaves, pedicels, and calyx minutely pubescent but appearing glabrous; leaves opposite-decussate, equal, the petioles 0.5-1 cm long, the lamina elliptic, acute, entire, decurrent, succulent, green, with a red flush

and 15-25 dot-like extrafloral nectaries below, the secondary veins invisible. Inflorescence a reduced, axillary cyme of several flowers (but appearing one at a time), the peduncle reduced to 1 mm, the prophylls minute or absent, the pedicel 0.8-1.7 cm long; calyx 8 mm long, the lobes subequal, lanceolate, 5 by 1.5 mm, green, suffused with red; corolla oblique in the calyx, 3.3 cm long, white, with a long, curved spur, the tube gradually expanding, inflated near the middle when seen from above, the limb spreading, with subequal, rounded, erose lobes 7 by 7 mm, the inside of the tube with short, pilose hairs above and a yellow area below; stamens 4, included, the filaments 2.3 cm long, adnate to the base of the corolla tube for 6 mm, pubescent, the anthers syngenesous in pairs, white, 1 by 1.7 mm, the thecae dehiscing by a central pore adorned with horns; ovary superior, 4 mm long, red, pubescent, the style 1.6 cm long, white, glabrous, the stigma stomatomorphic, covered with short glandular hairs; nectary a double-connate dorsal gland, white, pubescent. Fruit an ovoid, pointed, shiny pink, pubescent berry, 1.2 cm long, 1.2 cm in diam.; seeds elliptic, striate, magenta, 1.8 mm long, enveloped by a fleshy, white funiculus 3.5 mm long. Chromosome number:  $n = 16$  (Wiehler, Selbyana 1:161, 1975).

TYPE: *PERU*: LORETO: near Iquitos; cuttings collected by *Dressler s.n.* in 1965 and sent to Cornell University (acc. no. G-932); type specimens from clone of this collection, cultivated at SEL under the same acc. no., 1 July 1977, *Wiehler 77111* (HOLOTYPE: SEL; ISOTYPES: F, K, MO, NY, US).

DISTRIBUTION: Known only from the type collection in Amazonian Peru.

*Codonanthe corniculata* (the epithet means "with small, horn-like appendages," in reference to the anther cells) has been grown for several years by members of the gesneriad societies either as *C. sp.* G-932 or as *C. crassifolia* variant G-932. *Codonanthe crassifolia* differs from the new species by the red extrafloral nectaries found below the sinuses of the calyx lobes, the straight, non-inflated corolla tube as seen in dorsal view, the glabrous stamen filaments, the anther cells without horns, the glabrous or glabrescent ovary, and the bright red berries. *Codonanthe crassifolia* also occurs near Iquitos where Dressler collected it together with *C. corniculata* and *C. uleana* (Cornell acc. nos. G-928 and G-936, respectively). Seedlings of *C. corniculata* are uniform and agree with the parental stock, precluding a hybrid origin of this species (*C. crassifolia* × *C. uleana*).

***Columnea canarina* Wiehler, sp. nov.**

(Plate 29:A).

Species haec a *Columnea nicaraguensi* Oersted differt internodiis brevioribus, foliis majoribus, lamina subter rubro-maculata, et calyce corollaque canarina.

Epiphytic, perennial, suffrutescent herb with erect, ascending, or spreading stems to 50 cm long, 0.5-1.2 cm in diam., the internodes 0.9-2.5 cm long, green, sericeous, older stems tawny; leaf pairs strongly unequal, the petiole subsessile to 5 mm long, sericeous, the lamina of the larger leaf elliptic or oblanceolate, 12-20 by 4-5.5 cm, acuminate, dentate, oblique or obtuse, shiny dark green and sparsely strigose above, lighter green with dark red tips and sometimes additional red spotting below, sparsely sericeous, the midvein and the 5-7 secondary veins densely sericeous, the lamina of the smaller leaf similar, 7 by 3 cm. Inflorescence a reduced cyme of 2-4 flowers



in the axils of the larger leaves, the peduncle absent, the bracts lanceolate, entire, yellow, sericeous, with the prophylls 2 by 0.6 cm and the subtending bracts 1.6 by 0.2 cm, the pedicel 1.5-2 cm long, yellow, densely sericeous; calyx lobes subequal, lanceolate-elliptic, 3.6 by 0.9 cm, acuminate, serrate, yellow, sericeous; corolla erect in the calyx, 6.5 cm long, spurred, the galea 1.4 by 1.4 cm, the lateral lobes triangular, 1 cm long, the ventral lobe linear, 1.9 by 0.5 cm, canary yellow, pilose-sericeous outside, with short glandular trichomes inside; stamens 4, the filaments 5.7 cm long, adnate to the base of the corolla for 2 mm, glandular pubescent, the anthers exposed at male phase of anthesis, syngenesous, oblong, 2.2 by 1.2 mm; ovary superior, 4 mm long, sericeous, the style 6.2 cm long, with short erect glandular trichomes, the stigma bilobed; nectary a double-connate, dorsal gland. Fruit not yet seen.

TYPE: PANAMA: CHIRIQUÍ: near Valle Hornito and Cerro Hornito, Fortuna Dam site, 82° 15' W, 8° 14' N, 1000-1400 m alt., cuttings collected by Dressler s.n. in Aug. 1976, plants cultivated at SEL, acc. no. W-2264, 2 July 1977, Wiehler 77112 (HOLOTYPE: SEL; ISOTYPES: K, MO, NY, PMA, US).

DISTRIBUTION: Endemic to Panama, in the adjoining subcloud-forest areas of the Provinces of Bocas del Toro and Chiriquí, at altitudes of 800-1400 m.

ADDITIONAL MATERIAL EXAMINED: PANAMA: BOCAS DEL TORO: Trocha 3 de Noviembre, Los Gutiérrez, 870 m alt., leaf dark green above, below dull green with tip dark red, calyx and corolla canary yellow; 7 Jan. 1977, Dressler 5565 (SEL).

*Columnnea canarina* is closely related to *C. nicaraguensis* which occurs at elevations from sea level to 300 m on the Atlantic side of Nicaragua, Costa Rica, and Bocas del Toro in Panama, and then again above El Valle in Coclé. The new species differs from *C. nicaraguensis* in habit, red-spotted leaves, and yellow flowers.

*Columnnea dressleri* Wiehler, sp. nov.

(Plate 29:B).

*Columnnea zebrinae* Raymond affinis, a quo foliis non rubro-maculatis, calyce serrato-lacinato, dense sericeo, corolla rubra, staminum filamentis rubris differt.

Epiphytic, perennial, suffrutescent herb with erect, ascending, or spreading stems to 70 cm long or longer, 0.6-1.2 cm in diam., the internodes 1-2 cm long, green, sericeous, the older stems tawny and glabrescent; leaf pairs strongly unequal, the petiole 3-7 mm long, sericeous, the lamina of the larger leaf elliptic, 8-15 by 3-5 cm, long acuminate, subentire, oblique, shiny dark green and glabrous above, lighter green and sparsely sericeous below, with 3-5 pairs of sericeous secondary veins, the lamina of the smaller leaf similar on upright stems but caducous on spreading branches. Inflorescence a reduced axillary cyme of 1-4 flowers, the prophylls minute, ovate to lanceolate, 4 by 2-3 mm, green, sericeous, the subtending bracts similar, the peduncle absent, the pedicels 0.4-1.2 cm long, sericeous; calyx lobes subequal, lanceolate, 1.8 cm long, serrate-laciniate, green with maroon centers, densely sericeous on both sides; corolla erect in the calyx, 7.6 cm long, spurred, the galea 1.5 by 2.3 cm, the lateral lobes triangular, 8 mm long, the ventral lobe linear-elliptic, 2.4 cm long, scarlet, with a white area below the sinuses of the ventral lobe, externally with long erect glandular trichomes and short appres-



ed hairs, with short glandular trichomes inside; stamens 4, the filaments 7 cm long, adnate to the base of the corolla tube for 1 mm, red, pubescent proximally, distally glabrous, the anthers exposed at the male phase of anthesis, syngenesous, oblong, 6 by 2 mm; ovary superior, 6 mm long, glabrous for the lower two-thirds, long-sericeous apically, the style 7 cm long, glabrous proximally, pilose from the middle to the bilobed stigma; nectary a double-connate, dorsal gland. Fruit a subglobose, white berry, 1.5 cm in diam., seeds fusiform, 1.1 mm long, striate, light yellow, with a fleshy funicle 2.2 mm long.

TYPE: PANAMA: CHIRIQUÍ: Cerro Fortuna, 1200-1400 m alt., epiphyte, 16 Aug. 1976, *Dressler 5400* (HOLOTYPE: SEL).

DISTRIBUTION: Endemic to cloud-forests in Panama, in the Provinces of Chiriquí and Veraguas.

ADDITIONAL MATERIAL EXAMINED: PANAMA: CHIRIQUÍ: type locality, clone of type plant, collected by Dressler at the same date and cultivated at SEL under acc. no. W-2266, 4 July 1977, *Wiehler 77113* (K, MO, NY, PMA, SEL, US), Cerro Colorado, above San Félix, 1300-1400 m alt., cuttings collected by *Dressler s.n.* Feb. 1977, cultivated at SEL, acc. no. 2377, 4 July 1977, *Wiehler 77114* (SEL); VERAGUAS: "Buenos Aires," N slope of ridge E of Cerro Tute, ca. 950 m alt., epiphyte, stems to about 70 cm, corolla red with a little yellow at lower sinuses, 24 Oct. 1975, *Dressler 5200* (SEL); a clone of the same collection in cultivation at SEL, acc. no. W-2176, 4 July 1977, *Wiehler 77115* (MO, SEL, US).

*Columnnea dressleri* belongs into the *C. zebrina* alliance, but differs from that species by the absence of the translucent red leaf tips, the serrate-laciniate calyx lobes, densely sericeous on both sides, the scarlet corolla, and the red stamen filaments.

***Columnnea gallicauda* Wiehler, sp. nov.**

(Plate 29:C).

Differt a *Columnnea zebrina* Raymond foliis longioribus et acuminatioribus, calyce serrato-laciniato utrinque dense sericeo, et corollae dorso galeaque atromarronina vel atrescenti.

Epiphytic, perennial, suffrutescent herb with ascending, spreading, or descending stems to 1 m long, 0.6-1.3 cm in diam., the internodes 2-7 cm long, the young shoots green, sericeous, the older parts gray, glabrescent; leaf pairs strongly unequal, the petiole subsessile, to 4 mm long, the lamina of the larger leaf long-lanceolate, 20-30 by 4-6 cm, extremely acuminate, subentire, oblique, shiny dark green and glabrous above, lighter green below, sometimes completely or only distally suffused with red, the tip red-translucent for 2-5 cm, glabrescent, the mid-vein and the 6-10 pairs of secondary veins sericeous; the lamina of the smaller leaf similar on ascending branches, but minute or caducous on spreading or descending stems. Inflorescence a reduced axillary cyme of 2-4 flowers, the prophylls ovate, 1 by 0.6 cm, acuminate, entire, green, in the center maroon, shiny white-sericeous, the subtending bracts smaller but similar, the peduncle absent, the pedicels 0.6-1.2 cm, green sericeous; calyx lobes subequal, lanceolate, 3.5 cm long, acuminate, serrate-laciniate, green suffused with maroon, densely sericeous with long, shiny white hairs on both surfaces; corolla erect in the calyx, 8.5 cm long, spurred, the galea 1.5 by 1.8 cm, the lateral lobes triangular, 6 mm long, the ventral lobe linear, 2.1 by 0.4 cm, the lower tube orange-yellow with dark maroon stripes,

the back of the upper corolla, the galea and the lateral lobes dark maroon appearing dull black, externally with long, pilose, glandular trichomes and a layer of short, appressed hairs, the tube inside with short glandular trichomes; stamens 4, the filaments 7 cm long, adnate to the base of the corolla tube for 1 mm, ivory-yellow, pubescent proximally, distally glabrous, the syngenesous anthers exposed at the male phase of anthesis, oblong, 3.5 by 1.5 mm; ovary superior, 5 mm long, sericeous, the style 7 cm long, glabrous proximally, distally pilose with short glandular hairs, stigma bilobed; nectary a double-connate, dorsal, white, glabrous gland. Fruit a subglobose, white berry, 1.7 cm in diam.; seeds fusiform, 1.2 mm long, striate, yellow, with a fleshy funicle 3 mm long.

TYPE: PANAMA: VERAGUAS: 12-15 km NW of Santa Fé, between third branch of Río Santa Maria and continental divide, 650-800 m alt., epiphyte, 29-30 March 1975, *Dressler 5000* (HOLOTYPE: SEL).

DISTRIBUTION: Endemic to Panama, known only from the type locality in Veraguas.

ADDITIONAL MATERIAL EXAMINED: PANAMA: VERAGUAS: clone of type plant, from cuttings sent by Dressler to SEL, greenhouse acc. no. W-2179, 30 Dec. 1976, *Wiehler 76243* (K, MO, NY, PMA, SEL, US).

*Columnea gallicauda*, the rooster-tail plant, belongs, like *C. dressleri*, to the alliance of *C. zebrina* Raymond. It differs from the latter by the longer, elegant leaves and by the almost black upper part of the corolla, but chiefly by the long and thick, green and maroon, serrate-laciniate calyx lobes which are densely, shiny white sericeous on both sides. The calyx, in *C. zebrina* is thin, yellow-green, subentire, sparsely sericeous outside, glabrous inside, with a small sericeous area near the base next to the ovary.

***Columnea hiantiflora* Wiehler, sp. nov.**

(Plate 29:D).

Habitu et foliis *C. lineari* Oersted, corolla *C. incarnato* Morton similis, ab utroque calyce laciniato distincta.

Epiphytic, perennial, suffrutescent herb with erect, ascending, or spreading stems to 40 cm long (in cultivation), 4-6 mm in diam., the internodes 0.5-1.2 cm long, the young shoots green, sericeous, the older parts tawny, sericeous; leaf pairs equal to subequal, the petiole 5-9 mm long, sericeous, the lamina narrowly elliptic, 5.5-8.5 by 1.2-2.2 cm, acute to acuminate, subentire, decurrent, green, sericeous on both sides, with the 4-5 secondary veins sometimes flushed with pink. Inflorescence a reduced axillary, one-flowered cyme, the peduncle absent, the prophylls minute, linear, 6 by 1 mm, sericeous, the pedicel 1 cm long, green, sericeous; calyx lobes subequal, lanceolate, 1.9 cm long, acuminate, serrate-laciniate with 5-6 teeth, 3 mm long on each side, green, sericeous outside, glabrous adaxially; corolla erect in the calyx, 7.5 cm long, spurred, the galea 1.6 by 2.2 cm, the lateral lobes triangular, 1.2 cm long, the ventral lobe oblong, 1.8 by 1 cm, scarlet red, the sinuses of the lobes yellow, the throat streaked yellow within, externally sparsely pilose, internally with short glandular trichomes; stamens 4, the filaments 5.5 cm long, adnate to the base of the corolla tube for 1 mm, red, pubescent with glandular trichomes, the syngenesous anthers exposed at the male phase of anthesis, oblong, 3 by 1.1 mm; ovary superior, 3 mm long, sericeous, the style 6.5 cm long, with short, pilose, glandular trichomes, the stigma stomatomorphic-bilobed; nectary a double-connate, dorsal, white, glabrous gland. Fruit not yet seen.

TYPE: PANAMA: CHIRIQUÍ: near Valle Hornito and Cerro Hornito, Fortuna Dam site, 82° 10' W, 8° 44' N, 1100-1200 m alt., epiphyte, 24 Sept. 1976, *Dressler 5443* (HOLOTYPE: SEL).

DISTRIBUTION: Endemic to Panama, known only from the type locality in Chiriquí.

ADDITIONAL MATERIAL EXAMINED: PANAMA: CHIRIQUÍ: type locality, clone of the holotype, collected by Dressler at the same date, cultivated at SEL, greenhouse acc. no. W-2268, 4 July 1977, *Wiehler 77116* (K, MO, NY, PMA, SEL, US).

*Columnea hiantiflora* is similar in habit and leaf shape to *C. linearis* Morton from Costa Rica, which has, however, glabrous leaves and a much smaller, pink corolla. The wide-mouthed corolla (*hians*, Latin for gaping) is nearly identical with that of *C. incarnata* Morton, also endemic to Chiriquí, but that species has a much larger, leafy, glabrous calyx with almost entire margins.

*Dalbergaria ampliata* Wiehler, sp. nov.

(Plate 30:A).

A *Dalbergaria sanguinea* (Pers.) Steudel foliis brevioribus coriaceis supra pilosis, calycis lobis ampliatis lacinis ramosis 5-6, corolla rubro- et luteo-vittata, pilosa, staminum filamentis pubescentis, ovario glabro apice piloso dig-noscenda.

Epiphytic, perennial, suffrutescent herb with erect, ascending, or spreading, sparsely branching stems to 40 cm long, 0.8-1 cm in diam., the internodes 2-4 cm long, villous-hirsute; leaf pairs very unequal, the petiole 0.5-1.5 cm long, villous-hirsute, the lamina of the larger leaf oblanceolate, 15-20 by 6-8 cm, cuspidate, denticulate, oblique, leathery, pilose on both sides, with 7-8 secondary veins, the lamina of the smaller leaf similar, 3 by 1 cm. Inflorescence a reduced, axillary cyme of 1-4 flowers, the peduncle absent, the prophylls and subtending bracts minute, lanceolate, 1 by 0.4 cm, the pedicels 0.7-1 cm long, densely hirsute-villous; calyx lobes narrowly lanceolate, 3.2 cm long, 2 cm wide, on each side with 5-6 subulate, sometimes basally branched teeth, 0.8-1.2 cm long, red, pilose-sericeous; corolla erect in the calyx, tubular, 3.4-4.2 cm long, 1 cm in diam., spurred, with orange-red and pale yellow stripes, glabrate from the base to the middle, densely pilose near the limb, the lobes subequal, 2 by 2 mm, red, glabrous inside; stamens 4, included, the filaments 2.5-3.5 cm long, adnate for 1 mm to the base of the corolla tube, glabrous, the anthers syngenesous, oblong, 2 by 1 mm; ovary superior, glabrous from the base to the middle, pilose apically, the style 2-3 cm long, glabrous, the stigma stomatomorphic; nectary a double-connate, dorsal, glabrous gland. Fruit not yet seen.

TYPE: PANAMA: VERAGUAS: Buenos Aires, N slope of ridge E of Cerro Tute, NW of Santa Fé, ca. 950 m alt., epiphyte, 24 Dec. 1976, *Dressler 5543* (HOLOTYPE: SEL).

DISTRIBUTION: Endemic to Panama, only known from the type locality around Cerro Tute in Veraguas.

ADDITIONAL MATERIAL EXAMINED: PANAMA: VERAGUAS: type locality, epiphyte, 24 Oct. 1975, *Dressler s.n.*, (SEL); live material from same collection, flowered at greenhouse of Smithsonian Tropical Research Institute in Balboa, Panama, June 1976, *Dressler s.n.* (SEL).

*Dalbergaria polyantha* Wiehler, sp. nov.

(Plate 30:B).

*Columnea silvarum* Morton var. *butscheri* Morley, Ann. Missouri Bot. Gard. 60:457. 1973.

Ex affinitate *D. cruentae* (Morley) Wiehler\*, *D. perpulchrae* (Morton) Wiehler, et *D. silvarum* (Morton) Wiehler, sed differt a primo secundoque foliis subtus non rubro-maculatis, calycis trichomatibus non glanduliferis, a tertio prophyllis ovatis, et calycis lobis brevioribus.

Epiphytic, perennial, suffrutescent herb, the stems erect, ascending, or spreading, sparsely branching, to 2 m long, 0.8-1.2 cm in diam., green, lanate, the internodes 0.8-2.5 cm long; leaf pairs very unequal, the petiole subsessile, the lamina of the larger leaf oblanceolate, 17-22 by 5-6.5 cm, acuminate, serrate, oblique, green and long-velutinous on both sides, with 8-9 pairs of secondary veins, the lamina of the smaller leaf similar, 2.2 by 0.7 cm, often caducous. Inflorescence an axillary, reduced cyme of 4-10 flowers, the peduncle absent, the prophylls broadly ovate to lanceolate, 1.6 by 0.5-1.1 cm, green, sericeous, the subtending bracts linear, ca. 5 mm long, the pedicels 2-4.5 cm long, hirsute; calyx lobes subequal, lanceolate, 2.2 cm long, serrate-laciniate, on each side with 3-5 teeth, 2 mm long, green, sericeous-villose; corolla erect in the calyx, tubular, 4.3 cm long, spurred, the small rounded lobes subequal, 2 by 3 mm, lemon yellow, the lobes marked with red, sericeous-pilose outside, glabrous inside; stamens 4, excluded at male phase of anthesis, the filaments 4.4 cm long, adnate for 1 mm to the base of the corolla tube, glabrous, the anthers syngenesous, oblong, 1.8 by 1.2 mm; ovary superior, 5 mm long, sericeous, the style 4.8 cm long, glabrous, the stigma excluded at female phase of anthesis, stomatomorphic; nectary a double-connate, dorsal, glabrous gland. Fruit an elongated, ovoid, yellow, pilose berry, 1.4 by 1 cm; seeds oblong, 1.2 mm long, striate, yellow, with a fleshy funiculus 3 mm long.

TYPE: PANAMA: CHIRIQUÍ: vicinity of Barriles, 6-16 km S of Volcan, 1000-1300 m alt., plants raised from seed of the collection *Dressler & Williams 3987* at the SEL greenhouses, acc. no. W-1152, 26 June 1974, *Wiehler 7424* (HOLOTYPE: SEL; ISOTYPES: CR, K, MO, NY, PMA, US).

DISTRIBUTION: In the Province of Chiriquí, Panama, and in the adjoining Provinces of Puntarenas and San José in Costa Rica. The collection by *Butcher s.n.*, first sent to Mrs. Maude Cogswell of Hamburg, N. Y. and cultivated at Cornell and SEL, acc. no. G-948, supposedly from Cerro Campana, Province of Panamá, is probably also from Chiriquí, like his other collections of this species.

ADDITIONAL MATERIAL EXAMINED: PANAMA: CHIRIQUÍ: type locality, 25 April 1971, *Dressler & N. H. Williams 3987* (SEL), near village Cuesta de Piedra, near Río Escárrea, 1200 m alt., March 1962, *Butcher s.n.* (US, holotype of *Columnea silvarum* Morton var. *butscheri* Morley); Buena-vista, near Río Escárrea, 800 m alt., 7 Feb. 1972, *Butcher s.n.* (SEL); PANAMÁ (?): Cerro Campana (?), around 1965, *Butcher s.n.*, cult. at Cornell Univ. and SEL, acc. no. G-948 (BH, SEL); COSTA RICA: PUNTARENAS: near Río Canasta, 700 m alt., 12 March 1898, *Pittier 11961* (US); Golfo Dulce area, vic. of Esquinas Experiment Station, sea level, 12 Feb. 1949, *Allen 5204* (US); forested hills above Palmar Norte, trail to Buenas Aires, 450-550 m alt., n.d., *Allen 6042* (US); same area, 550 m alt., 28 March 1951, *Allen 6043* (BM, US); SAN JOSÉ: in mountain forest N of

\* comb. nov., *Columnea cruenta* Morley, Ann. Missouri Bot. Gard. 60:458. 1973

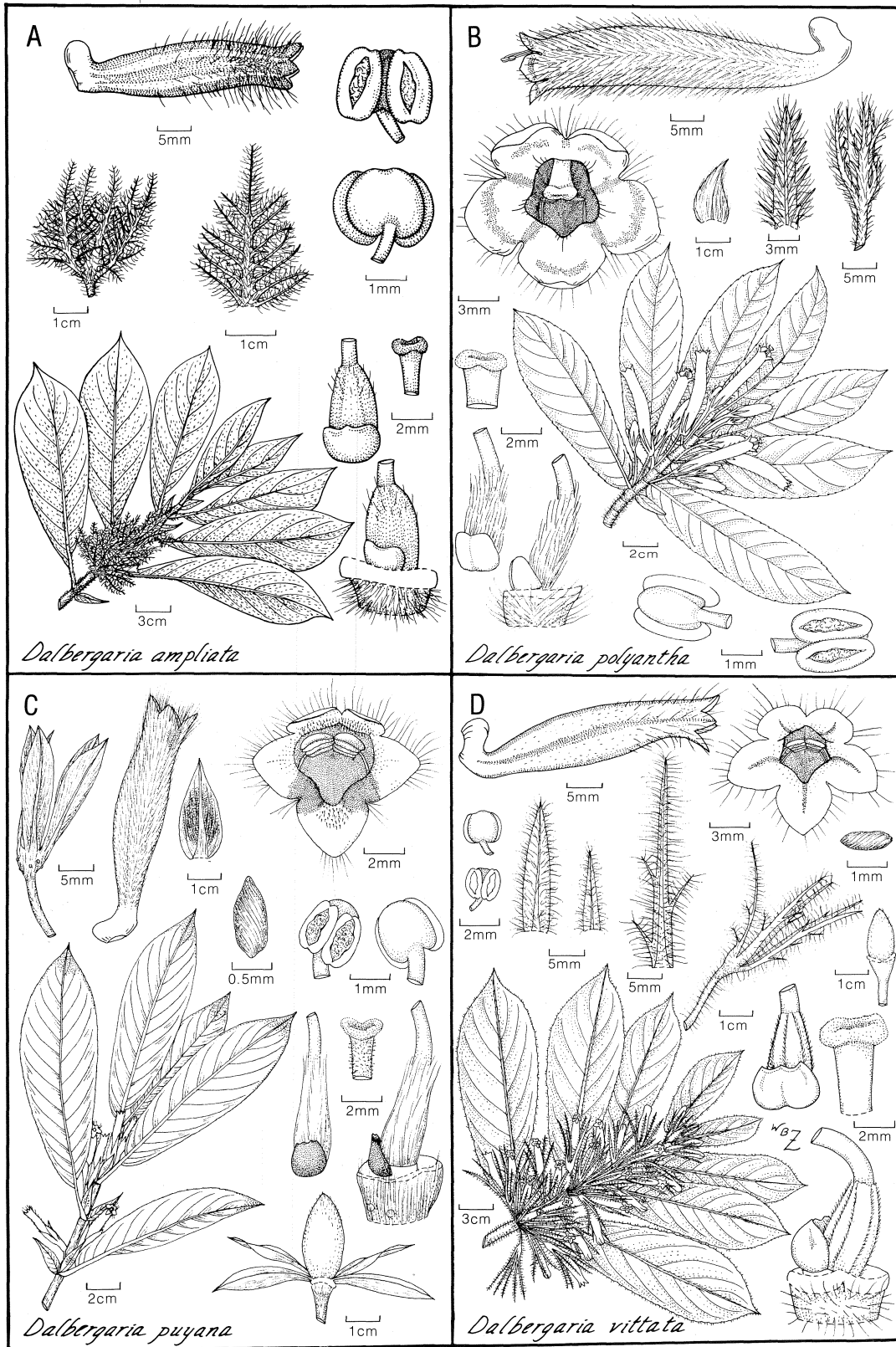


Plate 30

San Isidro del General, Cordillera de Talamanca, 1800 m alt., 12 May 1956, *L.O. Williams 19928* (US).

*Dalbergaria polyantha* is more closely related to *D. cruenta* from central Panama than to *D. silvarum* from the Province of Darién. *Dalbergaria cruenta* has brilliantly red-spotted leaves in all populations observed, and a pilose calyx with glandular hairs; *D. silvarum* has linear, subulate prophylls, 7-9 mm long, and hirsute calyx lobes, 3.1 cm long, with red, non-glandular hairs. The collections of these species look distinct both in the field and in cultivation.

***Dalbergaria puyana* Wiehler, sp. nov.** (Plate 30:C).

Habitu et textura *D. dimidiatae* (Benth.) Wiehler similis, praecipue differt foliorum maculis duobus rubro-translucentibus destitutis, prophyllis parvioribus, et corolla lutea.

Epiphytic or terrestrial, perennial, suffrutescent herb, the stems erect, ascending or spreading, sparsely branching, to 1 m tall, 6-9 mm in diam., green or suffused with red, sericeous, the internodes 2-3 cm long; leaf pairs very unequal, the petiole 5-9 mm long, sericeous, the lamina of the larger leaf oblanceolate, 13-17 by 3-6 cm, acuminate or acute, subentire, oblique, shiny green and finely sericeous, appearing glabrous above, lighter green, often with red tips or a red flush, sericeous below, with 9-11 pairs of secondary veins, the lamina of the smaller leaf similar, 0.8-2 by 0.3-0.6 cm, or caducous. Inflorescence an axillary, reduced cyme of 2-4 flowers, the peduncle absent, the prophylls ovate-lanceolate, 2.3-2.7 by 0.8-1.2 cm, acuminate, entire, lemon-yellow with red centers, sericeous, the subtending bracts similar, 1.5 by 0.4 cm, the pedicels 0.7-1 cm long, yellow, sericeous; calyx lobes subequal, oblanceolate, 2 cm long, acuminate, entire, ciliate, orange-yellow, sometimes with a red center, sericeous with shiny hairs, the dorsal lobe narrower than the others; corolla erect in the calyx, tubular, 3.6 cm long, spurred, the rounded lobes subequal, 3 by 3 mm, with the dorsal lobes somewhat connate, lemon-yellow, with a red spot in the sinuses of the ventral lobe, shiny sericeous, inside with short glandular trichomes in the throat, sericeous deeper inside; stamens 4, included, the filaments 2.9 cm long, adnate to the base of the corolla tube for 1 mm, glabrous, the anthers syngenesous, 1.5 by 1.9 mm; ovary superior, 4 mm long, sericeous, the style 2.8 cm long, glabrous below, glandular pubescent above the middle, the stigma stomatomorphic; nectary a double-connate, dorsal, brown gland. Fruit an oblong, pointed, yellow, sparsely sericeous berry; seeds oblong, 1 mm long, striate, light yellow, with a fleshy funiculus 2.7 mm long.

TYPE: *ECUADOR*: PASTAZA: rain-forest outside Puyo, ca. 900 m alt., epiphyte, cuttings collected by *Dressler, Williams, & Stevenson s.n.*, Dec. 1975, cultivated at SEL, acc. no. W-2040, 7 July 1977, *Wiehler 77117* (HOLOTYPE: SEL; ISOTYPES: K, NY, QCA, S, U, US).

DISTRIBUTION: Endemic to Ecuador, only known from the area around Puyo.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: PASTAZA: vicinity of Puyo, 750-1000 m alt., terrestrial in forest, Aug. 1939, *Skutch 4467* (US).

***Dalbergaria vittata* Wiehler, sp. nov.** (Plate 30:D).

*D. perpulchrae* (Morton) Wiehler et *D. silvarum* (Morton) Wiehler affinis, sed a prima foliis non rubro-maculatis, calycis lobis longioribus tectis trichomatibus longis rubris, corolla longioribus dissimiliter formata rubro-vit-

tata, a secunda prophyllis lanceolatis, calycis lobis longioribus trichomatibus glanduliferis, filamentis sericeis, antheris inclusis, corolla rubro-vittata bene distincta.

Epiphytic, perennial, suffrutescent herb, the stems erect, ascending, or spreading, sparsely branched, to 1.3 m long, 0.9-1.3 cm in diam., green, densely red-hirsute, the internodes 2-3 cm long; leaf pairs very unequal, the petiole 0.7-1 cm long, red-hirsute, the lamina of the larger leaf oblanceolate, 15-18 by 6-7.5 cm, acuminate, obscurely serrate-dentate, oblique, bluish green and red-pilose above, light green and pilose below, with 7-9 pairs of secondary veins, the lamina of the smaller leaf similar, 2-4.5 by 0.8-2.3 cm. Inflorescence an axillary, reduced cyme of 4-8 flowers, the peduncle 1 mm long or absent, the prophylls lanceolate, 2.3 by 0.5 cm, entire, the subtending bracts similar, 1.3 by 0.3 cm, the pedicels 1.8-3.2 cm long, green, red-hirsute; calyx lobes lanceolate, 3 cm long, almost covering the corolla, acuminate-subulate, with 1-2 long teeth on each side, green, with long red-hirsute and glandular indumentum; corolla erect in the calyx, tubular, 3.6 cm long, spurred, the rounded, short lobes subequal, 3 by 3 mm, yellow, with 5 longitudinal red stripes which end in the center of each lobe, puberulous and sparsely pilose outside, glabrous within; stamens 4, included, the filaments 3.1 cm long, adnate to the base of the corolla tube for 1 mm, sericeous below the middle, glabrous above, the anthers syngenesous, 2 by 1.8 mm; ovary superior, 6 mm long, glabrous, with 10 minute, longitudinal, sericeous ridges, the style 3 cm long, glabrous, the stigma stomatomorphic; nectary a double-connate, dorsal, white, glabrous gland. Fruit an oblong, pointed, yellow, red-spotted, sparsely sericeous berry; seeds oblong, 1.5 mm long, striate, tawny, with a fleshy funiculus 2.8 mm long.

TYPE: PANAMA: CHIRIQUÍ: Valle Hornito, near Cerro Hornito, Fortuna Dam site, 82° 15' W, 8° 44' N, 1000-1400 m alt., grown from live material of *Dressler 5324* at SEL, acc. no. W-2265, 8 July 1977, *Wiehler 77118*, (HOLOTYPE: SEL; ISOTYPES: K, MO, NY, PMA, U, US).

DISTRIBUTION: Endemic to Panama, from the Provinces of Bocas del Toro and Chiriquí.

ADDITIONAL MATERIAL EXAMINED: PANAMA: CHIRIQUÍ: type locality: 12 Aug. 1976, *Dressler 5324* (SEL); Cuesta de Piedra, Dec. 1976, *Dressler et al. s.n.*, SEL greenhouse acc. no. W-2352 (SEL); BOCAS DEL TORO: Trocha 3 de Noviembre, between Buenavista and Los Gutiérrez, 700-800 m alt., epiphyte, 7 Jan. 1977, *Dressler 5561* (SEL); Buenavista, 320 m alt., 7 Jan. 1977, *Dressler s.n.*, SEL greenhouse acc. no. W-2343, (SEL).

*Drymonia aciculata* Wiehler, sp. nov.

(Plate 31:A).

Differt a *D. stenophylla* (Donn. Smith) H. E. Moore foliis subaequalibus ellipticis coriaceis, floribus majoribus, limbo rubro-aciculato, et calcare prominenti.

Epiphytic, perennial vine or shrub, with branches to about 5 m long, 0.7-1.4 cm in diam., the young stems green, turning to shiny red-brown below, and gray with age, the internodes 4-8 cm long; leaf pairs usually subequal, the petiole 2-5 cm long, glabrous, the lamina elliptic to broadly elliptic, strongly variable in size according to locality, habitat, and available nutrition, from about 10 by 3 cm to 29 by 14 cm, acuminate, entire, cuneate, leathery, green and glabrous on both sides, with 6-8 pairs of secondary veins.

Inflorescence a reduced, axillary cyme of 2-4 flowers, the peduncle 1 mm long or absent, the prophylls and subtending bracts minute, subulate, 2 by 1 mm, the pedicels 1-2 cm long, green, glabrous; calyx lobes subequal, lanceolate, variable in size (like the corolla), 1.7-3.2 by 0.6-1.1 cm, acuminate to acute, obscurely denticulate to subentire, green, glabrous; corolla oblique in the calyx, 4.5-6 cm long, with a prominent spur, the tube inflated in the middle, gradually expanding to the large limb, 3 cm in diam., the lobes subequal, 1.3 by 1.3 cm, erose to finely lacinate, the tube light yellow, glabrous, the limb and throat deep lemon-yellow, marked with fine irregular, red streaks, glabrous, the inside of the tube dorsally with glandular trichomes, ventrally with a slight, longitudinal groove; stamens 4, included, the filaments 2-3 cm long, adnate for 6 mm to the base of the corolla tube, glabrous, the syngenesous anther oblong, 5 by 1 mm, dehiscent by a basal pore; ovary superior, 7-9 mm long, finely pubescent, with 10 minute, longitudinal, sericeous ridges, the style 1.4-2.2 cm long, glabrous, the stigma stomatomorphic; nectary a dorsal, double-connate, pointed or bilobed, white, glabrous gland. Fruit not seen.

TYPE: PANAMA: PANAMÁ: Cerro Jefe, cloud-forest, epiphytic vine, 11 Aug. 1971, *Wiehler & Dressler 71189* (HOLOTYPE: SEL; ISOTYPES: K, MO, NY, PMA, US).

DISTRIBUTION: Endemic to Panama, found mainly in the Province of Panamá, but also in Veraguas, and probably in Bocas del Toro.

ADDITIONAL MATERIAL EXAMINED: PANAMA: PANAMÁ: type locality on Cerro Jefe, 6 Jan. 1968, *Dressler 3326* (SEL); E slope of Cerro Jefe, 900 m alt., in *Clusia* forest, vine, 8 Feb. 1966, *Tyson 3300* (MO); at base of last hill on road to Cerro Jefe, vine, fls. borne on naked stems below lvs., 23 Oct. 1974, *Mori & Kallunki 2771* (MO); La Eneida, region of Cerro Jefe, epiphyte, 27 Dec. 1967, *Dressler 3293* (SEL); same area, 21 Oct. 1971, *Dressler 4122* (SEL); El Llano - Cartí highway, 12 km N of El Llano, vine, fls. well below foliage, 27 April 1973, *Dressler 4363* (SEL); El Llano - Cartí road, 7-12 km from Interamerican Highway, 360-400 m alt., epiphyte, 18 July 1974, *Croat 25097* (MO); VERAGUAS: Cerro Tute, 8-10 km NW of Santa Fé, 850-1300 m alt., vine, 3 Aug. 1975, *Dressler 5048* (SEL), ridge E of Cerro Tute, about 7 km NW of Santa Fé, 800-1000 m alt., 12 Oct. 1975, *Dressler 5195* (SEL); probably belonging to this species, but material examined sterile: BOCAS DEL TORO: between Criollo (just above Buena Vista) and Quebrada Higueron on Chiriquí Trail, cloud forest, liana, 18 April 1968, *Kirkbridge & Duke 794* (MO).

*Drymonia aciculata* is similar to *D. stenophylla* which has a plain, cream-colored corolla of a different shape. That species was known only from Costa Rica, but has been found recently in Panama [COCLÉ: El Valle, *Wiehler & Dressler 72293* (SEL); COLÓN: Santa Rita Ridge, *Wiehler & Dressler 71238* (SEL)]. Both species are in cultivation at the SEL greenhouses. Dressler has observed that *D. aciculata* is pollinated by two species of female Euglossine bees, *Euglossa nigrosignata* Moure and *E. gorgonensis* Cheesman (see *Dressler 3293*).

*Drymonia killipii* Wiehler, sp. nov.

(Plate 31:B).

Species foliis grandi ellipticis coriaceis, calycibus amplis tenuibus, et corollis magnis infundibuliformibus a congeneribus diversa.



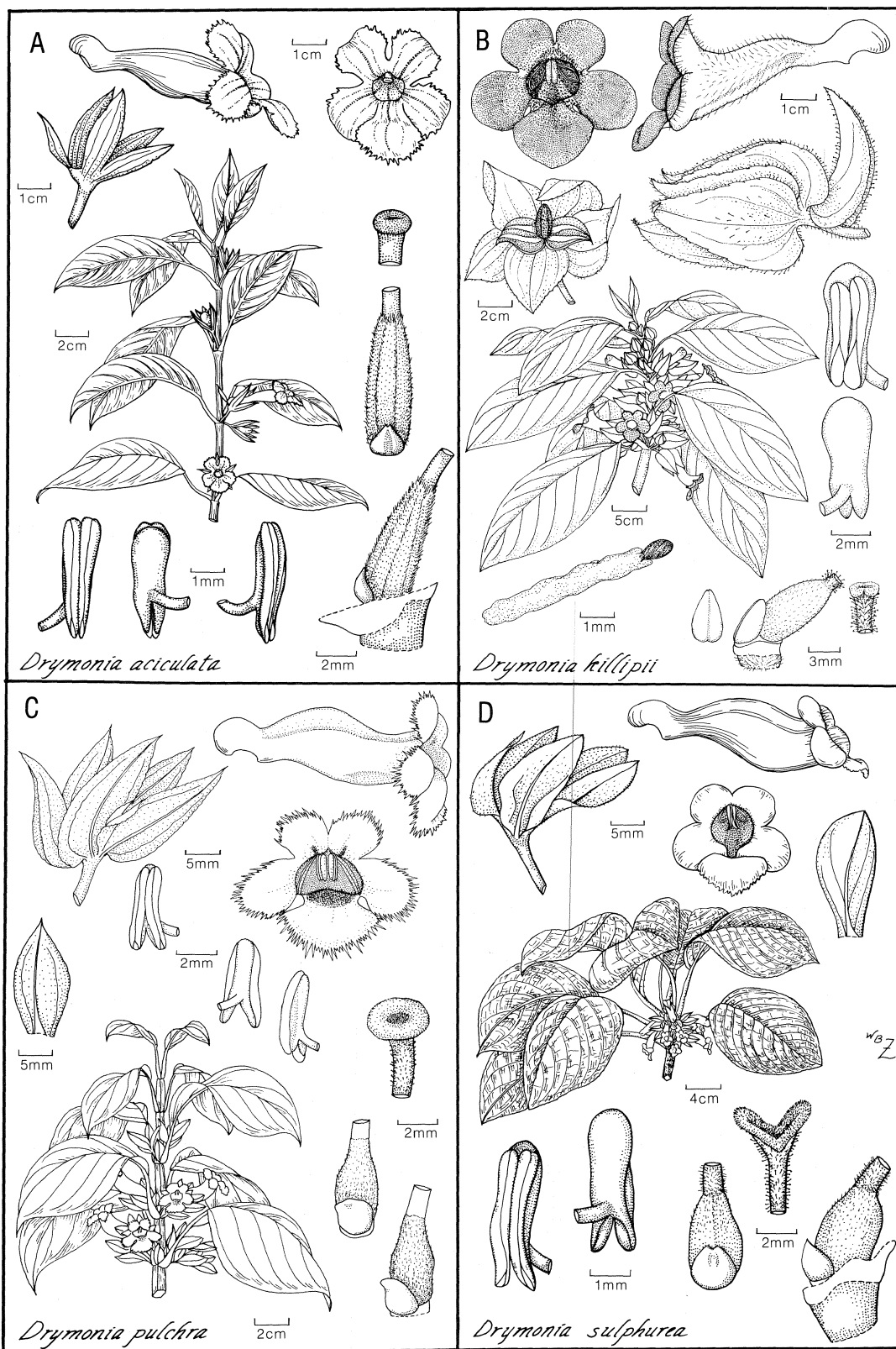


Plate 31

Epiphytic, rarely terrestrial, perennial shrub or vine with upright or ascending, sparsely branching stems to about 3 m long, 1.5-3.5 cm in diam., green or reddish and hirsute, tawny and glabrescent when aged, the internodes 2-7 cm long; leaf pairs subequal, the petiole 2-4 cm long, hirsute, the lamina elliptic to broadly elliptic, to 45 by 17 cm, acuminate, subentire, cuneate, leathery, bluish green with whitish veins above, yellow-green, sometimes with reddish veins below, hirsute, with 7-8 pairs of secondary veins. Inflorescence a reduced, axillary cyme of 2-6 flowers, the peduncle 1 mm long or absent, the prophylls and subtending bracts linear-lanceolate, 1 by 0.2 cm, green, the pedicels 1.5-2.5 cm long, green, hirsute; calyx lobes subequal, broadly ovate, 4.4 by 3 cm, acute, subentire, ciliate, auriculate, yellow-green, sparsely hirsute with glandular trichomes; corolla oblique in the calyx, infundibular, 7.5 cm long, with a prominent, thick-textured, white spur, the expanding tube cream-white, sometimes purple, sparsely pilose, the limb oblique, 4.8 cm in diam., the lobes of unequal size, rounded, subentire, royal purple, the throat inside lemon-yellow, superimposed with brown spots and dots, with 2 yellow nectar guides bordering a ventral, longitudinal groove, the dorsal interior of the tube covered with long, glandular trichomes; stamens 4, included, the filaments 3.6 cm long, adnate for ca. 1.2 cm to the base of the corolla tube, connate for 1.8 cm, glabrous, the syngenesous anthers oblong, 7 by 1.2 mm, dehiscent by a basal pore; ovary superior, 8 mm long, sericeous, the style 3.4 cm long, with hirsute-glandular hairs, the stigma stomatomorphic; nectary a dorsal, double-connate, pointed or bilobed, white, glabrous gland. Fruit a laterally compressed, bivalved display capsule, surrounded by enlarged, white, green-tinged calyx lobes, 4.7 by 3.5 cm, the capsule with reflexed, fleshy valves, internally cream-white, displaying a soft, cone-shaped, 1.8 cm high, gray mass of funiculi and seeds; seeds oblong, 1 mm long, striate, tan, with a fleshy, hyaline funiculus 5 mm long.

TYPE: *COLOMBIA*: EL VALLE: old road Cali - Buenaventura, near Río Sabaletas, on path above creek, terrestrial, 1.5 m tall, 2 May 1972, *Wiehler, Dressler, & Williams 72142* (HOLOTYPE: SEL; ISOTYPES: COL, K, MO, NY, US).

DISTRIBUTION: Pacific coast and western Andes of Colombia and Ecuador, in the Departments of Chocó, El Valle, Cauca, Nariño, and an undetermined locality in Ecuador.

ADDITIONAL MATERIAL EXAMINED: *COLOMBIA*: CHOCÓ: banks of Quebrada Togoromá, dense tidal forest, epiphytic vine, 13 June 1944, *Killip & Cuatrecasas 39117* (F, US-2 sheets); Río Catripe, in wet forest, ca. 100 m alt., succulent cauliflorous epiphyte, shoots to 1.5 m long, 17 Jan. 1947, *Haught 5439* (US-2 sheets); EL VALLE: La Cuarentena, Buenaventura Bay, forest at edge of mangroves, woody vine, stems unbranched, 9 June 1944, *Killip & Cuatrecasas 38971* (US); Río Calima, La Trojita, 5-50 m alt., trepadora, Feb.-March 1944, *Cuatrecasas 16825* (F); near Buenaventura, valley of Río Anchicayá, between Sabaletas and Quebrada del Tátabro, 30-60 m alt., 28-29 Sept. 1946, *Cuatrecasas 22037* (F-3 sheets); CAUCA: island of Gorgona, sea level, marshy jungle, epiphyte on tree overhanging stream, 11 Oct. 1924, *Downer 567* (K); island of Gorgona, 22 Nov. 1924, *Cheesman 726* (K); NARIÑO: San Pablo to Altaquer, n.d., *André K-1506* (K); ECUADOR: province unknown: western Andes, 2000 m alt., n.d. (before 1884), *Pearce 453* (K).

*Drymonia killipii* has a very noticeable floral fragrance which includes the scent of lemon. This species is named in honor of Ellsworth Paine Killip (1890-1968) who collected many neotropical Gesneriaceae.

*Drymonia pulchra* Wiehler, sp. nov.

(Plate 31:C).

Species nova *D. turrialvae* Hanst. proxima habitu, caulibus tetragonis, inflorescentia axillari congesta multiflora, sed foliis parvioribus ellipticis, lobis corollae citrinis laciniatis, fauce brunneo-maculata, tubo intra dorsaliter sulcato diversa.

Terrestrial and epiphytic, perennial, suffrutescent herb with sparsely branching, erect or ascending, square stems, to 50 cm tall, 0.7-1.3 cm in diam., green, the older parts tan and gray, glabrous, the internodes 3-6 cm long; leaf pair equal, the petiole 2-3 cm long, glabrous, the lamina elliptic to broadly elliptic, 9-12 by 5.5-7 cm, acuminate, subentire, cuneate to obtuse, green, glabrous, with 5-6 pairs of secondary veins. Inflorescence a reduced, axillary cyme of 4-10 flowers, the peduncle 1 mm long or absent, the prophylls lanceolate, 1.5 by 0.5 cm, acuminate, wine-red, the subtending bracts similar, smaller, the pedicels 1 cm long, wine-red, glabrous; calyx lobes subequal, broadly lanceolate, 2.5 by 1.3 cm, acuminate subentire, auriculate, wine-red with yellow-green blotches basally, glabrous; corolla oblique in the calyx, 4.5 cm long, spurred, the tube light yellow, glabrous, the limb 2.3-3 cm in diam., the lobes unequal, laciniate, deep lemon-yellow, the throat and tube inside marked with red-brown blotches and lines, the tube dorsally inside with a longitudinal groove and glandular trichomes; stamens 4, included, the filaments 2.2 cm long, adnate for 6 mm to the base of the corolla tube, with glandular trichomes below the middle, glabrous above, the anthers syngenesous, oblong, 5 by 1.5 mm, dehiscing by a basal pore; ovary superior, 4 mm long, pubescent, the style 1.5 cm long, glandular pubescent, the stigma almost round, stomatomorphic, with a wide opening; nectary a dorsal, double-connate, white, glabrous gland. Fruit not seen.

TYPE: *ECUADOR*: PASTAZA: Puyo, rain forest near Río Pindo Grande, 3 km outside of village, terrestrial and epiphytic, 30 July 1971, *Wiehler 7167* (HOLOTYPE: SEL; ISOTYPES: BH, K, MO, NY, P, QCA, S, U, US).

DISTRIBUTION: Endemic to eastern Ecuador, known only from a single collection.

*Drymonia pulchra* has horticultural value with its color combination of green, maroon, and bright yellow, and with its comparatively compact habit and floriferousness.

*Drymonia sulphurea* Wiehler, sp. nov.

(Plate 31:D).

*Drymoniae turrialvae* Hanst. primo aspectu maxime simile, sed floribus parvioribus, calyce luteo-viridi, corolla sulphurea, et stigmatibus bifurcatis.

Terrestrial, rarely epiphytic, perennial, succulent, rosette-forming herb with sparsely branching, erect, square stems, to 30 cm tall, 1-1.5 cm in diam., green, suffused with pink, the older parts gray, glabrous, the internodes very short, 4-9 mm long; leaf pairs equal or subequal, the petiole 11-15 cm long, to 1 cm in diam., succulent, light green, suffused with purple, glabrous, the lamina ovate or broadly elliptic, 17-27 by 15-21 cm, obtuse, acute, or short-acuminate, crenate, obtuse, coriaceous, somewhat bullate, bluish green above, light green, often flushed with purple below, glabrous,

with 6-7 pairs of secondary veins. Inflorescence a reduced, axillary cyme of 4-10 flowers, the peduncle to 3 mm long or absent, the prophylls obliquely oblanceolate, 2 by 1 cm, acuminate, entire, yellow-green, glabrous, the pedicels 2-3 cm long, green, suffused with pink, glabrous; calyx lobes subequal, lanceolate-elliptic, 2.5 by 1 cm, acute, entire, ciliate, yellow-green, pubescent; corolla oblique in the calyx, 3 cm long, spurred, the tube sulphur-yellow, pubescent, the limb 1.8 cm in diam., the lobes unequal, with the ventral lobe 6 by 9 mm, erose, the other lobes ca. 5 by 6 mm, subentire, the tube inside ventrally lemon-yellow, with glandular trichomes dorsally; stamens 4, included, the filaments 2.2 cm long, adnate for 6 mm to the base of the corolla tube, with glandular trichomes below the middle, glabrous above, the anthers syngenesous, oblong, 5 by 2 mm, dehiscent by a basal pore; ovary superior, 4 mm long, weakly sericeous, the style 1.8 cm long, densely glandular pubescent, the stigma biforked; nectary a dorsal, double-connate, grayish white, glabrous gland. Fruit not seen.

TYPE: PANAMA: PANAMÁ: Cerro Jefe, subcloud-forest, in somewhat open area near creek, 11 Aug. 1972, *Wiehler & Dressler 71213* (HOLOTYPE: SEL; ISOTYPES: K, MO, NY, PMA, US).

DISTRIBUTION: Endemic to Panama, only known from the Province of Panamá.

ADDITIONAL MATERIAL EXAMINED: PANAMA: PANAMÁ: La Eneida, region of Cerro Jefe, terrestrial, 8 July 1969, *Dressler 3648* (SEL, US); along road between Cerro Jefe and La Eneida, epiphyte, 2 July 1970, *Luteyn & R. Foster 1137* (DUKE); woods around La Eneida, alt. 1000 m, 5 Aug. 1970, *Luteyn & H. Kennedy 1771* (DUKE); Cerro Jefe, near type locality, terrestrial, 19 May 1972, *Wiehler & Dressler 72288* (SEL); Altos de Pacora, 20-24 km NE of Cerro Azul, terrestrial, 2 Sept. 1974, *Dressler 4707* (SEL) El Llano - Cartí highway, ca. 12 km N of El Llano, on boulder in small stream, 19 July 1974, *Dressler 4670* (SEL).

*Napeanthus bullatus* Wiehler, sp. nov.

(Plate 32:A).

A *N. apodemo* Donn. Smith foliis obtusis bullatis, venis laminae subter sericeis, inflorescentia sub anthesi pilosa, et corollae lobis rotundatis non emarginatis recedit.

Terrestrial, perennial, rosette-forming, low herb with stems to 3 cm tall and very short internodes; leaf pairs equal or subequal, the lamina sessile, oblanceolate, 8-13 by 3.5-7 cm, obtuse, crenate to subentire, cuneate, bullate, bluish green and sparsely pilose above, grayish green or purple and sparsely sericeous below, with 6-8 pairs of sericeous, secondary veins. Inflorescence a pair-flowered, axillary cyme of 4-8 flowers, the peduncles 1-3 cm long, green, pilose, the prophylls lanceolate, 5 by 2 mm long, green, pilose, the subtending bracts similar, smaller, the pedicels 1-2 cm long, green, pilose; calyx 8 mm long, green, pilose, the lanceolate lobes free for 5 mm, entire; corolla rotate, slightly zygomorphic, 1.4 cm in diam., the lobes 5 by 5 mm, erose, ciliate, pale lilac with a purple center around the androecium, glabrous above, glabrescent below; stamens 4, the filaments 2 mm long, glabrous, the anthers syngenesous, 1.3 by 1.5 mm, the thecae confluent, dehiscent by a longitudinal slit; staminode 1.2 mm long; ovary superior, 1.6 mm long, glabrous, the style curved, 4 mm long, glabrous, the stigma stomatomorphic; nectary absent. Fruit a bivalved or 4-valved, dry capsule with ca. 100 rhomboid, 0.4 mm long, striate, light brown seeds.

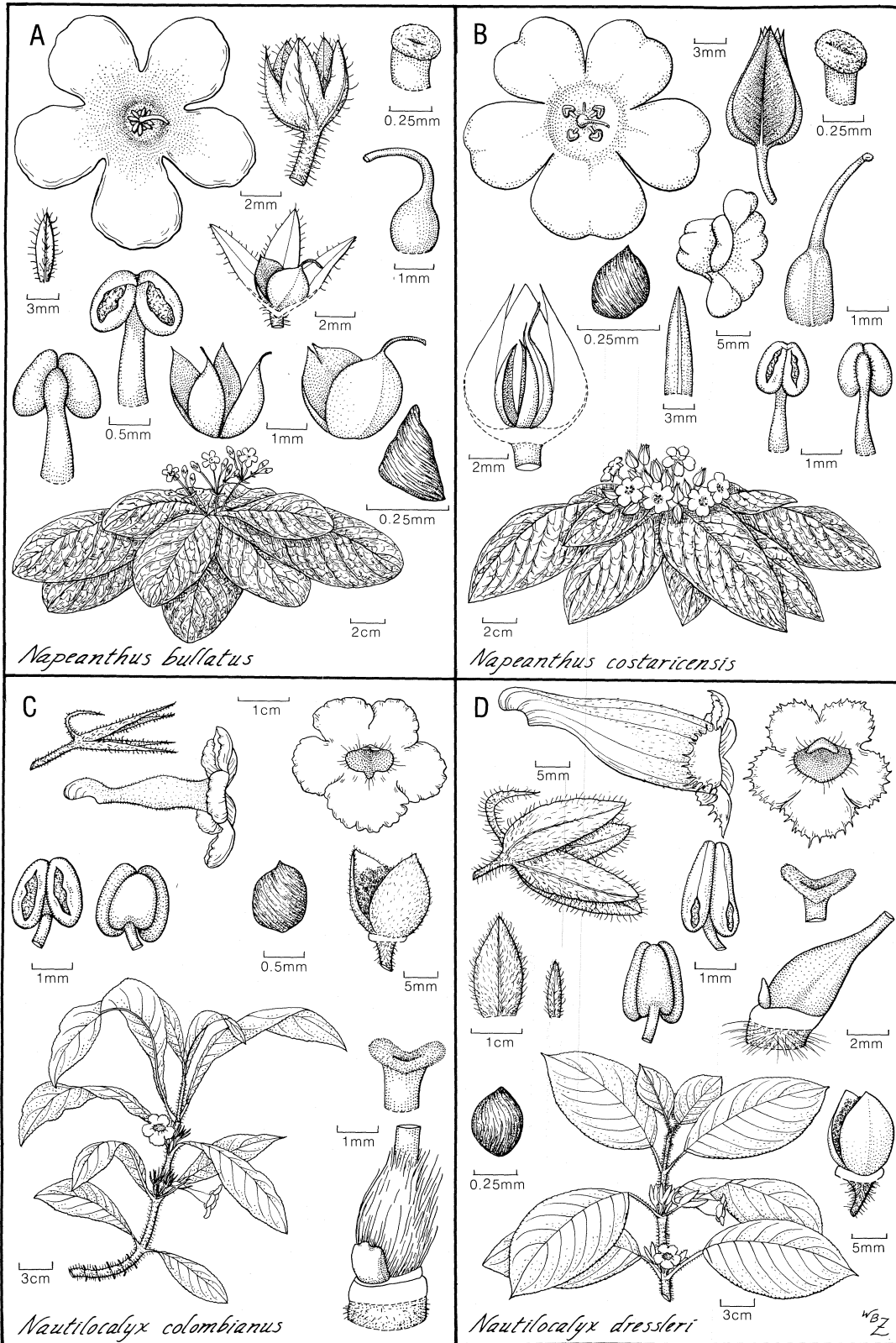


Plate 32

TYPE: PANAMA: PANAMÁ: Canal Zone, steep banks near Río Agua Salud, N of Gamboa, flowers pale blue, lilac in center, 11 Sept. 1971, *Dressler 4098* (HOLOTYPE: SEL; ISOTYPES: F, K, MO, NY, PMA, US).

DISTRIBUTION: Endemic to Panama, known only from the Provinces of Colón and Panamá.

ADDITIONAL MATERIAL EXAMINED: PANAMA: COLÓN: between Agua Clara rain gauge on Santa Rita Ridge and Puerto Pilón, deep shaded canyon, flowers light blue, 7 Feb. 1971, *Dressler 3931* (MO, SEL); along Río Guanache, SSW of Portobelo, clay slope in dark, wet woods by creek, together with *N. apodemus*, *Sinningia dressleri*, and *Gasteranthus delphinioides*, 10 Aug. 1971, *Wiehler & Dressler 71163* (SEL, US); Santa Rita Ridge, canyon below lumber road, past waterfall, on clay bank, not far from a population of *N. apodemus*, 13 Aug. 1971, *Wiehler & Dressler 71248* (MO, NY, SEL, US); same area, ca. 6 km beyond rain gauge, along a creek, 18 May 1972, *Wiehler & Dressler 72268* (SEL); PANAMA: region of Cerro Jefe, near La Eneida, steep banks by small stream in forest, fls. pale lilac, 29 Oct. 1971, *Dressler 4133* (MO, SEL, US); Cerro Jefe, along creek on way to Don Pedro Riviera's finca, together with *N. apodemus*, 19 May 1972, *Wiehler & Dressler 72287* (SEL); Cerro Campana, moist steep banks, flowers lilac-pink, 22 Oct. 1971, *Dressler 4128* (MO, SEL).

*Napeanthus bullatus* shows some variation in the degree of bullateness of the leaves; it is most pronounced in the population from Río Guanache, Colón, (in cultivation at SEL). This species is closely related to *Napeanthus apodemus* which was until recently considered to be the only representative of the genus in eastern Central America. We know today of four new species from Panama and one from Costa Rica. Since the habitat of this genus is usually off the beaten path along small creeks in shaded and humid places, more new species will probably be found. Occurring in both Panama and Costa Rica, *N. apodemus* has the widest distribution of these species. It has almost flat leaves, with the veins below and the inflorescence at anthesis weakly pubescent or glabrous, the corolla lobes emarginate, and the capsule 4-valved, or rarely bivalved.

*Napeanthus costaricensis* Wiehler, sp. nov.

(Plate 32:B).

Species inflorescentia brevi multiflora, calyce alato, et corolla grandi a congeneribus distincta.

Terrestrial, perennial, rosette-forming, low herb with stems to 5 cm tall, with very short internodes; leaf pairs equal or subequal, the lamina sessile, oblanceolate, 10-14 by 3.5-7 cm, acute, subentire, cuneate, leathery, bullate, deep green above, lighter green below, almost glabrous, with 6-8 pairs of weakly sericeous, secondary veins. Inflorescence a pair-flowered, axillary cyme of 4-12 flowers, the peduncle 0.7-1.5 cm long, green, weakly pubescent, the prophylls linear-lanceolate, 1.2 by 0.2 cm, entire, leathery, weakly pubescent, the subtending bracts smaller and similar, the pedicels 1-1.5 cm long, weakly pubescent; calyx ovate, 1.9 cm long, the lobes free for 0.6 cm, acuminate, entire, the connate part of the lobes forming wings, green, weakly pubescent; corolla rotate, slightly zygomorphic, 2.1-2.5 cm in diam., the lobes 8 by 10 mm, subentire, slightly emarginate, white, glabrous; stamens 4 (plus a dorsal staminode), rarely 5, the glabrous filaments 1.3 mm long, the anthers free, 1.5 by 1.5 mm, with confluent thecae dehiscent by longitudinal slits; ovary superior, 2 mm long, glabrous, the curved style 3

mm long, glabrous, with a stomatomorphic stigma; nectary absent. Fruit an oblong, dry capsule splitting both loculi- and septicidally; seeds globoid, 0.3 mm in diam., striate, brown.

TYPE: *COSTA RICA*: SAN JOSÉ: near San Cristóbal, ca. 19.4 km SW of San Isidro, 700-750 m alt., plants raised at SEL greenhouses (acc. no. W-1701) from selfed seed of live material of collection *Dressler & R. Andrews 4168* (cited below), 12 July 1977, *Wiehler 77119* (HOLOTYPE: SEL; ISOTYPES: CR, K, MO, NY, US).

DISTRIBUTION: Endemic to Costa Rica, known only from the type locality.

ADDITIONAL MATERIAL EXAMINED: *COSTA RICA*: SAN JOSÉ: type locality, steep bank near stream in canyon, flowers white, 4 March 1972, *Dressler & Andrews 4168* (SEL, US).

*Napenathus costaricensis* is easily recognized by its compact inflorescence, winged calyces, and large, white corollas. As in all other members of *Napeanthus* observed (in field and greenhouse), anthesis in populations of this species occurs about once a week in synchrony. The corollas last less than a day, falling off by mid-afternoon.

*Nautilocalyx colombianus* Wiehler, sp. nov.

(Plate 32:C).

Herba terrestris, perennis, aliquantum succulenta, caules erecti, ascendentes, vel decumbentes, saepe ad nodos radicanes, ad 1 m longi, 0.8-1.2 cm in diam., supra basin vix ramosi, dense et persistenter hirsuti, internodiis 4-10 cm longis; folia per paria aequalia, brevipetiolata, petiolis maximis 3 cm longis, laminis oblongo-lanceolatis, 18-24 × 7-8 cm, acuminatis, crenatis apicem versus, serratis ad basim, cunctatis, viridibus, hirsutis. Inflorescentia cyma axillaris, 2-4-flora, pedunculo communi brevi, 5-10 mm longo, prophyllis anguste lanceolatis, 1.7 × 0.2 cm, bracteis subtenentibus 1.2 × 1 mm, pedicellis 1-2 cm longis; lobi calycis subaequales, lineares vel subulati, 1.7-2.1 × 0.1 cm, virides, hirsuti; corolla in calyce obliqua, infundibularis, 5-6 cm longa, calcarata, alba, hirsuta, lobis 1.4 × 1.6 cm, rotundatis, erosis, tubo introrsum trichomatibus brevibus; stamina 4, inclusa, filamentis 2.3 cm longis, glabris, basi tubo corollae adnatis, antheris syngenesi, 2.1 × 2 mm, loculis omnino dehiscentibus, parallelis; ovarium superum, 3.5 mm longum, sericeum, stylo 1.9 cm longo, glabro, stigmatate stomatomorpho; nectarium glandula dorsalis, duplo-connata, alba, glabra. Fructus capsula bivalva, subglobosa, 9 mm in diam., semina subglobosa autem angulata, 0.6 mm in diam., striata, fulva.

TYPE: *PANAMA*: COLÓN: along Río Guanche, SSW of Portobelo, soggy, open area, edge of forest, 10 Aug. 1971, *Wiehler & Dressler 71160* (HOLOTYPE: SEL; ISOTYPES: BH, COL, F, K, MO, NY, PMA, US).

DISTRIBUTION: North-central Colombia to eastern Panama, in the Provinces of Santander, Antioquia, Darién, Colón, and in the Canal Zone.

ADDITIONAL MATERIAL EXAMINED: *COLOMBIA*: SANTANDER: vicinity of Puerto Berrio, between Ríos Carare and Magdalena, 100-700 m alt., Carare valley, 5 April 1935, *Haught 1624* (US); same area, San Juan valley, 8 June 1935, *Haught 1758* (US); same area, San Juan valley, 19 June 1935, *Haught 1778* (US-2 sheets); ANTIOQUIA: near Villa Arteaga, carretera al mar, selva pluvial, precipitación pluvial 3750-5000 mm anuales, 150 m alt., 4-8 Aug. 1947, *Hodge 7030* (US); Urabá, near Río Chadó, 70-100 m alt., Jan. 1950, *Uribe 2027* (US); between Villa Arteaga and Chigorodó, El

Tigre, ca. 100 m alt., 1 Oct. 1961, *Cuatrecasas & Willard 26118A* (US); near Villa Arteaga, ca. 200 m alt., 14 Aug. 1948, *Araque & Barkley 18C739* (SEL, US); PANAMA: DARIÉN: trail between Paya and Pucro, wet forest area, 12 June 1959, *W. L. Stern et al. 402* (MO, US); S of El Real, headwaters of Río Pirre, at fork known as Dos Bocas, mature forest, ca. 100 m alt., 25 Sept. 1969, *R. Foster & H. Kennedy 1250* (DUKE); same area, near Dos Bocas, 2 April 1971, *R. Foster & Lowenbach 2264* (DUKE); about 15 km S of El Real on Río Pirre, 10-11 Aug. 1962, *Duke 5462* (MO); ascent for Cerro Pirre from Río Pirre, 100-600 m alt., 11 Aug. 1962, *Duke 5288* (MO); forest 2-5 km N of Paya, 29 Aug. 1967, *Duke & Kirkbride 14017(1)* (MO); SAN BLAS: trail E of Cangandi Airport road, 3-7 km S of the airport, 27 Oct. 1967, *Duke 14814(1)* (MO); COLÓN: forested area near Guasimo, along river, 22 April 1970, *Croat 9955* (MO); semi-swampy floodplain near bridge over Río Buenaventura, near Portobelo, 14 Aug. 1970, *Foster & Kennedy 1789* (DUKE); between Agua Clara rain gauge and Puerto Pílon, deep shady canyon, 7 Feb. 1971, *Dressler 3932* (SEL); along Río Guanache, terrestrial on steep bank, 3 Aug. 1974, *Croat 26134* (MO); Río Guanache, ca. 2.5 km upriver from bridge on road to Portobelo, in floodplain, 14 Dec. 1974, *Mori & Kallunki 3722* (MO); Río Boquerón, about 6-8 km upstream from Peluca Hydrographic Station, 20 April 1974, *Dressler 4658* (SEL); CANAL ZONE: Quebrada Lopez, 30 m alt., 11 Feb. 1940, *Allen 2142* (MO, US).

*Nautilocalyx colombianus* is closely related to *N. panamensis* (Seem.) Seem. (still known as "*Achimenes panamensis*" and "*Episcia panamensis*" in the commercial trade) which is native to the same general area in Colombia and Panama but extends northwards to Mexico. These two species are the most northwestern representatives of a complex of white-flowered species of *Nautilocalyx*. Seemann's species differs from *N. colombianus* in leaf shape (lamina ovate, obtuse, cordate), in the shape of the calyx lobes (ovate to oblong-lanceolate, 11-16 by 4-6 mm), and in the form of the corolla (tube narrower, spur and lobes smaller). *Nautilocalyx colombianus* is pollinated by female bees of *Euglossa gorgonensis* Cheesman (Dressler, pers. comm., 29 July 1974).

*Nautilocalyx dressleri* Wiehler, sp. nov.

(Plate 32:D).

Ex affinitate *N. panamensis* (Seem.) Seem. sed differt foliis, prophyllis, et lobis calycis majoribus, corollae lobis et tubo rosea-notato, antherarum thecis dehiscentibus in dimidio inferiore, ovario pubescenti, stylo glabro, et capsula oblonga non globosa.

Terrestrial or epiphytic, perennial, somewhat succulent herb with erect, ascending, or decumbent stems, to 30 cm long or longer, 0.6-1.2 cm in diam., densely hirsute near the apex, with internodes 4-7 cm long; leaf pairs of equal size, the petioles 2-6 cm long, green, hirsute, the lamina broadly elliptic, 14-20 by 8-10 cm, acuminate, serrate, obtuse, green, hirsute-pilose. Inflorescence an axillary cyme of 2-6 flowers, the peduncle 2 mm long, the prophylls broadly lanceolate, subentire, green, pilose, 1.4 by 1 cm (in *Dressler 4258*) to 3 by 1.5 cm (in *Croat 27713*), the pedicels 1.8-2.5 cm long, green, hirsute, the subtending bracts lanceolate, 1.5 by 0.2 cm; calyx lobes broadly lanceolate, 2-2.5 by 0.8-1.2 cm, acute or acuminate, crenate, light green, pilose-sericeous; corolla oblique in the calyx, infundibular, 4-5 cm long, spurred, the tube cream-colored, sericeous-pilose, the lobes rotun-



date, erose, the lateral lobes with pink tips, the tube inside with a pink-streaked nectar-guide; stamens 4, included, the filaments 2.8 cm long, glabrous, adnate for 1 mm to the base of the corolla tube, the anthers syngeneous, 2.8 by 1.1 mm, with the parallel thecae dehiscing longitudinally by their basal half; ovary superior, 6 mm long, pubescent, the style 2 cm long, glabrous, the stigma bilobed; nectary a dorsal, double-connate, gray, glabrous gland. Fruit a bivalved, oblong capsule, 1.6 by 1.1 cm, the seeds subglobose, pointed, 0.4 mm in diam., striate, light brown.

TYPE: PANAMA: COCLÉ: Hills N of El Valle de Anton, in deep, shady canyon, ca. 800 m alt., 17 Jan. 1973, *Dressler 4258* (HOLOTYPE: SEL; ISOTYPE: MO).

DISTRIBUTION: Endemic to Panama, known only from cloud forests in the Provinces of Coclé and Veraguas.

ADDITIONAL MATERIAL EXAMINED: PANAMA: VERAGUAS: along Río Dos Bocas, ca. 12 km beyond Santa Fé, ca. 450 m alt., epiphytic on rock, 25 July 1974, *Croat 25786* (MO); valley of Río Dos Bocas along road between Escuela Agrícola Alto Piedra and Calovebora, 15.6 km NW of Santa Fé, steep forested hill E of river, 450-550 m alt., loosely rooted in debris on fallen log, 31 Aug. 1974, *Croat 27680* (MO); same area, primary forest along trail to Santa Fé, steep forested hill E of river, epiphytic herb, 31 Aug. 1974, *Croat 27713* (MO).

*Nautilocalyx dressleri*, known only from 4 collections, is apparently comparatively rare, and not yet in cultivation at SEL. In Veraguas it occurs in close proximity to *N. panamensis* [at Guabal, *Dressler 4721* (SEL)]. The latter has smaller leaves, prophylls, and calyx lobes, a white or cream-colored corolla, the cells of the anthers dehiscing by complete longitudinal slits, the ovary sericeous, the style pilose, and the capsule smaller and globose.

### Oerstedina Wiehler

Three new, berry-fruited species from Panama and Mexico do not fit into the present generic structure within the subfamily Gesnerioideae. They belong into the tribe Episcieae Endlicher, and appear to be closely related to *Rufodorsia* Wiehler, a very natural genus of four distinct species. The diagnostic features of *Rufodorsia* are the peculiar shape and coloration of the corolla, and the shape of the berry (globose or depressed). The three new species differ in these critical characters, and it seems therefore best to place them into a separate genus.

### Oerstedina Wiehler, gen. nov.

Genus novum *Rufodorsiae* Wiehler affine, sed forma corollae tubulosae, dorso corollae non rufo-colori, et bacca acuta bene distinctum.

Epiphytic, perennial, suffrutescent herbs with erect or ascending stems, opposite-decussate leaves of equal size, the inflorescence congested in the leaf axils, the calyx lobes subequal, the corolla a short, somewhat inflated tube, the anthers included and syngeneous, the ovary superior, the style stomatomorphic, the nectary a dorsal, double-connate gland (plus a single ventral gland in *O. mexicana*), and the fruit a pointed berry.

TYPE SPECIES: *Oerstedina cerricola* Wiehler

ETYMOLOGY: Named for Anders Sandøe Ørsted (1816-1872), a Danish botanist, explorer-collector in the neotropics between 1845 and 1848 (Danish West Indies, Jamaica, and especially Nicaragua and Costa Rica), professor of botany at the University of Copenhagen, and author of many botanical publications, among them *Centralamericas Gesneriaceae* (1858), an important source book. He collected and named many well-known species of Gesneriaceae, such as *Columnnea glabra*, *C. linearis*, *C. nicaraguensis*, and *C. querceti*, and authored the genus *Corytoplectus*.

*Oerstedina cerricola* Wiehler, sp. nov.

(Plate 33:A).

Herba epiphytica, perennis, caules erecti vel ascendentes, ad 1 mm longi, 5-8 mm in diam., basiramiferi, virides, deorsum vinoso-griscentes, sericei, internodiis 2-6 cm longis; folia opposita-decussata, per paria aequalia, petiolis 2-3 cm longis, roseis, sericeis, laminis ellipticis, 7-11 × 3.5-4 cm, acuminatis vel acutis, crenatis, cuneatis, strigoso-sericeis, nervis secundariis 4-6. Inflorescentia cyma axillaris, congesta, 4-10-flora, pedunculo redacto, 1-2 mm longo, prophyllis lanceolatis, 13 × 3 mm, integris, bracteis subtenentibus linearis, 8 × 2 mm, pedicellis 4-10 mm longis, sericeis; lobi calyce subaequales, lanceolati, 5 × 3 mm, apice serrulati, virides, roseo-suffusi, strigoso-sericei; corolla in calyce obliqua, tubulosa, 1.2 cm longa, calcarata, tubo aliquantum inflato, lobis parvis, rotundatis, subaequalibus, 2 × 2 mm, alba et roseo-suffusa, vel rosea, sericea, tubo introrsum trichomatibus glanduliferis; stamina 4, inclusa, filamentis 11 mm longis, tubo corollae 1 mm adnatis, sericeis, antheris syngensis, 1 × 1 mm, thecis parallelis, omnino dehiscentibus; ovarium superum, 2 mm longum, sericeum, stylo 5 mm longo, apice vinoso, glabro, stigmatum stomatomorpho; nectarium glandula duplo-connata, dorsalis, 1.5 mm longa, alba, glabra. Fructus bacca acuta, 5 mm longa, alba, pilosa; semina oblonga, 1.5 mm longa, striata, vinosa, funiculo carnosio, 1.5-1.9 mm longo.

TYPE: PANAMA: CHIRIQUÍ: Cerro Fortuna, ca. 20 km ESE of Boquete, from cuttings collected by Dressler s.n. in Sept. 1976, cultivated at SEL, acc. no. W-2285, 16 July 1977, Wiehler 77120 (HOLOTYPE: SEL; ISOTYPES: MO, PMA, US).

DISTRIBUTION: Endemic to Panama, known only from cloud forests in Bocas del Toro and Chiriquí.

ADDITIONAL MATERIAL EXAMINED: PANAMA: BOCAS DEL TORO: Cerro Horqueta, northern slopes, Robalo trail, 2000-2300 m alt., herb, 1 m tall, flowers pink, common, 5-7 Aug. 1947, Allen 4944 (G, GH, MO, S, US); CHIRIQUÍ: Trocha 3 de Noviembre, between Alto de Guayabo and Paso de la Zorra, 1400-1600 m alt., corolla pinkish cream, 25 Sept. 1976, Dressler 5473 (SEL); Cerro Colorado, N of San Félix, 1300-1400 m alt., Feb. 1977, Dressler s.n. (SEL; also cultivated, with acc. no. W-2375).

*Oerstedina mexicana* Wiehler, sp. nov.

(Plate 33:B).

A *O. cerricola* Wiehler foliis ovatis, floribus majoribus, calycum lobis angustioribus longioribusque, corollarum lobis ventralibus et lateralibus amplioribus, ovario glabro et nectario glandulae duae dignoscenda.

Epiphytic, perennial herb, with the stems erect or ascending, to 20 cm high, 8 mm in diam., branching at the base, green, further down tan, hirsute, the internodes 1-2.5 cm long; leaf pairs of equal size, the petioles 2-3 cm long, green, hirsute, the lamina ovate, 6-8 by 3.5-4.5 cm, acuminate, crenate, obtuse, leathery, bluish green and sericeous-hirsute above, light green and hirsute below, with 4-5 secondary veins. Inflorescence an axillary, congested

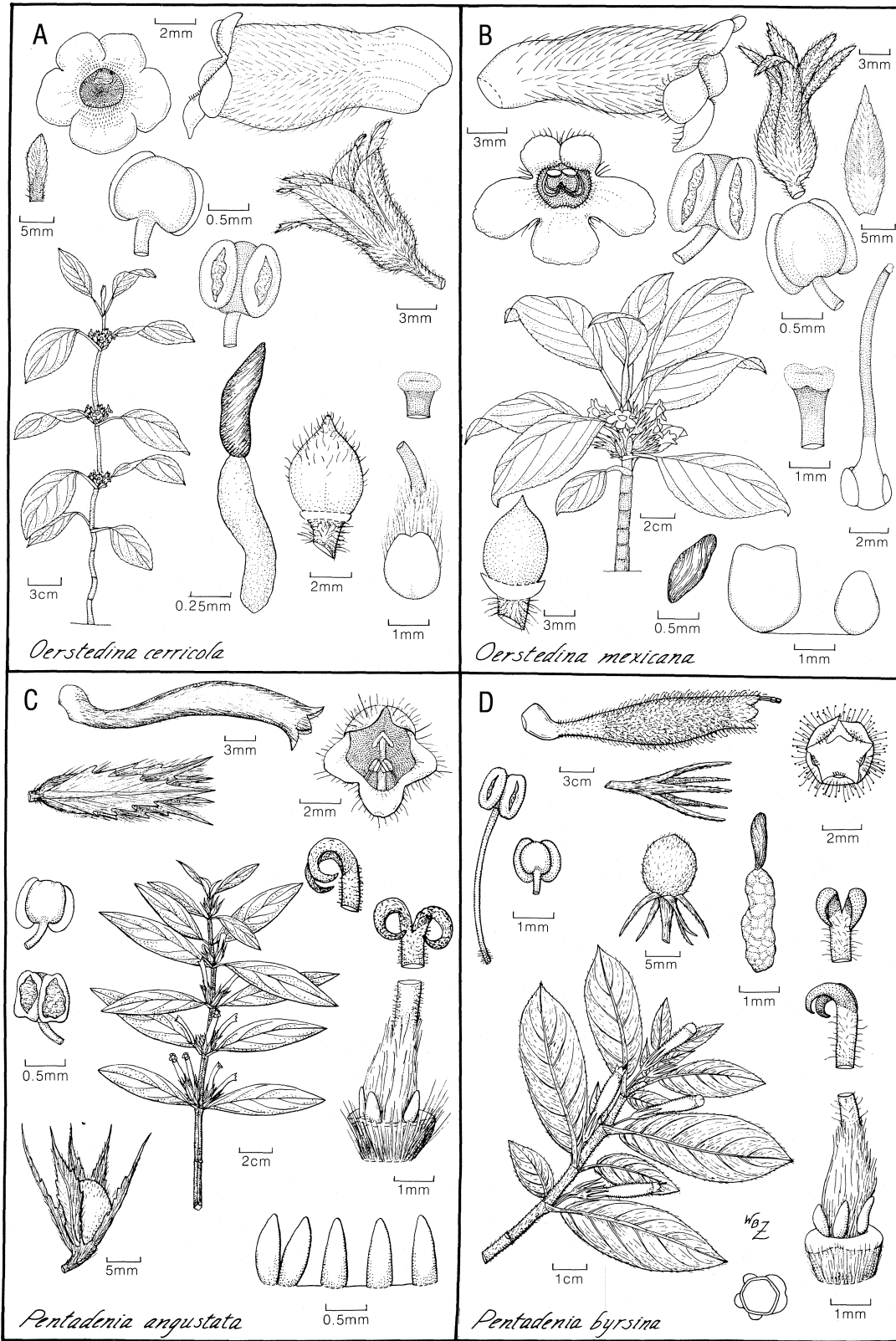


Plate 33

cyme of 4-6 flowers, the peduncle reduced to 1-2 mm, the prophylls lanceolate, 18 by 6 mm, entire, green, sericeous-hirsute, the subtending bracts similar, 13 by 3 mm, the pedicels 4-8 mm long, sericeous; calyx lobes subequal, linear-lanceolate, 11 mm long, subentire, green, with orange tips, sericeous-hirsute; corolla almost erect in the calyx, tubular, 2 cm long, with a short spur, the tube ventrally somewhat inflated, the lobes very unequal, subentire, with the ventral and lateral lobes ca. 5 by 5 mm, the dorsal lobes 2 by 2 mm, white, with a faint pink flush dorsally, sericeous, the inside of the tube with wine-red spotting and with short, glandular trichomes; stamens 4, included, the filaments 1.4 cm long, adnate for 5 mm to the base of the corolla tube, glabrous, the anthers 1 by 1 mm, with parallel thecae dehiscing by longitudinal slits; ovary superior, 2.5 mm long, glabrous, the style 1.3 cm long, glabrous, the stigma stomatomorphic; nectary consisting of 2 glands, one dorsal and double-connate, the other ventral and smaller, both white and glabrous. Fruit a pointed, white, glabrous berry, 1 cm long; seeds oblong, 1.1 mm long, striate, light brown, with a fleshy funiculus 1.9 mm long.

TYPE: *MEXICO*: GUERRERO: road between Ocote and Xextla, seed collected on 17 June 1973 by *Dressler s.n.*, plants cultivated at SEL, acc. no. W-2180, 16 July 1977, *Wiehler 77121* (HOLOTYPE: SEL; ISOTYPES: MEXU, US).

DISTRIBUTION: Known only from the type locality in Mexico.

A third species of *Oerstedina* will be published later, after several recent plant collections at SEL have flowered.

*Pentadenia angustata* Wiehler, sp. nov.

(Plate 33:C).

Differt a *P. ecuadorana* Wiehler corollis angustioribus, curvatoribus, parce sericeis, et nectarii glandulis elongatis.

Epiphytic, perennial, suffrutescent herb with ascending, spreading, or descending, sparsely branching stems, to 2 m long, 6-12 mm in diam., green or wine-red, turning tawny further down, puberulous, with internodes 1-4 cm long; leaf pairs subequal, the petiole 1-3 cm long, hirsute, the lamina elliptic, 7-10 by 2.5-3.5 cm, acuminate, entire, cuneate, green and sparsely hirsute above, lighter green, often suffused with pink, and sericeous below, with 4-5 pairs of secondary veins. Inflorescence an axillary, reduced cyme of 2-6 flowers, the peduncle absent, the prophylls oblong, 5 by 1.5 mm, entire, green, suffused with pink, sericeous, the subtending bracts similar, 3 by 1 mm, the pedicels 3-5 mm long, sericeous; calyx lobes subequal, lanceolate, 8-11 mm long, acuminate, serrate, the 3-4 teeth on each side sometimes subulate, pink to maroon, sericeous; corolla erect in the calyx, tubular, ca. 2.7 cm long, spurred, usually orange, but also yellow or pink, finely sericeous, the lobes small, 2 by 2 mm, entire, the tube inside with glandular trichomes; stamens 4, included, the filaments ca. 2.4 cm long, glabrous, the syngenesous anthers 0.7 by 0.7 mm; ovary superior, 3 mm long, sericeous, the style ca. 2.5 cm long, white, glandular-pubescent, the stigma bifid; nectary consisting of 5 elongated, white, glabrous glands, the two dorsal ones sometimes connate. Fruit a globose, white, pilose berry, ca. 1.2 cm in diam.; seeds oblong, striate, brown, 1.1 mm long, with a fleshy funicle 2.5 mm long.

TYPE: *COLOMBIA*: EL VALLE: old road from Cali to Buenaventura, 8 km past La Elsa, epiphyte, calyx maroon-pink, corolla orange, 30 April 1972, *Wiehler, Dressler & Williams 7276* (HOLOTYPE: SEL; ISOTYPES: COL, K, MO, NY, US).

DISTRIBUTION: From northwestern Colombia (Valle, Chocó, Antioquia) to Panama (Veraguas) and Costa Rica (Heredia).

ADDITIONAL MATERIAL EXAMINED: *COLOMBIA*: VALLE: Córdoba, 50-100 m alt., dense forest, 17 Feb. 1939, *Killip & Garcia 33381* (US); hoya del Río Digua, Piedra de Moler, 900-1180 m alt., 27 Aug. 1943, *Cuatrecasas 15012* (VALLE); highway from Buenaventura to Cali, near sea level, dense forest, 10 June 1944, *Killip & Cuatrecasas 38996* (US); Bahía de Buenaventura, Quebrada de San Joaquín, 0-10 m alt., 23 Feb. 1946, *Cuatrecasas 19957* (VALLE); Río Calima, lomas frente a Quebrada de la Brea, 30-50 m alt., 18 May 1946, *Cuatrecasas 21091* (F); hoya del Río Anchicayá, entre Sabaletas y la Quebrada del Tatabro, 30-60 m alt., 28 Sept. 1946, *Cuatrecasas 22046* (VALLE); old road from Cali to Buenaventura, 1 km S on road along Río Dagua, 1 May 1972, *Wiehler, Dressler, & Williams 72129* (SEL); *CHOCÓ*: Quibdó, Río Atrato, ca. 60 m alt., April-May 1931, *Archer 1904* (US); Loró, 50 km S of Quibdó, at junction of Río Atrato and Río Andágueda, 11 May 1931, *Archer 2053* (US); Río Atrato at Yuto, 70 m alt., 2 April 1958, *Cuatrecasas & Llana 24150* (US); *ANTIOQUIA*: entre Guapá and Río León, ca. 100 m alt., 18 March 1948, *Ruiz Landa, Rivera, & Barkley 123* (US-2 sheets); *PANAMA*: VERAGUAS: 8 km W of Santa Fé on road past Escuela Agrícola Alto Piedra on Pacific side of continental divide, 800-1200 m alt., 18-19 March 1973, *Liesner 916* (MO); same area, 15-20 km NW of Santa Fé, 650-800 m alt., 8 Sept. 1974, *Dressler 4732* (SEL); *COSTA RICA*: HEREDIA: valley of Río Sarapiquí, near Cariblanco, 800-900 m alt., 1959, *Horich s.n.* (BH, US, both sub *Moore 7773*; at SEL sub *Wiehler 7210*).

*Pentadenia byrsina* Wiehler, sp. nov.

(Plate 33:D).

Species foliis coriaceis, antheris exclusis, et corolla tricolori a congeneribus diversa.

Epiphytic, perennial, suffrutescent herb and climber, with ascending, spreading, or descending, sparsely branching stems, to ca. 2 m long, 5-13 mm in diam., maroon, sericeous, with internodes 1.2-3 cm long; leaf pairs very unequal, sessile, or the petioles to 3 mm long, the lamina of the larger leaf oblanceolate or elliptic, 5-8 by 2.5-3 cm, acuminate or acute, entire, cuneate or oblique, leathery, shiny dark green and sparsely sericeous above, lighter green or suffused with pink, and with long, silky, sericeous hairs below, the pairs of secondary veins 6-10. Inflorescence an axillary, reduced cyme of 4-6 flowers, the peduncle absent, the prophylls or subtending bracts minute, subulate, 3 by 0.6 mm, the pedicles 4-10 mm long, green, sericeous; calyx lobes subequal, linear-lanceolate, ca. 7 mm long, green, or flushed with pink, sericeous; corolla erect in the calyx, tubular, ca. 2.4 cm long, the spur and the following constricted area cream-white, the inflated upper part of the tube magenta-red, the limb lemon-yellow, with the lobes subequal, 2 by 2 mm, the outside of the tube with short, sericeous hairs and long, pilose, glandular trichomes, the inside with short, glandular hairs; stamens 4, excluded, the filaments at the male phase of anthesis 2.5 cm long, adnate for 2 mm to the base of the corolla tube, pilose to mid-point, glabrous above, the anthers syngenesous, 1.2 by 1.2 mm; ovary superior, 2.5 mm long, green, sericeous, the style at the female phase of anthesis 2.2 cm long, white, pilose, the bifid stigma exserted; nectary consisting of 5 white, glabrous glands, the

2 dorsal ones connate. Fruit a globose, white, pubescent berry, ca. 8 mm in diam.; seeds oblong, 1.6 mm long, striate, light brown, with a fleshy funicle 2.2 mm long.

TYPE: *ECUADOR*: NAPO: woods near Baeza, epiphyte, seed collected by Dressler, Williams, & Stevenson s.n., Dec. 1974, plants cultivated at SEL, acc. no. W-2138, 17 July 1977, Wiehler 77122 (HOLOTYPE: SEL; ISOTYPES: COL, K, NY, QCA, S, US).

DISTRIBUTION: known from two separate areas: from Napo, the type locality in eastern Ecuador, and from Valle in western Colombia.

ADDITIONAL MATERIAL EXAMINED: *COLOMBIA*: VALLE: Western slope of the Andes, between Las Brias and La Marina, 1750-1850 m alt., epiphyte, 27 Oct. 1946, Cuatrecasas 22667 (F-2 sheets); valley of Río Dígua, near Queremal, 1350-1400 m alt., 25 Feb. 1947, Cuatrecasas 23702 (F); old road from Cali to Buenaventura, at Río Anchicayá, epiphytic climber, rooting by nodes and internodes, on the same tree with 2 species of *Dalbergaria*, 29 April 1972, Wiehler, Dressler, & Williams 7217 (SEL).

*Pentadenia byrsina* can be recognized easily by its leathery leaves and its three-colored corolla. *Byrsa* is the Greek name for leather.

***Pentadenia colombiana* Wiehler, sp. nov.**

(Plate 34:A).

Corollae forma et colore *P. brysinæ* Wiehler similis, praesertim differt foliis parvioribus subaequalibus ovatis non coriaceis, calycum lobis serrato-subulatis, et antheris inclusis.

Epiphytic, perennial, suffrutescent, vine-like herb, either climbing while rooting by nodes and internodes, or with stems pendent, spreading, or descending, sparsely branching, 2-3 m long, 3-6 mm in diam., green, hirsute, with internodes 1-3 cm long; leaf pairs subequal, the petioles 3-9 mm long, hirsute, the lamina ovate, 2.5-4 by 1.6-2.4 cm, acute, entire, obtuse, green, hirsute, with 3-4 pairs of secondary veins. Inflorescence a reduced, axillary, one-flowered cyme, the peduncle, prophylls, and subtending bracts absent, the pedicel 8-13 mm long, green, hirsute; calyx lobes subequal, lanceolate, ca. 1 cm long, serrate, with 4-7 teeth on each side, the lower ones subulate, green, with the tips and teeth red, hirsute; corolla erect in the calyx, tubular, ca. 3 cm long, the spur cream-white, the tube rose-red, with short, appressed hairs and long, glandular trichomes, the limb greenish yellow, the lobes subequal, 2 by 3 mm, entire, the inside of the tube with small, glandular trichomes; stamens 4, included, the filaments 2.8 cm long, glabrous, adnate for 5 mm to the base of the corolla tube, the anthers syngenesous, 1.2 by 1.2 mm; ovary superior, 3 mm long, sericeous, the style 2.6 cm long, white, pilose-glandular, the stigma bifid; nectary consisting of 5 white, glabrous glands, the 2 dorsal ones connate. Fruit a globose, white, pilose berry, ca. 1.3 cm in diam.; seeds oblong, striate, brown, 1.1 mm long, with a fleshy funicle 2.9 mm long.

TYPE: *COLOMBIA*: VALLE: along Río Dagua, near Buenaventura, on old road from B. to Cali, epiphyte on isolated tree by river, 1 May 1972, Wiehler, Dressler, & Williams 72130 (HOLOTYPE: SEL; ISOTYPES: BH, COL, F, K, MO, NY, P, S, U, US, W).

DISTRIBUTION: Endemic to Colombia, only known from two collections near Buenaventura in Valle.

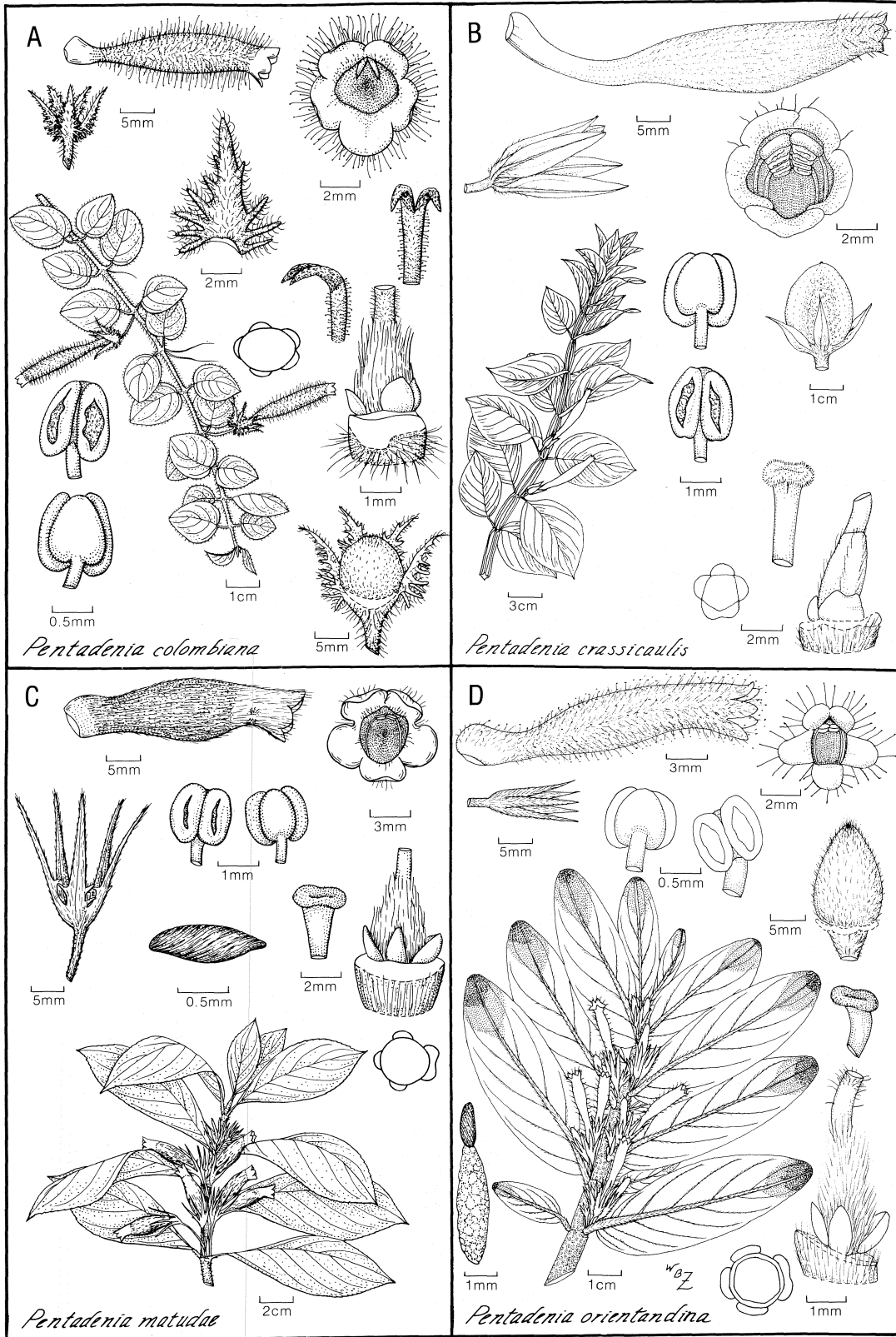


Plate 34

ADDITIONAL MATERIAL EXAMINED: COLOMBIA: VALLE: Sabaletas, km 29 of highway from Buenaventura to Cali, 25 m alt., herbaceous, epiphytic vine, 4-6 June 1944, *Killip & Cuatrecasas 38847* (US).

***Pentadenia crassicaulis*** Wiehler, sp. nov. (Plate 34:B).

A congeneribus caulibus crassis succulentis alatis, et corollis elongatis distinguenda.

Epiphytic or saxicolous, perennial, succulent herb, with stems ascending, spreading, descending, or climbing and rooting by the nodes, freely branching, 2-3 m long, 6-13 mm in diam., green, or suffused with purple, sparsely sericeous, glabrescent, the internodes 2-5 cm long; leaf pairs equal, the petioles 4-9 mm long, sericeous, the lamina ovate, 7-9 by 3-5.5 cm, acuminate, subentire, weakly serrate near the apex, cuneate, leathery, yellow-green above, reddish below, glabrate, with 3-4 pairs of sericeous, secondary veins. Inflorescence a reduced, axillary, one-flowered cyme, the peduncle, prophylls, and subtending bracts absent, the pedicel 3-8 mm long, sericeous; calyx lobes subequal, lanceolate, ca. 18 by 4 mm, entire, orange-green and basally pilose outside, yellow-green and glabrous inside; corolla erect in the calyx, tubular, ca. 5.3 cm long, the spur cream-white, the tube lemon yellow, sericeous, turning greenish and pilose near the limb, the lobes subequal, 2 by 3 mm, entire, yellow, glabrous, the tube inside with short, glandular trichomes; stamens 4, included, the filaments ca. 4.2 cm long, adnate for 12 mm to the base of the corolla tube, pubescent, the anthers syngenesous, 2 by 1.5 mm; ovary superior, 5 mm long, green, glabrous, the style ca. 4.2 cm long, white, glabrous, the stigma stomatomorphic; nectary consisting of 5 white, glabrous glands, the 2 dorsal ones enlarged, connate. Fruit a large, oblong, white, glabrous berry, ca. 2.3 by 1.9 cm; seeds oblong, striate, brown, 1.5 mm long, with a fleshy funicle 3 mm long.

TYPE: COLOMBIA: NARIÑO: near Ricaurte, at km 79 on road from Túquerres to Tumaco, along Río Guabo, epiphyte on tree stumps and rocks, 9 May 1972, *Wiehler & N. H. Williams 72185* (HOLOTYPE: SEL; ISOTYPES: COL, K, MO, NY, S, U, US).

DISTRIBUTION: Known only from two collections, in Nariño, Colombia, and in Pichincha, Ecuador.

ADDITIONAL MATERIAL EXAMINED: ECUADOR: PICHINCHA: road from Nono to Tandayapa, 1700-2000 m alt., steep, rocky banks, 5 Jan. 1975, *Dressler 4926* (SEL).

***Pentadenia matudae*** Wiehler, sp. nov. (Plate 34:C).

Ex affinitate *P. nervosae* Oersted, *P. rubidae* (Morton) Wiehler\*, et *P. vinaceae* (Morton) Wiehler, sed a prima antheris inclusis, a secunda calyce sericeo, a tertia corolla parce sericea, et ab omnibus corolla bicolori bene distincta.

Epiphytic, perennial, suffrutescent herb, with erect, ascending, or spreading, sparsely branching stems, ca. 50 cm long, ca. 6-10 mm in diam., green or maroon, sericeous, with internodes 2-7 cm long; leaf pairs subequal, the petioles 1-3.5 cm long, sericeous, the lamina elliptic, 10-15 by 5-7 cm, acuminate, serrate, cuneate, green, sericeous, sometimes with a pink flush below, the pairs of secondary veins 5-7. Inflorescence an axillary, reduced cyme of 4-8 flowers, the peduncle absent, the prophylls lanceolate, 1.2-1.9

\*comb. nov., *Alloplectus rubidus* Morton, Ann. Missouri Bot. Gard. 24:204. 1937.



cm long, entire, sericeous, the subtending bracts subulate, ca. 9 mm long, the pedicels ca. 2.3 cm long, green or maroon, sericeous; calyx lobes lanceolate, ca. 1.4 cm long, with 2-3 subulate teeth on each side, green with red tips, or suffused with maroon, sericeous on both sides; corolla nearly erect in the calyx, tubular, ca. 3.2 cm long, the spur almost absent, the lobes equal, 2 by 3 mm, the lower two-thirds of the tube red, the upper third greenish yellow, sparsely sericeous externally, the throat inside ventrally with three red spots, dorsally with glandular trichomes, the tube inside pilose; stamens 4, included, the filaments ca. 2.5 cm long, adnate for 5 mm to the base of the corolla tube, proximally pilose, distally glabrous, the anthers syngenesous, 1.2 by 1 mm; ovary superior, 3 mm long, sericeous, the style 2.7 cm long, glabrous, the stigma stomatomorphic; nectary consisting of 5 white, glabrous glands, the 2 dorsal ones connate. Fruit a globose, white, glabrate berry, ca. 1 cm in diam.; seeds oblong, striate, reddish brown, 1.1 mm long.

TYPE: MEXICO: CHIAPAS: Rodillo, 9 Aug. 1937, *E. Matuda 1626* (HOLOTYPE: US, Herb. no. 1791633; ISOTYPES: F, GH, K, MEXU-not seen, NY, US).

DISTRIBUTION: Endemic to Mexico, known only from the State of Chiapas.

ADDITIONAL MATERIAL EXAMINED: MEXICO: CHIAPAS: Monte Ovando, 9-12 April 1937, *Matuda 1860* (GH, US); same locality, 5 May 1948, *Matuda 17743* (US); San Juan Panamá, Escuintla, 1834 m alt., in wet forest, on tree, 23 July 1948, *Matuda 18070* (F); Municipio Angel Albino Corzo, El Triunfo, above Finca Prusia, 2300 m alt., 8 April 1961, *MacDougall 466* (US); same collection, cultivated by Denham in Boulder, Colorado, U.S.A., acc. no. GG-614, Cornell acc. no. G-919, June 1963, *Denham s.n.* (US); Lago de Tziscaco, near Guatemalan border, E of La Trinitaria, Nov. 1972, *N. H. Williams s.n.* (SEL; greenhouse acc. no. W-1798).

*Pentadenia matudae* belongs to a group of large-leaved pentadenias which includes *P. nervosa* from Veraguas, Panama (corolla sigmoid-curved, anthers and stigma exserted, recently rediscovered on Cerro Tute, and found to differ from the following species), *P. rubida* from Chiriquí, Panama (calyx long-pilose, corolla yellow), and *P. vinacea* from Honduras, Belize, and Guatemala (calyx hirsute, corolla yellow, but densely red-hirsute).

*Pentadenia orientandina* Wiehler, sp. nov.

(Plate 34:D).

A *P. zapotalana* Wiehler foliis brevioribus coriaceis acutis vel obtusis apice rubro-translucentibus, corolla brevior leviter tantum curvata glanduloso-pilosa notabilis.

Epiphytic, perennial, suffrutescent herb with ascending or spreading, freely branching, thick stems, to 40 cm long, 7-12 mm in diam., green or tawny, hirsute, with internodes 1-4 cm long; leaf pairs very unequal, but subequal in seedlings and in nearly upright branches, the petiole 3-8 mm long, green, sericeous, the lamina of the larger leaf elliptic to oblanceolate, 6-9 by 2.5-3.5 cm, acute or obtuse, entire, oblique, stiff-leathery, green, apically red-spotted below, with the tip red-translucent, pilose-sericeous, the pairs of secondary veins 5-8, the lamina of the smaller leaf similar, variable in size from 3 by 1.5 cm to minute and caducous. Inflorescence a reduced, axillary cyme of 2-8 flowers, the peduncle absent, the prophylls minute, lanceolate, by 1 mm, green, sericeous, the subtending bracts smaller, similar, the pedicels 4-10 mm long, green or maroon, sericeous; calyx lobes subequal, lanceo-

late, 10 by 1.5 mm, subentire, green (but in fruit red-tipped), sericeous; corolla erect in the calyx, tubular, ca. 2.5 cm long, with a short spur, the lobes subequal, elongate, 2.5 by 1.5 mm, entire, lemon-yellow, short hirsute and long glandular-pilose, the inside glabrate; stamens 4, included, the filaments 2.2 cm long, adnate for 4 mm to the base of the corolla tube, glabrous, the anthers syngenesous, 1 by 1 mm; ovary superior, 3 mm long, green, sericeous, the style ca. 1.9 cm long, white, pilose, the stigma stomatomorphic; nectary consisting of 5 white, glabrous glands, the 2 dorsal ones connate. Fruit an ovoid, pink, pilose berry, ca. 1.7 by 1 cm; seeds oblong, striate, tan, 1.3 mm long, with a fleshy funicle 3.5 mm long.

TYPE: *ECUADOR*: MORONA-SANTIAGO: Cordillera de Cutucú, 25 km SE of Logroño, 1000 m alt., epiphyte, grown from cuttings of the collection *Madison & Coleman 2537* at the SEL greenhouses, 20 July 1977, *Wiehler 77123*, (HOLOTYPE: SEL; ISOTYPES: BH, F, GH, K, MO, NY, P, QCA, S, U, US).

DISTRIBUTION: Known from two different areas in the eastern Andes, the Cordillera de Cutucú in Ecuador, and the Province of Junín in Peru.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: MORONA-SANTIAGO: type locality, 15 Jan. 1976, *Madison & Coleman 2537* (SEL); Cordillera de Cutucú, western slope, along a trail from Logroño to Yaupi, about 2° 46' S, 78° 06' W, wet montane forest, 1500 m alt., epiphyte, Nov. 1976, *Madison, Bush, & Davis 3420* (SEL); *PERU*: JUNÍN: Pichis Trail, San Nicolas, ca. 1000 m alt., dense forest, terrestrial, 4-5 July 1929, *Killip & Smith 26059* (US).

*Pentadenia orientandina* ("from the eastern Andes") has horticultural value because of its compact habit, attractive, leathery, red-spotted leaves, and the simultaneously appearing yellow corollas and shiny, pink berries.

***Reldia* Wiehler, gen. nov.**

Tribus Beslerieae Bartling & Wendland; *Gasterantho* Benthaffine, a quo foliis alternis, forma corollae nectarii, et capsula seca differt.

Low, terrestrial, perennial herbs with erect stems, short internodes, and alternate leaves spirally arranged in a two-fifths phyllotaxy, the upper leaves forming a loose rosette, the vascular crescent of the petiole in cross-section near the lamina invaginated, the abaxial lamina with the stomata grouped into clusters. Inflorescence axillary, without prophylls or subtending bracts, the corolla infundibular, zygomorphic, the ovary superior, the nectary reduced to a single posterior gland. Fruit a non-fleshy, bivalved capsule; seeds minute.

TYPE SPECIES: *Reldia alternifolia* Wiehler

ETYMOLOGY: Named for Dr. Robert L. Dressler of the Smithsonian Tropical Research Institute, Balboa, Panama, in recognition of his long-standing interest in the neotropical Gesneriaceae. He has discovered many new species of gesneriads in Panama, including the two species of the new genus. The manuscript and illustrations of the genus were presented to him at the Marie Selby Botanical Gardens on 2 June 1977, his 50th birthday and wedding day.

***Reldia alternifolia* Wiehler, sp. nov.**

(Plate 35:A).

Herba perennis, terrestris, humilis, caules erecti, ad 15 cm longi, 4-6 mm in diam., virides vel purpurei, hirsuti, internodiis 4-10 mm longis; folia

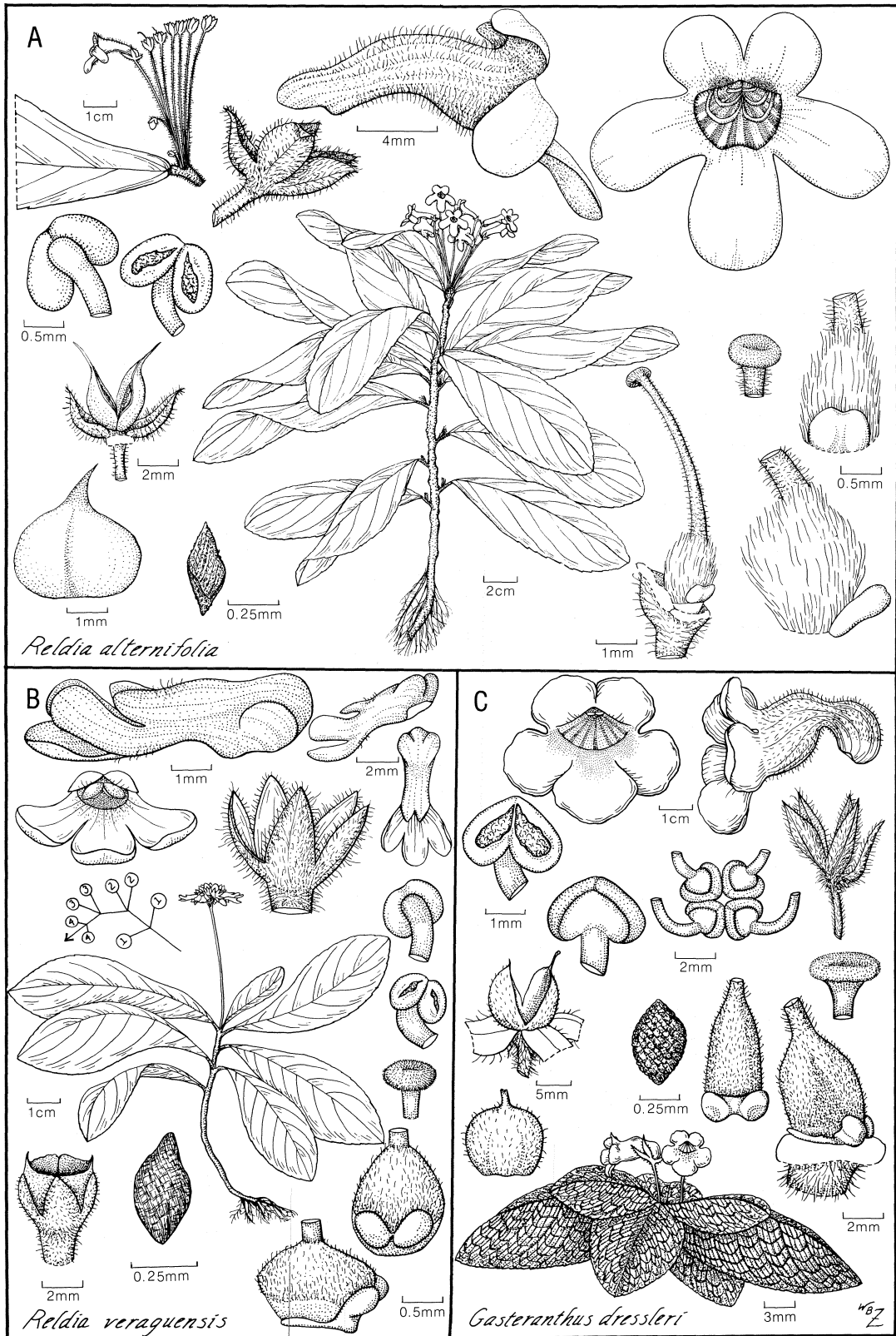


Plate 35

alterna, petiolis 3-10 mm longis, viridibus vel purpureis, hirsutis, laminis obovatis, 10-15 × 4.5-7 cm, obtusis, subintegris vel obscure serratis, cuneatis, coriaceis, viridibus, glabris, nervis secundariis 5-6, rubris, sericeis, stomatibus abaxialibus conglomeratibus (Figura 1). Inflorescentia cyma epiphylla, cristata, 1-10-flora, ebracteata, pedunculo destituto, pedicellis e petiolo seriatim exorientibus, 3-4 cm longis, purpureis, hirsutis; lobi calycum subaequales, ovati, 7 × 3 cm, acuti, integri, pilosi; corolla in calyce obliqua, infundibularis, ca. 2.1 cm longa, calcarata, tubo eburnea, pilosa, limbo ca. 1.5 cm in diam., alba, intus glabra, lobis inaequalibus, integris, lobo ventrali et lobis lateralibus ca. 6 × 4 mm, lobis dorsalibus ca. 4.5 × 3 mm, basaliter cinnamomeo-maculatis, tubo intra piloso, ventraliter luteo, cinnamomeo-vittato, dorsaliter trichomatibus brevibus glanduliferis; stamina 4 (et staminodium 1, dorsale), inclusa, filamentis 1.3 cm longis, glabris, tubo corollae 3 mm adnatis, antheris syngenesi, 0.7 × 0.7 mm; ovarium superum, 3 mm longum, hirsutum, stylo 7 mm longo, piloso, stigmatibus stomatomorpha; nectarium glandula dorsalis, biloba, alba, glabra. Fructus capsula seca, 3 mm longa, lateraliter aliquantum compressa, bivalvis, loculicida; semina rhombiformia, minuta, 0.4 × 0.3 mm, striata, granulata, nigra.

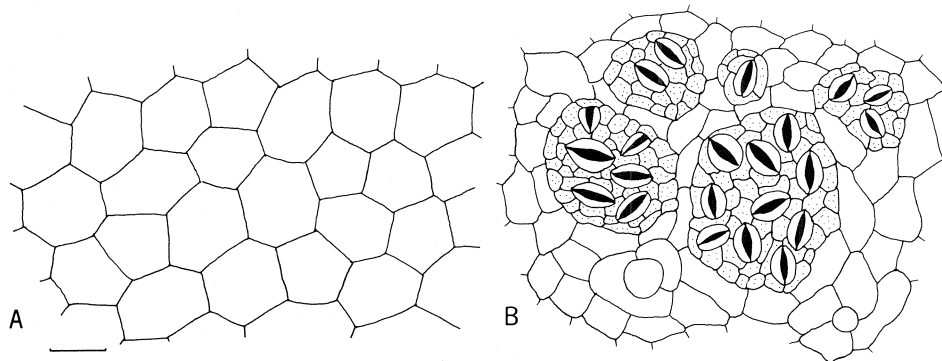


Figure 1. Epidermis of the leaf of *Reldia alternifolia*, Wiehler 71125. A, adaxial surface; B, abaxial surface with clustered stomata. Raised surface shaded. Scale: 50 microns.

TYPE: PANAMA: PANAMÁ: El Llano - Cartí highway, about 17 km N of El Llano, 400-450 m alt., wet forest, near stream, 16 Jan. 1974, Dressler 4540 (HOLOTYPE: SEL; ISOTYPES: K, MO, SEL, US).

DISTRIBUTION: Endemic to Panama, known only from the Provinces of Colón and Panamá.

ADDITIONAL MATERIAL EXAMINED: PANAMA: COLÓN: ridge between Río Guanche and Río Iguanita, ca. 300 m alt., 19 Dec. 1974, Dressler 4891 (SEL); same locality and collection, live plants grown at SEL greenhouses, acc. no. W-2188, 21 July 1977, Wiehler 77125 (SEL, to be distributed); PANAMÁ: type locality, plants raised from seed of type material, grown at SEL greenhouses, acc. no. W-1925, 21 July 1977, Wiehler 77124 (SEL, to be distributed).

The cristate epiphyllous inflorescence of *Reldia alternifolia* (see Plate 35:A) is the first example observed among the neotropical Gesneriaceae. It was described, illustrated, and interpreted by Anton Weber for two paleotropical gesneriad species of *Chirita* [Notes Roy. Bot. Gard. Edinburgh 34(2): 221-230, 1975].

**Reldia veraguensis** Wiehler, sp. nov.

(Plate 35:B).

A *R. alternifolia* Wiehler pedunculis longis et corollis parvioribus statim dignoscenda.

Low terrestrial, perennial herb with erect stems, to 10 cm long, 2.5-4 mm in diam., green, hirsute, the internodes 7-10 mm long; leaves alternate, the petioles 5-8 mm long, sericeous, the lamina oblanceolate, 5-8 by 2-3 cm, acute, subentire, but weakly serrate apically, cuneate, green, glabrous, with 6-7 pairs of secondary, sericeous veins, the abaxial stomata grouped into clusters. Inflorescence an axillary, pair-flowered, ebracteate cyme of 2-10 flowers, the peduncle 3-4.5 cm long, green, sericeous, the pedicels 2-4 mm long; calyx lobes subequal, lanceolate, 2.5 mm long, entire, outside pilose, inside glabrous; corolla oblique in the calyx, infundibular, 8 mm long, with a broad spur, white, sparsely pilose, the limb strongly bilabiate, the ventral and lateral lobes 2.8 by 1.5 mm, the 2 dorsal lobes 1 by 1 mm, all rotund, entire, the tube inside ventrally yellow, dorsally with glandular trichomes; stamens 4 (plus a dorsal staminode, 1 mm long), included, the filaments 3.5 mm long, glabrous, adnate for 0.5 mm to the base of the corolla tube, the anthers syngenesous, 0.5 by 0.7 mm, the thecae confluent, dehiscing by longitudinal slits; ovary superior, 2 mm long, laterally compressed, pilose, the style 1.5 mm long, glabrous, the stigma discoid-stomatomorphic; nectary a bilobed, dorsal, white, glabrous gland. Fruit a dry, bivalved, loculicidal capsule forming a round splash-cup; seeds oblong, striate, granular, brown, 1.3 mm long.

TYPE: PANAMA: VERAGUAS: between third branch of Río Santa María and continental divide, 13-14 km NW of Santa Fé, 700-800 m alt., steep slopes in wet forest, 16-17 Nov. 1974, *Dressler 4831* (HOLOTYPE: SEL).

DISTRIBUTION: Endemic to Panama, known only from the type locality in Veraguas.

**Gasteranthus dressleri** Wiehler, sp. nov.

(Plate 35:C).

Habitu *G. crispo* (Mansf.) Wiehler similis, sed differt forma et colore corollae; corollae forma et colore *G. delphinioidi* aemulans, sed differt habitu plantae et calcari brevior.

Low, terrestrial, perennial herb with short stems, 4-8 cm long, ca. 5 mm in diam., the equal leaves forming a rosette; petioles 1-5 cm long, somewhat succulent, green, pilose; lamina broadly elliptic, 13-18 by 8-9.5 cm, obtuse or acute, crenate, auriculate or obtuse, bullate, bluish green and hirsute above, pale gray-green and glabrous below, the veins below sericeous, with 6-8 pairs of secondary veins. Inflorescence an axillary, ebracteate, pair-flowered cyme of 1-4 flowers, the peduncle 1-3 cm long, the pedicels 2-5 cm long, both purple, hirsute; calyx lobes lanceolate, 17-21 by 6-7 mm, acuminate, entire, green, with purple stripes, long-pilose outside, glabrous inside; corolla oblique in the calyx, infundibular, ca. 5.5 cm long, the large spur and the tube white, pilose-hirsute, the limb ca. 5 cm in diam., white, glabrate inside, the lobes subequal, rotund, ca. 1.8 by 2.2 cm, entire, the tube inside with magenta lines and short, glandular trichomes, the throat yellow below; stamens 4 (plus a dorsal staminode, 11 mm long), included, the filaments 2 cm long, adnate for 9 mm to the base of the corolla tube, glabrous, the anthers 2 by 3 mm, syngenesous into a square, the theca apically confluent, dehiscing by longitudinal slits; ovary superior, 6 cm long, laterally compressed, short-pilose, the style curved, 1.8 cm long, pilose basally, glabrous

above, the stigma facing downward, stomatomorphic; nectary consisting of a large, dorsal, grooved, white, glabrous gland with two bulges, pilose, laterally compressed, with the staminode fitting into the groove. Fruit a fleshy, pilose, laterally compressed, bivalved, loculicidal capsule, 1.1 by 1.4 cm; seeds oblong, 0.5 mm long, granular, light brown.

TYPE: PANAMA: COLÓN: about 1-2 km upstream on Río Guanche from bridge and road to Portobelo. Terrestrial, in loam-clay soil near river bank in moist, somewhat shaded areas, often together with *Gasteranthus delphinoides*, 10 Aug. 1971, *Wiehler & Dressler 71165* (HOLOTYPE: SEL).

DISTRIBUTION: Known from three separate areas, in Colombia (Antioquia, Valle) and Panama (Colón).

ADDITIONAL MATERIAL EXAMINED: PANAMA: COLÓN: on Santa Rita Ridge road, NW of Agua Clara rain gauge, about half-way between rain gauge and coastal highway near Puerto Pílon, forest in steep, shady canyon, near stream, 7 Feb. 1971, *Dressler 3930* (SEL); near type locality, Río Guanche, ca. 2.5 km upstream from bridge, 1 Nov. 1971, *H. Kennedy 1233* (SEL); plants raised from seed of holotype, SEL greenhouse acc. no. W-1104, 22 July 1977, *Wiehler 77126* (SEL, to be distributed); COLOMBIA: VALLE: Río Bravo, NW of village of Darién, 1800 m alt., edge of thick woodland, 22 July 1962, *Robinson 85* (K); Alta Flor, Calima Gorge, 850 m alt., steep woodland, "7. 9. 62," *Hugh-Jones 397* (K); ANTIOQUIA: La Viva, 1500 m alt., forest brookside, 5 Oct. 1880, *Kalbreyer 1659* (K). The adaxial lamina in this collection is almost glabrous. The next two collections from Antioquia probably belong to the same species, but have dark purple or brown corollas and the leaves glabrate above: Alto Boqueron, 2700 m alt., forest, moist, shady, fl. dark brown, 8 July 1880, *Kalbreyer 1511a* (K); Río Verde, 1880 m alt., forest, moist, shady, fl. dark purple, 7 Dec. 1880, *Kalbreyer 1787* (K).

*Gasteranthus dressleri* belongs to the tribe Beslerieae, but it looks superficially so much like a member of the genus *Sinningia* (tribe Gloxinieae) that it was at first labelled provisionally as "*Sinningia dressleri*." Upon closer examination, however, it has all the characteristics of the genus *Gasteranthus*, including the clustered stomata (Figure 2). It is an interesting com-

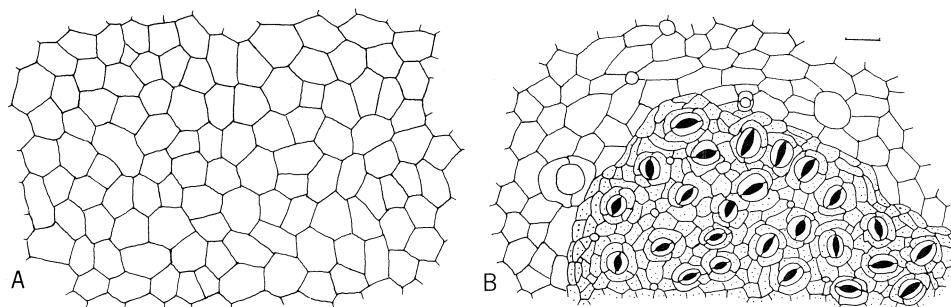


Figure 2. Epidermis of the leaf of *Gasteranthus dressleri*, *Wiehler 77126*. A, adaxial surface; B, abaxial surface with clustered stomata. Raised surface shaded. Scale: 50 microns.

panion species to the scarlet-flowered *G. crispus* from Ecuador (Plate 24:A) which was first described as a new, monotypic genus. *Gasteranthus delphinioides* is a subshrub, to 60 cm high, with corollas in shape, size, and coloration similar to *G. dressleri*, but with a downward curved spur, 2.5 cm long.

***Trichantha cerropirrana* Wiehler, sp. nov.** (Plate 36:A).

A *T. dissimili* (Morton) Wiehler caulibus et foliis sericeis, pedicellis longioribus tenuioribusque, et floribus parvioribus sericeis diversa.

Epiphytic, perennial, suffrutescent, vine-like herb, either climbing while rooting by the nodes, or with stems spreading or descending, sparsely branching, ca. 1-2 m long, 6 mm in diam., reddish brown, sericeous, with internodes 1-3 cm long; leaf pairs unequal, the petiole 3-9 mm long, sericeous, the lamina of the larger leaf subfalcate-elliptic, ca. 8 by 3 cm, acuminate, entire, oblique, green above, reddish purple below, sericeous, with 4 pairs of secondary veins, the lamina of the smaller leaf similar, ca. 4 by 2 cm. Inflorescence a reduced, axillary cyme of 1-2 flowers, the peduncle absent, the prophylls minute, lanceolate, 5 by 1 mm, the pedicels 4 cm long, reddish, sericeous; calyx lobes subequal, lanceolate, ca. 15 by 8 mm, acuminate, with 1-3 large teeth on each side, red, sericeous; corolla erect in the calyx, tubular, ca. 2.8 mm long, red, sericeous, with a small spur and a constricted, yellow limb, the lobes subequal, narrowly lanceolate, ca. 5 by 1 mm, the tube inside with glandular trichomes; stamens 4, included, the filaments 7 mm long, glabrous, the anthers free, oblong, 2 by 2 mm (the short filaments and free anthers may represent an abnormal condition, but the type specimen has only 1 flower); ovary superior, 2 mm long, sericeous, the style 1.5 cm long, glabrous, the stigma apparently stomatomorphic; nectary a double-connate, dorsal, glabrous gland. Fruit not seen.

TYPE: PANAMA: DARIÉN: Cerro Pirre, 830-1500 m alt., cloud forest, 9-10 Aug. 1967, *Duke & Elias 13834* (HOLOTYPE: MO).

DISTRIBUTION: Apparently endemic to eastern Panama, known only from the type collection in Darién.

***Trichantha ciliata* Wiehler, sp. nov.** (Plate 36:B).

A congeneribus caulibus brunneo-hispidis et foliis ciliatis distinguenda.

Epiphytic, perennial, subshrub or liana, either climbing while rooting by the nodes or with stems spreading or descending, sparsely branching, about 1 m long or longer, to 10 mm in diam., tawny, brown-hispid, with internodes 2-6 cm long; leaf pairs very unequal, sessile, or with a petiole of 1-2 mm, the lamina of the larger leaf obovate or elliptic, ca. 12-14 by 6-7 cm, acuminate, entire, ciliate, oblique, green and glabrate above, red, or marked with red, and sparsely pilose below, with 7-8 pairs of secondary veins, the lamina of the smaller leaf similar, ca. 1.5 by 1 cm. Inflorescence a reduced, axillary cyme of 1-10 flowers, the peduncle absent, the prophylls subulate, 6 by 0.5 mm, the pedicels 3-5 cm long, red or yellow, hispid; calyx lobes subequal, lanceolate to ovate, ca. 17 by 6-9 mm, rounded or acute, subentire, red or yellow, pilose outside, glabrous inside; corolla almost erect in the calyx, tubular, ca. 5.8 cm long, spurred, red, yellow, (or white in Peru), glabrous, but with 3-4 long hairs in each of the sinuses of the lobes, the limb oblique, with subequal lobes, ca. 7 by 5 mm, entire; stamens 4, included, the filaments ca. 4 cm long, adnate for 2 mm to the base of the corolla tube, gla-

brous, the anthers syngenesous, oblong, 2.5 by 2.5 mm; ovary superior, 5 mm long, sericeous, the style 3.5 cm long, glabrous, the stigma stomatomorphic; nectary a double-connate, dorsal, glabrous gland. Fruit an oblong, yellow or red, sericeous berry, ca. 1.5 cm long; seeds oblong, striate, yellow or brown, 1.8 mm long, with a fleshy funicle 2.6 mm long.

TYPE: *ECUADOR*: PICHINCHA: road Alluriquin to Chiriboga, 1200 m alt., wet forest, epiphyte, 20 April 1977, *Madison 4065* (HOLOTYPE: SEL).

DISTRIBUTION: Known from the Provinces of Imbabura and Pichincha in western Ecuador, and from the Dept. of Junín in eastern Peru.

ADDITIONAL MATERIAL EXAMINED: *ECUADOR*: IMBABURA: near San Pablo, above Rio Pamplona, Selva Alegre region, W of Otovalo, 2000 m alt., in wet forest, liana, petals deep pink, 25 Nov. 1943, *Drew E-34* (US); PICHINCHA: near El Volante, on road from Chiriboga to Santo Domingo, ca. 1700 m alt., wet thicket, subshrub to 1 m high, 28 Oct. 1955, *Asplund 18216* (S); Nanegalito, 1600 m alt., subtropical rain forest, (calyx & corolla red), 16 Feb. 1967, *Sparre 14885* (S); Nanegal, Jan. 1901, *Sodirol 1-907* (P); *PERU*: JUNÍN: Pichis Trail, San Nicolas, ca. 1100 m alt., dense forest, herb, 6-10 dm, calyx tube white, lobes pale green, corolla pure white, 4-5 July 1929, *Killip & Smith 25962* (US).

*Trichantha ciliata* is a worthwhile addition the trichanthas in cultivation. The ciliate leaves and hispid stems distinguish it from its relatives.

*Trichantha filifera* Wiehler, sp. nov.

(Plate 36:C).

Ex affinitate *T. minoris* Hooker et *T. dissimilis* (Morton) Wiehler, sed a prima calycum lobis subintegris, corollis unicoloribus hirsutis, a secunda calycum lobis aequalibus viridibus, corollarum lobis rubris et appendiculis longis rubris, ab utraque foliis per paria subaequalibus distincta.

Epiphytic, perennial, suffrutescent herb with erect, ascending, or spreading, freely branching stems, to 70 cm long, 3-5 mm in diam., green, red-hirsute, with internodes 2-5 cm long; leaf pairs subequal, the petiole 5-14 cm long, green, hirsute, the lamina elliptic or ovate, 7-11 by 3.5-6 cm, acuminate, subentire to weakly serrulate, oblique, somewhat leathery, green hirsute, with 6-7 pairs of secondary veins. Inflorescence an axillary cyme of 1-6 flowers, the peduncle 1-3 mm long, the prophylls and subtending bracts minute, lanceolate, 3 by 1 mm, caducous at anthesis, the pedicels 2-3 cm long, green, hirsute; calyx lobes equal, broadly lanceolate, 2 by 1 cm, acuminate, entire, or basally with 1-2 small teeth on each side, green (but in fruit often spotted with red apically), pilose; corolla erect in the calyx, tubular, ca. 4 cm long, spurred, cream-white, but appearing bright orange-red because of the long and dense red indument, the limb regular, small, the lobes equal, thick, ovate, 5 by 4 mm, concave, incurved, coherent at all times (the corolla entrance remaining closed unless forced open by the beak of a nectar-seeking hummingbird), the sinuses between the lobes bearing subulate, red-sericeous appendages, 1.1 cm long, the interior of the tube glabrate, with a few glandular trichomes near the base; stamens 4, included, the filaments 3.2 cm long, glabrous, adnate for 0.5 mm to the base of the corolla tube, the anthers syngenesous, 1.5 by 2 mm; ovary superior, 7 mm long, white, sericeous, the style 3.2 cm long, glabrous, the stigma curved, bifid; nectary a double-connate, dorsal, bilobed, white, glabrous gland. Fruit a globose, white, pilose berry, ca. 1.3 cm in diam.; seeds oblong, striate, tan, 1 mm long, with a fleshy hyaline funiculus 3.3 mm long.



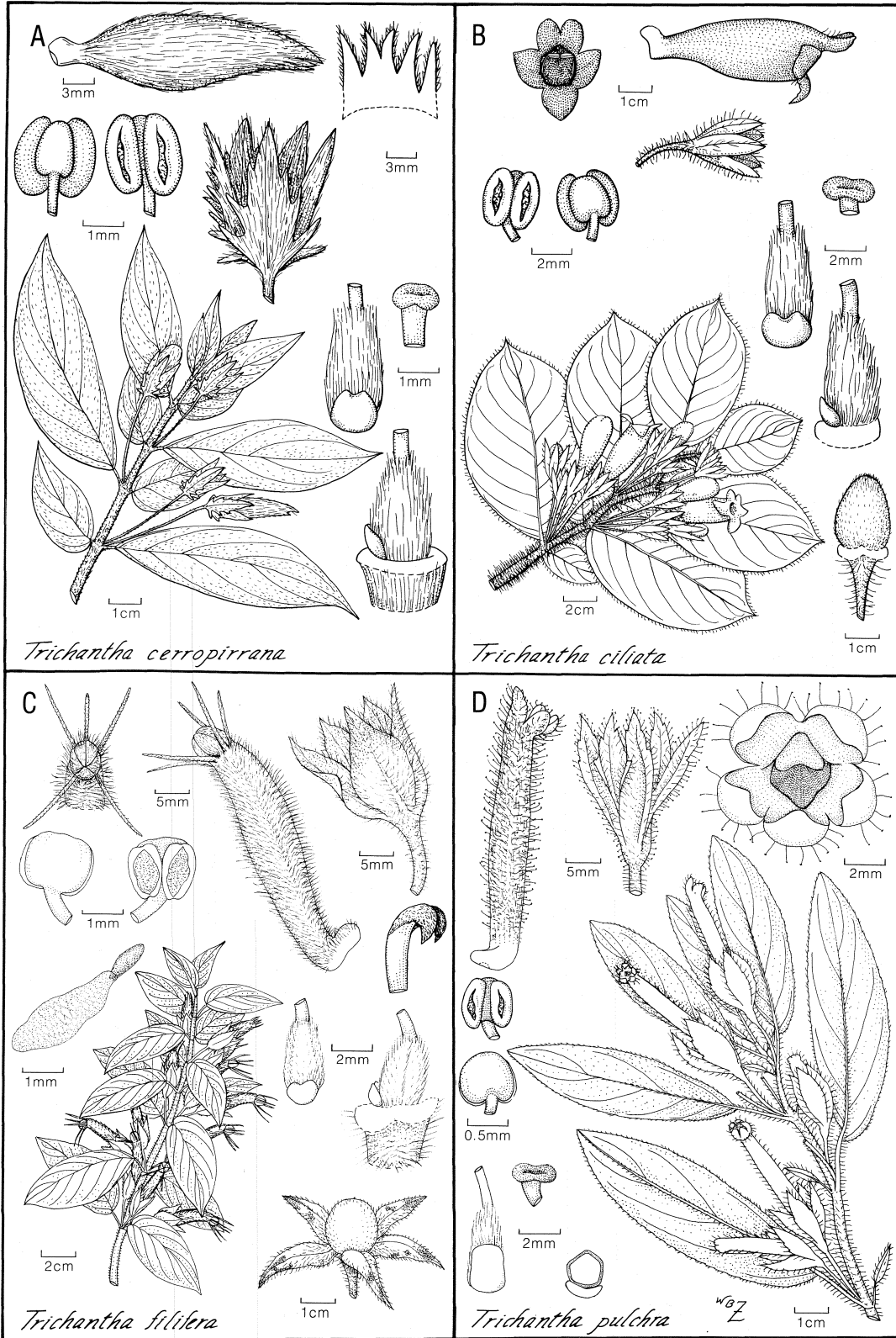


Plate 36

TYPE: *COLOMBIA*: VALLE: old road from Cali to Buenaventura, about 10 km beyond Queremal, on path down to Rio Anchicayá, epiphyte on tree in sunny meadow, cuttings of coll. *Wiehler et al. 7286*, cultivated at SEL greenhouses, acc. no. W-1631, 23 July 1977, *Wiehler 77127* (HOLOTYPE: SEL; ISOTYPES: BH, BM, BR, COL, F, GH, K, MO, NY, P, S, U, US, VALLE, W).

DISTRIBUTION: Known only from the type locality in Valle, Colombia.

ADDITIONAL MATERIAL EXAMINED: *COLOMBIA*: VALLE: type locality, growing together with *Dalbergaria picta*, 30 April 1972, *Wiehler, Dressler, & Williams 7286* (SEL).

*Trichantha pulchra* Wiehler, sp. nov.

(Plate 36:D).

*Trichanthae dissimilis* (Morton) Wiehler affinis, sed foliis angustioribus elongatis, corolla angustata lutea pilosa notabilis.

Epiphytic, perennial, suffrutescent herb with erect, ascending, or spreading, sparsely branching stems, to 80 cm long, 4-7 cm in diam., green, red-hirsute, with internodes ca. 2-3 cm long; leaf pairs very unequal, the petiole 8-15 mm long, green, hirsute, the lamina of the larger leaf oblanceolate or elliptic, 7-13 by 2-4 cm, acuminate, subentire, cuneate or oblique, leathery, dark green above, lighter green and with a pink flush below, hirsute, with 4-6 pairs of secondary veins, the lamina of the smaller leaf minute, subulate or lanceolate, 9 by 1-3 mm, early caducous. Inflorescence an axillary cyme of 1-4 flowers, the peduncle 1-3 mm long, the prophylls and subtending bracts minute, lanceolate, 3 by 1 mm, the pedicels 1-2 cm, red, hirsute; calyx lobes subequal, oblanceolate, ca. 7 by 6 mm, acute, serrate apically, entire below, light green with orange-red tips or completely orange-red, glandular red-pilose; corolla erect in the calyx, tubular, ca. 4.2 cm long, spurred, lemon-yellow, sericeous near the base, the upper half glandular pilose, constricted below the oblique limb, the lobes equal, ovate, concave, incurved but not coherent, the tube inside glabrate; stamens 4, included, the filaments 3.6 cm long, adnate for 0.5 mm to the base of the corolla tube, connate for 4 mm, glabrous, the anthers syngenesous, 1.2 by 1.2 mm; ovary superior, 3 mm long, glandular sericeous, the style 3.2 cm long, glabrous, the stigma curved, stomatomorphic; nectary a double-connate, dorsal, white, glabrous gland. Fruit a globose, white, glandular pilose berry, ca. 9 mm in diam.; seeds oblong, striate, tan, 1.2 mm long, with a fleshy funicle 2.7 mm long.

TYPE: *PANAMA*: PANAMÁ: about 19 km N of El Llano, El Llano - Cartí highway, epiphyte, cuttings from the collection *Dressler 4300* cultivated at SEL, acc. no. W-1910, 11 May 1975, *Wiehler 75267* (HOLOTYPE: SEL; ISOTYPES: BH, BM, BR, GH, F, K, MO, NY, P, PMA, S, U, US, W).

DISTRIBUTION: Endemic to eastern Panama, in the Provinces of Darién and Panamá.

ADDITIONAL MATERIAL EXAMINED: *PANAMA*: PANAMÁ: type locality, 10 March 1973, *Dressler 4300* (MO, SEL); El Llano - Cartí road, between 14-18 km from Chepo, ca. 400 m alt., epiphyte, 20 Feb. 1973, *Correa, Dressler et al. 1861* (PMA, SEL); DARIÉN: Cerro Pirre, 830-1500 m alt., cloud forest, terrestrial, 9-10 Aug. 1967, *Duke & Elias 13774* (MO).

#### Acknowledgement

I wish to thank the curators of the herbaria cited for the generous loans of specimens of Gesneriaceae.