

Manipulus rubiacearum - I

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Abstract

Five new species of Rubiaceae from Brazil, *Psychotria isanae* Kirkb., *Palicourea veterinariorum* Kirkb., *Peara carajensis* Kirkb., *Borreria reflexa* Kirkb. and *Sipaneopsis cururuensis* Kirkb., five new species of Rubiaceae from Colombia, *Rudgea bracteata* Kirkb., *Psychotria gonzalagunioides* Kirkb., *Palicourea denslowiae* Kirkb., *Palicourea therydri* Kirkb. and *Gonzalagunia congesta* Kirkb., and one new variety of Rubiaceae from Colombia, *Gonzalagunia discolor* Standl. var. *danielis* Kirkb., are described. One new combination is made, *Psychotria cotejensis* (Standl.) Kirkb., and one new name established, *Psychotria aviculooides* Kirkb.

This is the first in a series of reports on new taxa of Neotropical Rubiaceae. The novelties included here were discovered in material sent for determination from NY and WIS or seen during visits to COL, F, IAN and MG during the last three years.

Rudgea bracteata Kirkbride, sp. nov.

(Figs. 1, 5)

Types: **Duque-Jaramillo 2098**, Nov 1945, Trapecio Amazónico: entre Rios Loreto-Yacu y Hamaca-Yacu, orilla del Loreto-Yacu, 300 m, Amazonas, Colombia (holotype: COL; isotype: COL); **Schultes 6776**, Trapecio Amazónico, interior regions betw Amazon and Putumayo watersheds, 100 m, Amazonas, Colombia (paratype US).

A. R. hostmanniana, *R. canophorantha* et *R. bolivarensis* inflorescentiae ramis uniformiter 7-8 mm longis, inflorescentiae bracteis ellipticis anguste ellipticis anguste ovatis vel latissime ovatis anguste acutis acutis vel late acutis 8-14 x 3-4 vel 9-12 mm florum bracteis ellipticis acutis vel raro obtusis 8.5-13.5 x 4.5-7 mm differt.

Tree 4 mm tall, the branches quadrangular, glabrous, the internodes 3-15 cm long, ca 4 mm diam. *Stipules* glabrous, broadly ovate, obtuse at apex, ca 5 x 6 mm, basally coriaceous and apically scarious-chartaceous, the scarious-

chartaceous portion caducous, with persistent appendage arising from the coriaceous base, the appendage oblong-ligulate, 4.5 x 1.5-3 mm, with 7-10 caducous setae at the apex 1.5-2 mm long. *Leaves* opposite, glabrous, the petiole terete, adaxially canaliculate, 0.5-1 cm long; blade coriaceous, narrowly elliptic, abruptly acuminate at apex, attenuate to cuneate at base, 25-30 x 7-10 cm, 3.3-4 times longer than wide, venation pinnate with 13-15 arcuate anastomosing lateral veins on each side of the midrib, the midrib prominent and lateral veins subprominent above and beneath. *Inflorescences* terminal, pedunculate, glabrous or sparsely puberulous, racemose, 50-70-flowered, the axis 3-4.5 cm long, with internodes 1-2 cm long, with 8-10 congested compound dichasial 7-8-flowered branches 7-8 mm long, opposite, ternate or quaternate at nodes, the primary branches ca 6 mm long, subtended by 1 bract narrowly elliptic to narrowly ovate, narrowly acute at apex, 8-14 x 3-4 mm, bearing a flower at the apex and 2 lateral secondary branches ca 2 mm long, subtended by 2 bracts very broadly ovate, broadly acute at apex, 10-11 x 11-12 mm, and bearing a dichasium at the apex subtended by 2 bracts elliptic, acute at apex, 12.5-13.5 x ca 9 mm. *Flowers* sessile, the flower terminating the primary branches subtended by 1 bract, the terminal dichasial flower bractless, the lateral flowers of dichasia each subtended by 2 bracts, the bracts elliptic, acute at apex, 8.5-13.5 x 4.5-7 mm, glabrous; hypanthium cylindrical, 0.8-1 mm tall, ca 1.5 mm diam, glabrous; calyx persistent on fruit, the tube 1.2-1.4 mm tall, 5-lobate, the lobes shallowly obtuse, 0.1-0.4 mm tall, their surfaces glabrous but the margin minutely ciliolate; glandular disc probably filling the space between the corolla and style, circular, bilobate with one lobe above each locule; corolla, stamens and style not seen. *Fruit*

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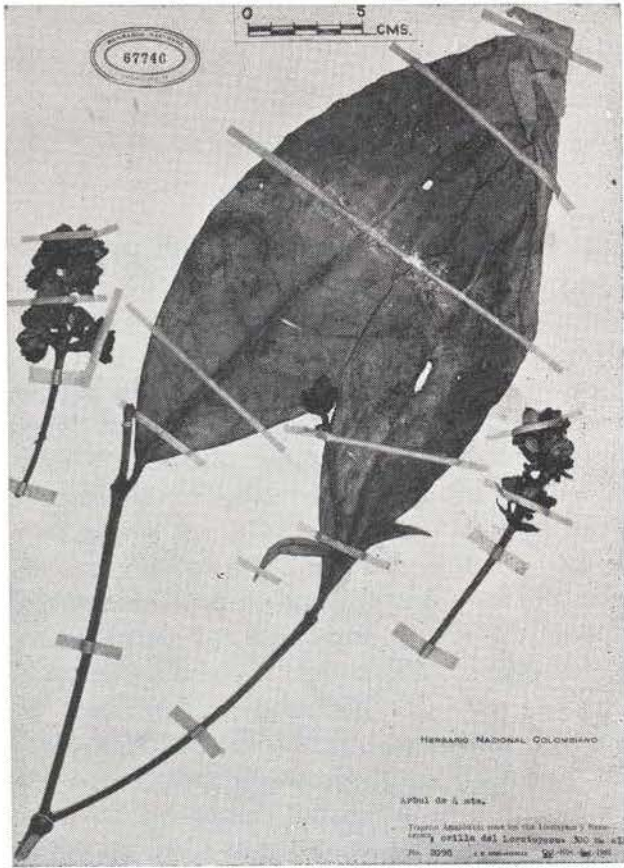


Fig. 1 — Holotype of *Rudgea bracteata* (Duque-Jaramilla 2098 [COL]).

baccate, cylindrical, obtuse at both ends, 12-14 mm long including calyx, 8-9.5 mm diam, glabrous.

Some species of *Rudgea*, such as *R. hostmanniana* Benth., *R. canophorantha* (Wernh.) Standl. and *R. bolivarensis* Steyerem., exhibit a general syndrome of characters: coriaceous leaves, stipules with a dorsal ligulate appendage terminating in setae, and conical racemose inflorescences composed of compound dichasial branches opposite or whorled and decreasing in length distally. *Rudgea bracteata* shares this syndrome of characters, but it can easily be separated from the related species by the uniformly shorter branches of the inflorescence and the much larger inflorescence and floral bracts.

***Psychotria isanae* Kirkbride, sp. nov.**

(Figs. 2, 6)

Types: Fróes 22251, 28 Apr 1947, Iraruca, Içana, Rio Negro, Amazonas, Brasil (holotypes: IAN);

Black 48-2656, 12 May 1948, beira do rio Içana Amazonas, Brasil (paratype: IAN); Fróes 28414, 3 Mar 1952, vizinhanças de Tunuí, Rio Içana, Amazonas, Brasil (paratype: IAN); Pires 1002, 10 Nov 1947, Taraquá, Rio Uaupés, Amazonas, Brasil (paratype: IAN).

A. P. emetica et *P. erecta* habitu robustiore caulibus 5-10 mm diametro continue cavis foliorum lamina margine dense ciliata differt.

Herb 1-2 m tall, the habit probably wand-like, the unbranched terminal stems terete, continuously hollow from the apex downward internodes and nodes, sericeous-strigose, the internodes 2-10 cm long, 0.5-1 cm diam, all pubescence ferrugineous. *Stipules* deciduous from all but the apical 2 or 3 nodes, linear-subulate to narrowly triangular, at base flared out to span the stem from petiole to petiole, strigose, the lobe 6.7-11.7 x 1.2-1.7 mm, narrowly acute at apex, the blade at base very shallowly triangular, 1.7 x 7.5-8.3 mm, the scar fimbriate distally with ferrugineous thread-like hairs. *Leaves* opposite, the petiole



Fig. 2 — Holotype of *Psychotria isanae* (Fróes 22251 [IAN]).

terete, adaxially canaliculate, 1-2 cm long, abaxially strigose, adaxially densely strigose; blade elliptic, obtuse at the base, acuminate to broadly acuminate at the apex, 11-18 x 4.5-9 cm, 1.8-2.5 times longer than wide, glabrous above, densely ciliate, the venation pinnate with 8-11 arcuate anastomosing lateral veins on each side of the midrib, the prominent veins strigose-sericeous and the intercostal areas sericeous beneath, the midrib proximally sulcate, distally prominent, and the other veins subprominent. *Inflorescences* axillary heads of 2-4 strongly reduced branches crowded together, the branches 3-5 mm long, very densely sericeous, each 11-18-flowered, the head 0.5-1 cm diam. *Flowers* sessile, 5-merous; hypanthium turbinate, 1.2-1.8 mm tall, 0.8-1 mm diam, glabrous; calyx tubular and shallowly dentate, taller than the disc, persistent on the fruit, the tube 0.8-1 mm tall, sparsely strigose externally, glabrous internally, the lobes ca 0.1 x 0.8-1 mm; corolla white, salverform, the tube 5 mm long, 1 mm diam at the base, 1.2 mm diam at orifice, glabrous externally, distal 1/4 densely sericeous and proximal 3/4 glabrous internally, the lobes valvate, elliptic, narrowly acute at apex, 1.4-1.8 x 0.8 mm, glabrous externally, sericeous and apiculate at the apex internally, the apicule 0.4-0.6 mm long; stamens separating from the wall of the corolla tube slightly below the orifice, the filaments ca 0.4 mm long, glabrous, the anthers exerted, basifixed, narrowly oblong, ca 1 mm long, sparsely villous; glandular disc filling the space between the corolla and the style, circular, glabrous; style terete, 3.6 mm long, glabrous, the bilobate stigma included, its lobes lanceolate, ca 1 mm long, glabrous. *Fruit* baccate, fusiform, 4-6 mm tall, 2-3.5 mm diam, glabrous, the seed elliptic, 3.8 mm long, its dorsal face convex, its ventral face flat.

Psychotria isanae is most closely related to *P. emetica* L. f. and *P. erecta* (Aublet) Standley & Steyermark which it resembles in its general habit, leaf shape and venation, inflorescence form and fruits. It is easily distinguished from them by its more robust habit, the thicker continuously hollow stems and the dense ciliate pubescence of the leaf margin.

Manipulus...

***Psychotria* (subgen. *Heteropsychotria*) *gonzagalunioides* Kirkbride, sp. nov.**

(Figs. 3, 7)

Type: **Haight 5404**, 28 Dec 1946, San Juan de Micay Valley, Cauca, Columbia (holotype: COL; isotypes F, US).

Frutex 2.5 m altus, stipulis anguste ovatis 1.7-2.5 x 0.6-0.8 cm bifidis lobis anguste triangularibus acutis 0.5-1 mm longis, folis oppositis petiolatis, lamina anguste elliptica vel anguste obovata 18.5-36 x 8.5-12.5 cm 2.6-2.9-plo longiore quam lata, venatione pinnata nervis lateralibus utroque latere 14-19 arcuatis anastomosantibus, inflorescentiis axillaribus pendulis paniculatis pedunculo 22-24 cm longo, axe principali 17-25 cm longo axibus lateralibus brevissimis, capitulis sessilibus 5-10 mm diametro 8-12-floris, axibus reductis secundariis tertiarisque bractea obovata obtusa vel late acuta 3.3-5 x 1.9-2.2 mm subtentis, flore quoque bracteola anguste obovata anguste acuta 2.5-5.8 x 0.7-1.2 mm subtento.

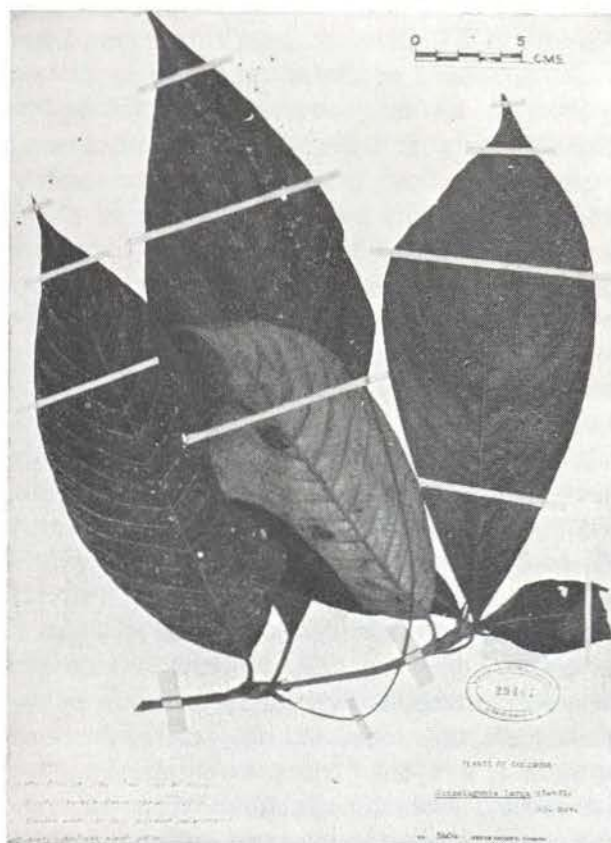


Fig. 3 — Holotype of *Psychotria gonzagalunioides* (Haight 5404 [COL]).

Shrub 2.5 m tall, the branches terete, tomentose, ferrugineous. *Stipules* persistent, entire, narrowly ovate, 1.7-2.5 x 0.6-0.8 cm, bifid at the apex the lobes narrowly triangular and acute at the apex 0.5-1 cm long, abaxially tomentose, ferrugineous. *Leaves* opposite, the petiole terete, 1-4 cm long, tomentose to sparsely tomentose, ferrugineous when tomentose; leaf blade narrowly elliptic to narrowly obovate, acuminate at apex, attenuate to cuneate at base, 18.5-36 x 8.5-12.5 cm, 2.6-2.9 times longer than wide, the venation pinnate with 14-19 arcuate anastomosing secondary veins on each side of the midrib, glabrate to tomentose beneath, glabrous to sparsely tomentose above, the intercostal areas bearing on both faces a few scattered long erect hairs. *Inflorescences* axillary, pendulous, pedunculate panicles, the main axis elongate and the lateral ones condensed to compact sessile heads, the peduncle quadrangular, 22-24 cm long, sparsely tomentose, ferrugineous, the main axis quadrangular, 17-25 cm long, tomentose, ferrugineous, the lateral 8-12-flowered heads 5-10 mm diam, each condensed secondary and tertiary branch subtended by an obovate bract obtuse to broadly acute at apex, 3.3-5 x 1.9-2.2 mm, sericeous on both faces, each flower subtended by a narrowly obovate bracteole narrowly acute at apex, 2.5-5.8 x 0.7-1.2 mm, sparsely sericeous on both faces. *Flowers* possibly heterostylous, 5-merous, sessile; hypanthium turbinate, 0.8-1 mm long, 0.6 mm diam, densely sericeous; calyx tubular and dentate, persistent on the fruit, the tube 0.2-0.4 mm tall, externally sparsely sericeous, internally glabrous, the lobes triangular, acute at apex, 0.3-0.4 x 0.5-0.6 mm, externally sparsely sericeous, internally glabrous, with a glandule in the sinus betw each lobe; corolla (in bud) white, salverform, the tube 2.2 mm long, externally glabrous or glabrate, internally densely sericeous above and glabrous below the middle, the lobes valvate, ovate, acute at apex, 1.2 x 0.6-0.7 mm, externally sparsely sericeous, internally glabrous with the apex apiculate; stamens exerted, the filaments separating from the wall of the corolla tube just below the orifice, 0.8 mm long, glabrous, the anthers dorsifixed in the middle, 0.9-1 mm

long, glabrous; glandular disc filling the space betw the corolla and the style, circular, entire, glabrous; style terete, 1.2 mm long, minutely papillate, the stigma included, bilobate, its lobes 0.7 mm long, sparsely papillate. *Fruit* blue, sessile, laterally compressed, broadly obovate in outline, 1.5-1.7 x 1.3-1.5 mm, 0.8-0.9 mm thick, sparsely sericeous, the seed in each locule smooth, the dorsal face convex, the ventral face broadly and deeply concave.

Psychotria gonzalagunioides has a type of inflorescence unique in *Psychotria*. It is a panicle with a long main axis but secondary ones so condensed that they appear as small, tight, sessile heads of flowers and bracts. When the heads are dissected and the bracts removed, their axis is discernable as 2-3 mm long. There is no change in the length of the axes as the fruit develops, so the heads always appear unbranched. Each flower and fruit is subtended by one bracteole.

In appearance, *P. gonzalagunioides* most resembles the species of subgen. *Heteropsychotria* sect. 7 ser. B (sensu Steyermark, 1972) such as *P. caerulea* R. & P. In this series the secondary axes of the inflorescences are terminated by small heads very similar externally to those of *P. gonzalagunioides*, but the flowers of most species in the series are subtended by two or rarely 1-3 bracteoles. The species of the next series (Ser. C sensu Steyermark, 1972) resemble *P. gonzalagunioides* less, although they also have only one bracteole subtending each flower. *Psychotria gonzalagunioides* does not fit well into either Ser. B or C; it may be best to erect another series following C within Sect. 7 to accommodate *P. gonzalagunioides*.

***Psychotria* (subgen. *Heteropsychotria*) *cotejensis* (Standley) Kirkbride, comb. nov.**

(Figs. 4, 8)

Cephaelis cotejensis Standley, Field Mus. Nat. Hist., Bot. Ser. 11(5):187, 1936. Type: Lehmann 9022, Nov 1898, Coteje on Rio Timbiquí, 300 m or less, Cauca, Colombia (lectotype: K). (Holotype at B destroyed).

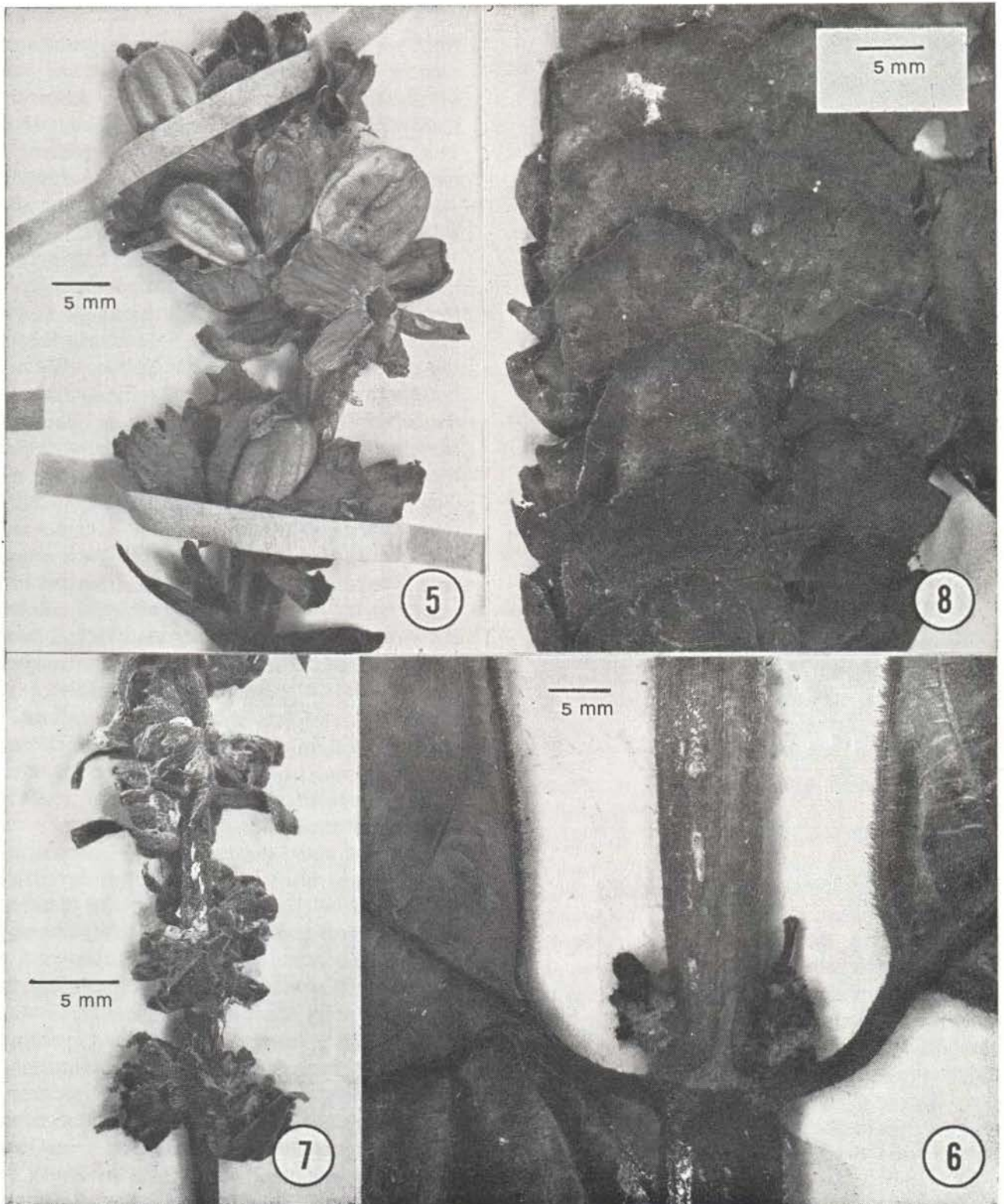
Small tree 4-10 m tall, the branch tips terete, puberulous, the internodes 2-5 cm long, hollow, the nodes solid. *Stipules* caducous,



Fig. 4 — Lectotype of *Psychotria cotejensis* (Lehmann 9022 [K]).

present only at apical node, very broadly ovate, ca 1.5 x 2 cm, bifid, densely puberulous externally and internally, bearing numerous basal colleters internally among the hairs, the lobes 10 mm long with the central edges rapidly diverging at an angle greater than 90°. parallel, 8.8 mm apart, and the lateral edges *Leaves* opposite, the petiole terete, canaliculate adaxially, puberulous; blade narrowly obovate, abruptly acuminate at apex with acumen ca 1 cm long, attenuate at base, 31-36 x 11-14 cm, 2.6-3.1 times longer than wide, the venation pinnate with 19-23 arcuate secondary veins on each side of the midrib, the veins prominent and strigose-puberulous and the intercostal areas glabrate beneath, glabrous above with the veins subprominent. *Inflorescences* terminal, sessile, narrowly oblong spikes of dichasia, 200-300-flowered,

10.5-18 cm long, 3-4 cm diam, the terete axis not visible, 9-18 cm long, puberulous to sparsely puberulous, each bearing 36-48 pairs of decussate dichasia; bracts 1 subtending each dichasium, red or pink, orbicular, obtuse at apex, 21-22 x 22 mm, puberulous externally, glabrous internally, minutely ciliate, subtended on each side at the base by 2-3 colleters, and subtending each lateral flower of the dichasia 1 obovate bract obtuse at apex, 16-18 x 11-14 mm, puberulous to sparsely puberulous externally, glabrous internally, minutely ciliate, the dichasial bracts of one node overlapping the floral bracts of the node below. *Flowers?* heterostylous, 5-merous, pedicellate, the pedicel terete, 1-1.4 mm long, glabrous, subtended by numerous colleters 1.4-2 mm long; nypanthium turbinate, ca 1.2 mm tall, ca 1.4 mm diam, glabrous; calyx lobes free, hyaline, elliptic, obtuse at apex, 0.7-1.4 x 0.4-1 mm, glabrous on both faces but ciliate, with groups of 3-6 colleters betw the lobes arranged in 2 ranks of 1-3, the abaxially ranked colleters 0.4-0.6 mm tall, the adaxially ranked ones 1-1.2 mm tall; corolla (in bud) white or pink, the tube 4.4-4.8 mm long, probably much longer at anthesis, glabrate externally, glabrous internally except for a densely sericeous patch under each anther, the lobes ovate, obtuse at apex, ca 2 x 1 mm, sparsely puberulous externally, glabrous internally and apiculate at apex, the apicule 0.2-0.3 mm tall; stamens separating from the wall of the corolla tube ca 1/2 way from the base, the filaments ca 0.5 mm long, glabrous, with a large number of raphide-containing idioblasts concentrated at or near the apex; glandular disc filling the space betw corolla and style, circular, entire, glabrous; style terete, ca 5 mm long, glabrous, the stigma exerted, its 2 lobes oblong, ca 1 mm long, abaxially glabrous, adaxially densely sericeous. *Infructescence* not seen. *Fruit* (fide Standley, 1936) baccate, 5 mm long. *Specimens examined*. COLOMBIA. Valle del Cauca: Costa del Pacifica, Río Cajambre. Barco: margen derecha del Río Cajambre (brazo Agua Sucia) cerro (Selva) El Sapote, 60-150 m, 28 Apr 1944, *Cuatrecasas 17208* (US, VALLE). Cauca: San Juan de Micay Valley, ca 100 m, 28 Dec 1946, *Haught 5398* (COL, US).



Figs. 5-8 — 5. Inflorescence of the holotype of *Rudgea bracteata* (Duque-Jaramilla 2098 [COL]). 6. Node of the holotype of *Psychotria isanae* showing an infructescence and an inflorescence (Fróes 22251 [IAN]). 7. Portion of the inflorescence of the holotype of *Psychotria gonzalagunioides* (Haught 5404 [COL]). 8. Portion of the inflorescence of the lectotype of *Psychotria cotejensis* showing the overlapping dichasial bracts (Lehmann 9022 [K]).

Psychotria cotejensis and *P. aviculoides* are closely related, as was pointed out by Standley (1936) when he described *Cephaelis cotejensis*. Vegetatively they are nearly identical except that the stipules are caducous in *P. cotejensis* and persistent in *P. trianae* and that the leaf blades are slightly larger in *P. cotejensis* and consequently have a few more secondary veins.

The basic inflorescence structure, which is very unusual in *Psychotria*, is identical in the two species. Their inflorescences lack the large enclosing involucre bracts of section *Cephaelis* (Sw.) Müll. Arg. They consist of spikes of dichasia arranged in decussate pairs. Each dichasium is subtended by a large brightly colored bract which partially covers the dichasium above. Therefore, the inflorescences appear as masses of overlapping bracts from which only the corollas protrude at anthesis. The two species are easily distinguished by the differences in size of the inflorescence parts and flowers as set forth in the following key:

1. Stipules caducous, present only at apical node; leaf blade 31-36 x 11-14 cm, with 19-23 secondary veins on each side of the midrib; inflorescences 200-300-flowered, narrowly oblong, 10.5-18 cm long, 3-4 cm diam, the axis 9-18 cm long, bearing 36-48 pairs of dichasia, the dichasial bracts red or pink, 21-22 x 22 mm; floral bracts 16-18 x 11-14 mm; calyx lobes elliptic, obtuse at apex, 0.7-1.4 mm long *P. cotejensis*
1. Stipules persistent; leaf blade 22-30 x 7-10 cm, with 14-18 secondary veins on each side of the midrib; inflorescences 80-160-flowered, ellipsoid, 3-3.5 cm long, 2 cm diam, the axis 2.5-3 cm long bearing 10-20 pairs of dichasia, the dichasial bracts purple to blue, 15-20 x 12-18 mm; floral bracts 11-16 x 5-7.5 mm; calyx lobes obovate, acute at apex, 1.9-2.6 mm long. *P. aviculoides*.

This pair of species does not fit into the subgeneric classification of *Psychotria* as reviewed and revised by Steyermark (1972). In order to accommodate them, a new series, *D*, will have to be added to Section 7. Pending further study of all taxa involved, Steyermark

did not give this section and its series formal names so I likewise have refrained from doing so.

Cuatrecasas (17208) has reported that the common name of *P. cotejensis* is "penei" or rarely "penei del amarillo" which is a very apt descriptive phrase for the inflorescence of this species.

***Psychotria* (subgen. *Heteropsychotria*) *aviculoides* Kirkbride, nom. nov.**

(Figs. 9, 13)

Cephaelis trianae Standley, Publ. Field Columbian Mus., Bot. Ser. 7(1): 82, 1930. Type: *Triana* 1671 or 3146.33 (fl & fr), Abr 1853, 500-900 m, "Barbacoas i Choco", Colombia (holotype: K; isotypes: BM, COL). Not *Psychotria trianae* Standl., Field Mus. Nat. Histl., Bot. Ser. 11(5): 251, 1936.

Tree or shrub 3-5 m tall, the branch tips terete, glabrate to densely puberulous, the internodes 2-7 mm long, hollow, the nodes solid. *Stipules* persistent, ovate to broadly ovate, 9-19 x 7-16 mm, bifid, sparsely puberulous to densely puberulous externally, densely sericeous internally with numerous basal colleters among the hairs, the lobes 2-7 mm long with the central edges parallel, when younger touching, separating 0.5-1 mm in age, the lateral edges rapidly diverging at 90°. *Leaves* opposite, with the petiole terete, canaliculate adaxially, glabrate to strigose-puberulous; blade narrowly obovate, abruptly acuminate at apex with acumen 1-1.5 cm long, narrowly long cuneate at base, 22-30 x 7-10 cm, 2.5-3.2 times longer than wide, the venation pinnate with 14-18 strongly arcuate secondary on each side of the midrib, the veins prominent and strigose-puberulous and the intercostal areas glabrate beneath, glabrous above with the veins subprominent. *Inflorescences* terminal, sessile, elliptic spikes of dichasia, 80-160 flowered, 3-3.5 cm long, 2 cm in diam, the terete axis not evident, 2.5-3 cm long, puberulous, each bearing 10-20 pairs of decussate dichasia; bracts 1 subtending each dichasium, purple to blue, elliptic to broadly transverse elliptic or rarely obovate, obtuse at apex, 15-20 x 12-18 mm, puberulous externally, glabrous internally, minutely ciliate, subtended on each side at the base by 2-4 colleters, and subtended



Fig. 9 — Holotype of *Psychotria aviculoides* (Triana 1671(3146.33) [K]).

ding each lateral flower of the dichasia a single obovate to rarely narrowly obovate bract obtuse at apex, 11-16 x 5-7.5 mm, puberulous to sparsely puberulous externally, glabrous internally, minutely ciliate. *Flowers*, heterostylous, 5-merous, pedicellate, the pedicel terete, 0.4-1.6 mm long, glabrous, subtended by numerous colleters 0.4-1 mm long; hypanthium turbinate, ca 1 mm tall, ca 0.7 mm in diam, glabrous; calyx persistent on fruit, glabrous, the tube 0.4 mm tall, the lobes obovate, acute at apex, 1.9-2.6 x 0.8-1.1 mm, with 1-3 colleters 0.4-0.5 mm tall on the internal surface at the base of each sinus; corolla (from pin flower at anthesis) white, the tube 15 mm long, glabrous externally, glabrous internally with a puberulous band beneath the stamens, the lobes elliptic, narrowly acute at apex, 3.3-4.2 x 1.6 mm,

glabrous; stamens separating from the wall of the corolla tube ca 2/3 way from the base, the filaments 0.6-0.8 mm long, glabrous, the anthers included, dorsifixed slightly below the middle, linear, ca 3.5 mm long, glabrous; glandular disc filling the space between corolla and style, circular, entire, glabrous; style terete, ca 18 mm long, glabrous, the stigma exerted, its 2 lobes oblanceolate, ca 2 mm long, glabrous. *Infructescence* elongating, the axis visible, 4-18 cm long, puberulous. *Fruit* baccate, oblong, 1-10 mm long including calyx, 4-5 mm in diam, glabrous.

Distribution. Known from lower elevation forests along the Pacific coast of Colombia in the departments of Chocó, Valle del Cauca and Nariño.

Specimens examined. COLOMBIA. Chocó: cerca de Istmina, carretera a Cértegui, en selva, 75 m, 3 Ago 1944 [fl], *García-Barriga 11192* (COL, US); Istmina, on Río San Juan, 75 m, 29 Apr 1939 [fl & fr], *Killip 35460* (US); 1.5-2.5 km W of Istmina along the road to Pie de Pepé, 75-100 m, 21 Feb 1971 [fr], *Lellinger & de la Sota 427* (US). Valle del Cauca: Río Calima (region del Chocó), La Trojita, margen derecha, La Esperanza, 16-30 m, 7-III-1944 [fr], *Cuatrecasas 16752* (US, VALLE). Nariño: Barbacoas, Corregimiento Santander (Buenavista) a Barbacoas (Vertiente del Río Telembí), 840-200 m, 2 Ago 1948 [fr], *García-Barriga 13198* (COL).

The holotype of *Psychotria aviculoides* from K and Triana collections of the species from BM and COL have all been studied. The holotype from K was labeled as number 1677, the specimen from BM as 1671 and that from COL as 3146.33. The staff of BM had the alertness and foresight to also send on loan another Triana collection also numbered 1677 which is *P. macrophylla* R. & P.. The relationship of the specimens can only be grasped through an understanding of the history of Triana's collections.

Prior to his departure from Colombia, Triana arranged his collections in systematic order according to Endlicher's *Genera Plantarum* (1836-1841) and listed them in an autographic catalogue. Each collection was assigned numbers: the first was the generic number of

Endlicher, and the second was a collection number assigned within each genus starting from one. The two numbers were separated by a decimal point. In addition, the determination, locality and elevation and number of duplicates of each collection were given. Later, a continuous single series of collection numbers was assigned to the entries in the catalogue in numerical order (Wurdack, 1971). Consequently, the Rubiaceae are in Endlicher genera 3100-3311, and the collections are numbered in the continuous series from 1592-1869 with numbers 1845-1869 being indeterminate collections.

Comparing the specimens to the entries in Triana's catalogue reveals that the BM specimen, no. 1671, and the COL specimen, no. 3146.33, are from the same collection. Further, 1671 (3146.33) is listed as from "Barbacoas i Choco" which are the lower elevations of Nariño, Cauca, Valle and Chocó. In contrast, 1677(3147.5) is listed as from "Gallego Quindio" which are the higher elevations in Quindio and Tolima. All the data indicates that the K specimen numbered 1677 which is the holotype of *P. aviculoides* is incorrect. First, no. 1671 was collected within the known range of *P. aviculoides* both geographically and altitudinally; second, no. 1677, as catalogued, was collected outside of the known range of *P. aviculoides* again both geographically and altitudinally; third, there is a Triana collection numbered 1677 at BM which is *P. macrophylla* R. & P. that is known from higher elevations; and finally, the hand writing on the Triana collections from BM, which is the depository of Triana's herbarium, does not match that of the holotype from K. Therefore, the type collection of *P. aviculoides* is Triana 1671 (3146.33), and the holotype at K is incorrectly numbered. This is probably due to an error in transcription when the label for the K specimen was prepared.

Many well developed infructescences of this species are available. When compared to the inflorescences, they are much longer and their axis is clearly visible between the dichasia and their bracts. Probably as the fruit matures, the axis elongates. This would make the berries more visible and more accessible to birds.

The common name of *P. aviculoides* is reported to be "amargo" by Triana [1671 (3146.33)] and "amargo pajarito" by Garcia-Barriga (11192). "Amargo" is the common name applied to some species of *Psychotria* and *Palicourea* by the residents of the Chocó (H. García-Barriga, personal communication).

Psychotria aviculoides is most closely related to *P. cotejensis*, as discussed above.

***Palicourea veterinariorum* Kirkbride, sp. nov.**
(Figs. 10, 14)

Types: BRASIL. Espírito Santo: **Döbereiner/Tokarnia 343**, 11.8.1966, ca 500 m, Distrito Vieira Machado, Mun. Muniz Freire (fl) (holotype: RB; isotype: US). Rio de Janeiro: **Döbereiner/Tokarnia 1299**, 4.2.1977, ca 500 m, Mun. Santa Maria Madalena, Chácara Françoise, practically inside the town of Santa Maria Madalena (fr) (paratype: US); **1374**, 29.12.1977, ca 600 m, Mun. São Sebastião do Alto, Fazenda Areira Saco (fl) (paratype: US).

A *P. blanchetina* stipulis 3.8-4.2 mm longis, petiolo 1-1.5 cm longo, foliorum lamina 19-27 cm longa nervis secundariis utroque costae latere 17-20, panicula 3-4 x 2-2.5 cm bracteis minute ciliatis superficiebus glabris, corolla 7.6-7.7 mm longa tubo extra sparsim villosulo differt.

Shrub, the branches terete, striate, 2-5 mm diam, glabrous, the internodes (3)7-15 cm long, with a distinct constriction immediately below each node 0.5-1 cm long. *Stipules* bilobate, the lobes broadly ovate, obtuse at apex, 2.8-4.2 x 2.4-2.6(3.2) mm, glabrous, with numerous internal basal colleters and a glabrous tissue 1-1.5 x 2.5-5 mm connecting the lobes at their bases. *Leaves* opposite, the petiole terete, adaxially flattened, 1-1.5 cm long, glabrate to sparsely puberulous; blades narrowly elliptic, acuminate at apex, attenuate at base, 19-27 x 5-8 cm, 2.7-3.8 times longer than wide, minutely ciliate, the venation pinnate with 17-20 arcuate anastomosing lateral veins on each side of the midrib, these prominent and glabrate to very sparsely puberulous, the intervenium with a few scattered minute hairs on both faces. *Inflorescences* terminal, the peduncle terete, 3-10 cm long, puberulous to sparsely puberulous, the shorter peduncles uniformly puberulous, the longer ones sparsely puberulous with the

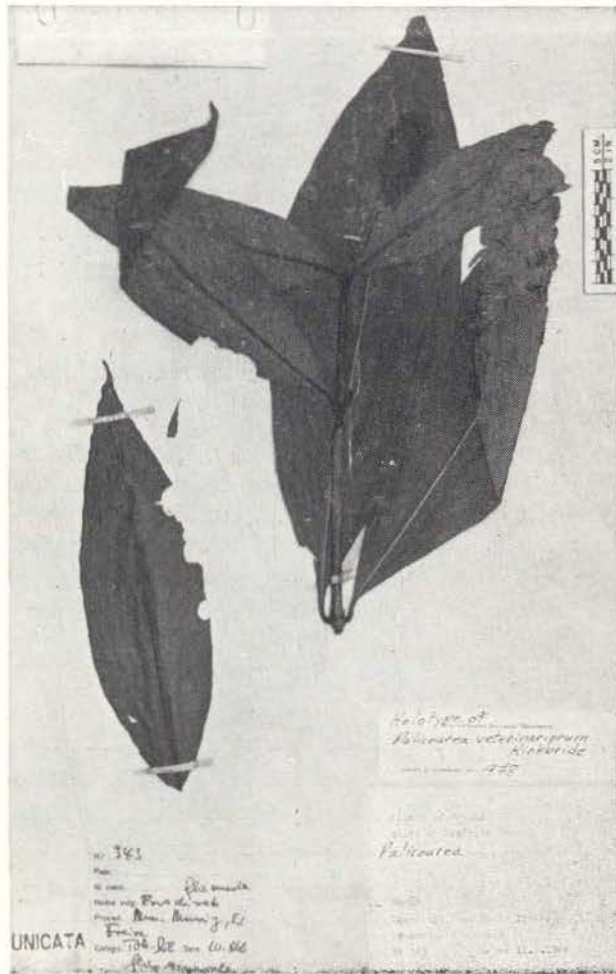


Fig. 10 — Holotype of *Palicourea veterinariorum* (Döbereiner/Tokarnia 343 [RB]).

pubescence denser distally; panicle 20-30-branched, 100-150-flowered, ovate in outline 3-4 x 2-2.5 cm, the axis 1.5-3 cm long, densely puberulous, the branches dividing 4-6-times, 0.5-1.5 cm long, decreasing gradually in length distally, densely puberulous, the narrowly ovate, narrowly acute bracts subtending each branch and its divisions and each pedicel 1-4 x 0.4-0.8 mm, minutely ciliate but otherwise glabrous. *Flowers* heterostylous, 5-merous, the pedicel terete, 1.5-3 cm long, densely puberulous; hypanthium broadly elliptic to circular in outline, 1-1.1 x 1 mm, sparsely puberulous, with a line of articulation at the base separating it from the pedicel; calyx campanulate, persistent on fruit, glabrate externally, glabrous internally, the tube ca 0.6 mm tall, with 2 colleters just below each

sinus internally, the lobes narrowly transverse-oblong, irregularly truncate at apex, ca 0.2 x 0.9-1 mm, sparsely and minutely ciliate; corolla yellow, salverform, assymmetrically gibbous at base with a bend of ca 30° away from the gibbosity immediately above, the tube ca 6.2 mm long, ca 1 mm diam at base, ca 1.5 mm diam at orifice, sparsely villosulous externally, glabrous internally except for a ring of sericeous pubescence just above the gibbosity, the lobes ovate, acute at apex, 1.4-1.5 x ca 1 mm, glabrous; stamens separating from the wall of corolla tube slightly over 1/2 way from base, the filaments ca 0.5 mm long, glabrous, the anthers dorsifixed ca the middle, narrowly oblong, ca 2 mm long, glabrous; glandular disc filling the space between corolla and style, shorter than the calyx, circular, glabrous, bilobate with one lobe above each locule; style terete, ca 4 mm long, glabrous, the stigma bilobate, ca 1 mm long. *Fruiting panicle* 4.5-6.5 x 3-4 cm, the axis 3.5-5.5 cm long, the branches 1-2 cm long. *Fruit* didymous when dry, compressed laterally to the septum, depressed ovate in outline, 2.7-3.2 x 3.8-4.2 mm, 1.2-1.5 mm thick, sparsely puberulous, with a distinct furrow between the locules, each seed with three strong ridges.

Palicourea veterinariorum is closely related to *P. blanchetiana* Schlechtd. The forms of their foliage and stipules, inflorescences, and flowers are similar, but they can easily be separated by the details of these structures as set forth in the following key:

1. Stipules 3.8-4.2 mm long; petiole 1-1.5 cm long; leaf blade 19-27 cm long with 17-20 lateral veins on each side of the midrib; panicle 3-4 x 2-2.5 cm with the bracts minutely ciliate but otherwise glabrous; corolla 7.6-7.7 mm long, the tube sparsely villosulous externally .. *P. veterinariorum*
1. Stipules 2.5 mm long; petiole 1.5-2.5 cm long; leaf blade 14-17 cm long with 12-14 lateral veins on each side of the midrib; panicle 8-12 x 2.5-3.5 with the bracts minutely puberulous; corolla 11 mm long, the tube glabrous externally .. *P. blanchetiana*

Müller Argoviensis (1881) published the treatment of tribes I-VI of the Rubiaceae, including the Psychotrieae, in *Flora brasiliensis*.

sis. He adopted a circumscription for *Psychotria* used neither by prior nor subsequent authors, reducing *Palicourea* to a section of *Psychotria*. Standley, commenting (1930) upon this arrangement, wrote "Mueller's treatment of the Psychotrieae [in *Flora brasiliensis*], the more difficult portion of the family, it must be admitted, is sadly inferior".

Müller (1881) transferred *P. blanchetiana* to *Psychotria* and grouped it together with four other species, nos. 17-21, in his series *Cylindricae* which was defined by "Panicleae cylindricae, pluries longiores quam latae, inferne non v. vix latiores, ramuli patentes, folia opposita". The panicles of *P. veterinariorum* are only ca 1.5 times longer than wide which does not correspond well with the other species of series *Cylindricae*, but it must be included within this series because of its close relationship with *P. blanchetiana*.

This species is dedicated to its collectors, Jürgen Döbereiner and Carlos A. M. Hubinger Tokarnia, veterinarians who are studying the toxicity of Brazilian plants. They encountered this species in montane forests at 500-600 m of elevation. It was shown to be nontoxic for cattle and rabbits. When its leaves and stems were crushed, they gave off the odor of methyl salicylate as does *Palicourea marcgravii* St.-Hil., *P. juruana* Krause, *P. crocea* (Sw.) R. & S. and *P. cujabensis* Schlecht.

***Palicourea denslowiae* Kirkbride, sp. nov.**
(Figs. 11, 15)

Types: **Denslow 2252**, 14 May 1974, vic. Planta Providencia, 26 kms S & 23 kms W (air) of Zaragoza (7°13'N, 75°03'W), in valley of Rio Anorí betw Dos Bocas & Anorí, 400-700 m, Antioquia, Colombia (fl) (holotype: US; isotype: WIS); **Denslow 2420**, 28 Sep 1974, topotype (fr) (paratype: WIS).

A *P. thermydri* stipulae lobis anguste oblongis vel late oblongis obtusis 1.8-3.2 mm longis, petiolo 1.5-2 cm longo, inflorescentia sessili 20-33-flora, bracteis depresso ovatis 11.7-14.2 mm latis, florum bracteis 6-6.5 mm latis, calycis margine irregulari, corollae lobis corniculatis non cornu corollae lobis longiore absimilis.

Shrub 1.5 m tall, the branches subquadrate, glabrous, the internodes 2-6 cm long,

Manipulus...

4-6 mm diam, slightly constricted immediately below the nodes. *Stipules* connate into amplexicaul sheaths above the petioles, the sheath 3-4 mm tall, glabrous, bilobate on each side of the stem, the lobes narrowly oblong to broadly oblong, obtuse at apex, 1.8-3.2 x 1-1.8 mm, with 3-4 colleters subtending each lobe internally. *Leaves* opposite, the petiole terete, adaxially canaliculate, 1.5-2 cm long, glabrous; blade narrowly elliptic, acuminate at apex, attenuate at base, 12.5-25 x 5-9 cm, 2.5-2.8 times longer than wide, venation pinnate with 11-14 arcuate secondary veins on each side of the midrib, the prominent veins and intercostal areas glabrate beneath, the weakly prominent veins and intercostal areas glabrous above. *Inflorescences* terminal, sessile, truly thyrsoid, 5 x 4-6 cm, 20-33-flowered, trichotomous from the base, the primary branches flattened, 1.5-1.8 cm long, glabrate to sparsely puberulous, the secondary branches evident only on the central primary



Fig. 11 — Holotype of *Palicourea denslowiae* (Denslow 2252 [US]).

branch, flattened, 0.8-1.2 cm long, sparsely puberulous to puberulous, the capitula terminating the unbranched lateral primary and evident secondary branches 1.5-2 x 1.5-2.5 cm; a pair of bracts subtending the bases of each branch and capitulum, these depressed ovate, broadly acute at apex, abaxially carinate, 4.2-6.7 x 11.7-14.2 mm, glabrous on both faces, minutely ciliate. *Flowers* sessile, 5-merous, subtended by 2 depressed ovate to very broadly ovate, broadly acute bracteoles 3.9-5.2 x 6-6.5 mm, these glabrous on both faces, minutely ciliate; hypanthium turbinate, 2.5 mm tall, 5 mm in diam, glabrous; calyx tubular, persistent on the fruit, the tube 5.2-5.8 mm long, glabrous, bearing on the inner face ca 1/3 way up from the base 5 evenly spaced groups of 3 small glands, the margin irregular, minutely ciliate; corolla, purple, salverform, the tube 17 mm long, upper 2/3 lanate and lower 1/3 glabrous externally, glabrous internally except for a densely sericeous ring 1/4 way up from the base, the lobes broadly triangular, obtuse at apex, 3.4 x 2.8 mm, lanate and corniculate externally, glabrous internally, the corniculate appendages conical, narrowly acute at apex, 5.4 mm tall, 2.9 mm diam, glabrous; glandular disc filling the space betw the corolla and style, circular, entire, glabrous; stamens separating from the wall of corolla tube 3/4 of the way from the base, the filaments 5.8 mm long, glabrous, the anthers exerted, dorsifixed at middle, narrowly oblong, 5.2-5.8 mm long, glabrous; style terete, 11 mm long, glabrous, the 2 stigmatic lobes included, lanceolate, 4.8 mm long, glabrous, the 2 stigmatic lobes included, lanceolate, 4.8 mm long, abaxially glabrous, adaxially lanate. *Fruit* baccate, quadrangular, including calyx 17-19 mm long, 10-11 mm diam, glabrous.

Palicourea denslowiae is closely related to *P. therydri* Kirkb. Their leaves and stipules and the basic pattern of their inflorescences are identical so that their facies are strikingly similar. Detailed examination of the two species reveals the differences expressed in the following key:

1. Lobes of the stipule narrowly oblong to broadly oblong, obtuse at apex, 1.8-3.2 mm

long; petiole 1.5-2 cm long; inflorescence sessile, 20-30-flowered, its bracts depressed ovate, 11.7-14.2 mm wide; bracts subtending the flowers 6-6.5 mm wide; calycine margin shallowly irregular; corolla lobes corniculate shorter than their appendages *P. denslowiae*

1. Lobes of the stipule triangular to narrowly acute at apex, 3.6-4.4 mm long; petiole 1-1.5 cm long; inflorescence elevated on peduncle 2-3 cm long, 9-19-flowered, its bracts broadly ovate, 5-6 mm wide; bracts subtending the flowers 3.7-5 mm wide; calyx lobes 5, broadly oblong to broadly transverse-oblong, obtuse at apex, 4.7-5.2 x 3.2-5.9 mm; corolla lobes not corniculate. *P. therydri*.

They are also similar to *P. dives* Standl.

in their thyrsoid inflorescences with clustered flowers subtended by large bracts, but are easily distinguished by the fewer secondary veins of their leaf blades, the smaller inflorescences and flowers and the externally lanate corolla.

***Palicourea therydri* Kirkbride, sp. nov.**

(Figs. 12, 16)

Type: **Scolnik, Arague Molina & Barkley 19An510**, 7 May 1949, en selvas húmedas en las Fuentes Termales de Santo Domingo, 1200 m. Antioquia, Colombia (holotype US).

A *P. denslowii* stipulae lobis triangularibus vel anguste triangularibus anguste acutis 3.6-4.4 mm longis, petiolis 1-1.5 cm longis, inflorescentia 9-19-flora pedunculo 2-3 cm longo elevata, bracteis late ovatis 5-6 mm latis, florum bracteis 5-6 mm latis, calycis lobis 5 late oblongis vel tranverse late oblongis 4.7-5.2 x 3.2-5.9 mm necnon corollae lobis ecornutis differt.

Tree 4 m tall, the branches quadrangular, glabrate, the internodes 2.5-6 cm long, 2.5-5 mm diam. *Stipules* connate into amplexicaul sheaths above the petioles, the sheath 3-4 mm tall, glabrous, bilobate on each side of the branch, the lobes triangular to narrowly triangular, narrowly acute at apex, 3.6-4.4 x 1-1.6 mm, glabrous, with 4-5 colleters subtending each lobe internally. *Leaves* opposite, the petiole terete, adaxially canaliculate 1-1.5



Fig. 12 — Holotype of *Palicourea therymydi* (Scolnik et al. 19An510 [US]).

cm long, sparsely puberulous to glabrate; blade narrowly elliptic, acuminate at apex, attenuate at base, 10-15 x 3.5-6 cm, 2.5-2.9 times longer than wide, venation pinnate with 12-14 arcuate secondary veins on each side of the midrib, the prominent veins puberulous to sparsely puberulous and the intercostal areas glabrate beneath, glabrous above. *Inflorescences* terminal, pedunculate, modified thyrsoïd, 5-7 x 2-5 cm, 9-19-flowered, trichotomous from the flattened, 2-3 cm long, sparsely puberulous peduncle, the primary branches flattened, 0.5-1.8 cm long, puberulous terminated by capitula 1-2.5 x 1-2.5 cm subtended by a pair of bracts, these ovate, broadly acute at apex, abaxially carinate, 6-7.5 x 5-6 mm, glabrous on both faces, minutely ciliate. *Flowers* sessile, 5-merous, subtended by 2 bracteoles, these broadly ovate, broadly acute at apex, 4.2-5.8 x 3.7-5 mm, glabrous on both faces, minutely ciliate; hypanthium

Manipulus...

cylindrical, 3.3 mm tall, 2.5 mm diam, glabrous; calyx tubular, the tube campanulate, 4.2 mm tall, glabrous, charged at middle internally opposite each sinus with a group of 2-5 small glands, the lobes erecta, broadly oblong to broadly transverse oblong, obtuse at apex, 4.7-5.2 x 3.2-5.9 mm, glabrous on both faces, sparsely minutely ciliate; corolla blue, salverform, the tube 15.4 mm long, 2.5 mm diam at base and orifice, lanate above the middle and glabrous below externally, charged internally below the middle with a ring of dense sericeous pubescence, rugose above the ring and glabrous below, the lobes ovate, acute at apex, 4.4-4.8 x 1.8-2 mm, lanate externally, glabrous and apiculate internally, the apicule 0.6-0.8 mm tall; stamens separating from the wall of corolla tube ca 2/3 of the way from the base, the filaments ca 2 mm long, flattened, glabrous, the anthers included, dorsifixed at the middle, narrowly oblong, ca 4 mm long, glabrous; glandular disc filling the space betw corolla and style, circular, bilobate with 1 lobe above each locule, glabrous; style terete, 19.5 mm long, glabrous, the stigma excluded, its 2 lobes oblanceolate, ca 3 mm long, abaxially glabrous, adaxially minutely papillate. *Fruit* not seen.

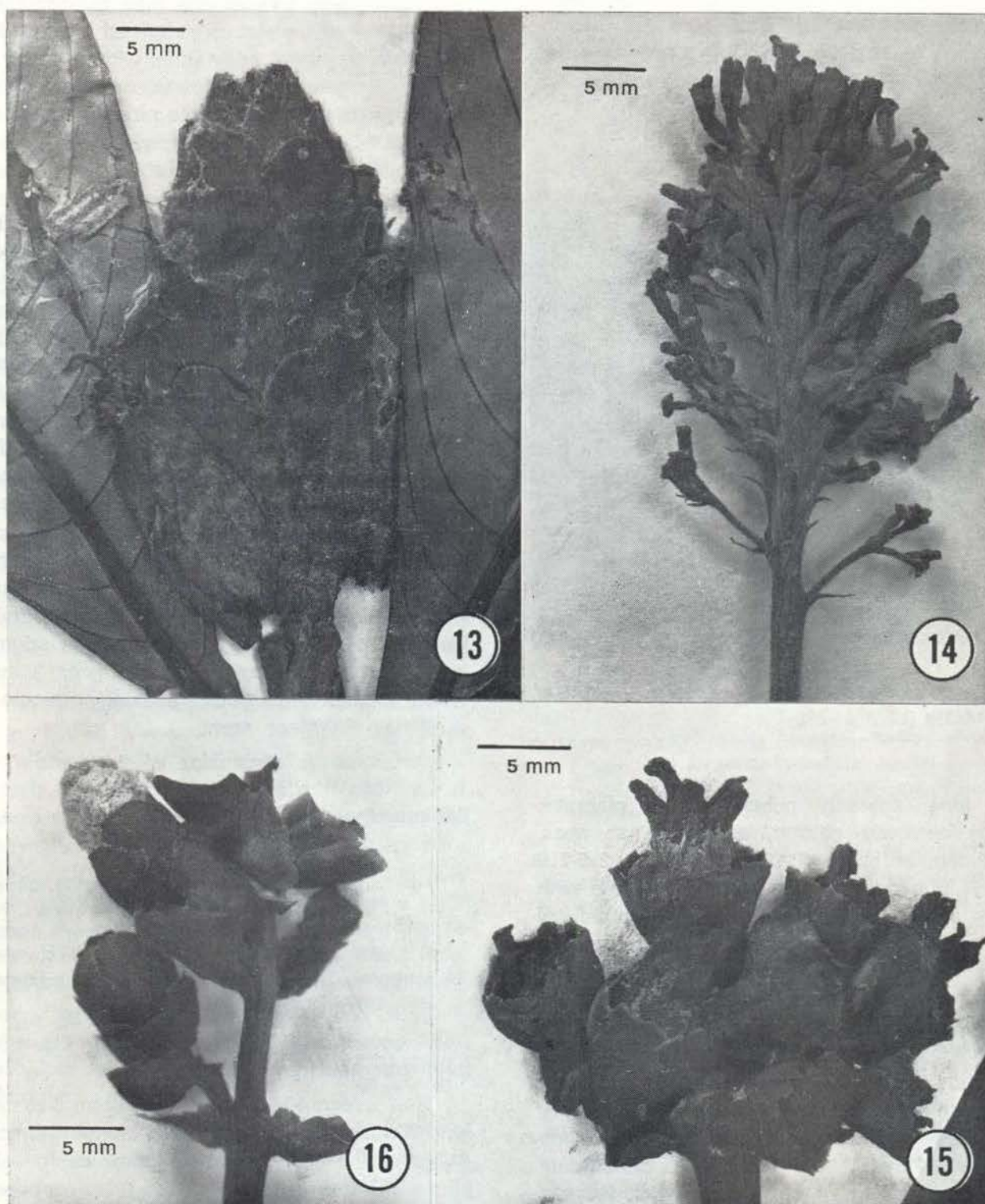
Refer to the discussion of *P. denslowii*.

Perama (sect. *Rosella carajensis* Kirkbride, (Figs. 17, 22)

Types: **Cavalcante & Silva 2632**, 18.4.1970, Clareira N₁, Serra Norte. Serra dos Carajás, Marabá, Pará, Brasil (holotype: MG); **Cavalcante 2082**, 21.5.1969, platô a 700 m de alt., 6°00'S, 50°18'W, Serra dos Carajás, Marabá, Pará., Brasil (paratype: MG), **2090** (paratype: MG).

A sect. *Rosellae* speciebus ceteris quaque inflorescentiae ramo 1-floro differt.

Herb erect, 40-60 cm tall, the stem 5-20 cm long with the leaves distributed along it, terete except for a shallow groove below each leaf, pilose, the internodes 1-7 cm long. *Leaves* opposite at 6-10 nodes, sessile; blade chartaceous, narrowly elliptic, narrowly acute at apex, cuneate at base, 16-63x3.5-14mm, 3.8-4.6 times longer than wide, the venation basally acrodromus of 3 or 5 evident veins, these faintly prominulous above, prominulous and pilrose beneath.



Figs. 13-16 — 13. Inflorescence of the holotype of *Psychotria aviculoides* showing overlapping dichasial bracts (Triana 1671(3146.33) [K]). 14. Inflorescence of the holotype of *Palicourea veterinariorum* (Döbereiner/Tokarnia 343 [RB]). 15. One branch of the inflorescence of the holotype of *Palicourea denslowiae* (Denslow 2252 [US]). 16. One branch of the inflorescence of the holotype of *Palicourea therydri* (Scolnik et al. 19Ans510 [US]).

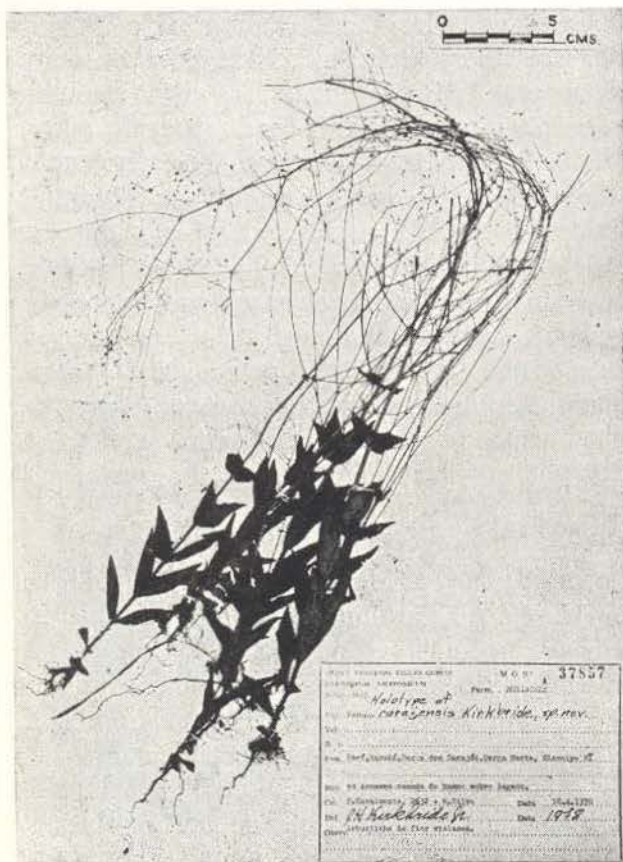


Fig. 17 — Holotype of *Perama carajensis* (Cavalcante & Silva 2632 [US]).

Inflorescences terminal, pedunculate thyrses 30-40 cm long, the opposite branches terete, glabrous, subtended by sessile bracts connate about the base of the branches by a ridge or low flap of tissue, this chartaceous, triangular to broadly triangular, narrowly acute at apex, 0.4-2 x 0.2-1.6 mm, glabrous, the flowers solitary at the apex of each terminal branch, the peduncle terete, 4.5-7 cm long, sparsely pilose. *Flowers* pedicellate, the pedicel terete, 3-10 mm long, glabrous, that of all lateral dichasial flowers but not of the central dichasial ones subtended by a pair of bracts, these narrowly triangular or narrowly oblong, narrowly acute at apex, 0.4-0.5 x 0.1-0.15 mm, glabrous; hypanthium turbinate, 0.8 mm tall, 0.6 mm diam, densely strigose; calyx persistent on fruit, navicular, bilobate, the tube 0.1-0.4 mm tall, the lobes deltate, broadly acute at apex, 0.4 mm tall and broad, one or both sinuses sparsely ciliate, corolla infundi-

buliform, white or blue, the tube 2.3 mm long, 0.4 mm diam at base, 0.7 mm diam at orifice, sparsely and minutely strigose outside, sparsely sericeous above and glabrous below the middle inside, the 4 lobes triangular, acute at apex, 1 x 0.6-0.7 mm, glabrous, the stamens exerted, their filaments ca 0.6 mm long, separating from the wall of corolla tube 3/4 from the base, the anthers dorsifixed, oblong, obtuse at apex, weakly sagittate at base, ca 1 mm long; style 2.8 mm long glabrous, with 3 'glands' surrounding the base, the 'glands' ca 0.2 mm tall, conical, obtuse at apex, glabrous, the stigma exerted, capitate. *Fruit* capsular, persistent until dehiscence, globose, 1.2-1.6 mm diam, sparsely strigose.

Perama carajensis is a member of section *Rosella* Schumann. It is sharply distinguished from all other species of the section by the branches of its inflorescence terminating in single flowers rather than capitula. In its navicular calyx it is most similar to Peruvian *P. wurdackii* Steyermark.

Key to the species of sect. *Rosella*.

1. Calyx navicular.
 2. Inflorescence branches terminating in 3-8-flowered capitula; corolla tube 4 mm long, the lobes 2 x 1.5 mm, all externally densely papillate-puberulous.

P. wurdackii Steyermark.
 2. Inflorescence branches terminating in a solitary flower; corolla tube 2.3 mm long, sparsely minutely strigose outside, the lobes 1 x 0.6-0.7 mm, glabrous.

P. carajensis Kirkb.
1. Calyx with two elongated prominent segments, not navicular.
 3. Leaves always present; corolla blue or white, the tube externally papillate-puberulent to villose; hypanthium 0.8-1 mm tall, hispidulo-setulose.

P. dichotoma Poepp. & Endl.
 3. Leaves absent at and after anthesis; corolla pale pink, the tube externally strigose; hypanthium ca 0.5 mm tall, strigose.

P. harleyi Kirkb. & Steyermark.

Borreria reflexa Kirkbride, sp. nov.

(Figs. 18, 23)

Types: **Anderson, Stieber & Kirkbride 36482**, 2 Mar 1972, serra 22 km W of Barreiras, Espigão Mestre, ca 620 m, Bahia, Brasil (holotype: UB; isotypes NY, US); **Irwin, Harley & Smith 31463**, 4 Mar 1971, near Barreiras airport, ca 5 km NW of Barreiras, Espigão Mestre, ca 650 m, Bahia, Brasil (paratypes: NY, UB, US); **Anderson, Stieber & Kirkbride 36698**, 6 Mar 1972, ca 100 km WSW of Barreiras, Espigão Mestre, ca 750 m, Bahia, Brasil (paratypes: NY, UB, US).

A *Florae brasiliensis* speciebus 5 ad 9 habitu robustiore, foliis majoribus necnon ramificationibus fertilibus dichotomis et a *Borreria monodonte* ac *B. cymosa* inflorescentiis sessilibus tantum terminalibus calycis lobis 7.4-9 mm longis valde reflexis absimilis.

Shrub 1-2 m tall, the stems and branches minutely puberulous, quadrangular with wings at each corner 0.2-0.3 mm wide, the internodes 1.5-4.5 cm long 0.5-4 mm diam. *Stipules* with the minutely puberulous to minutely and sparsely puberulous sheath 2.1-5.4 mm long,

3.3-4.6 mm wide at top, charged at edge with 5 setae, these linear-subulate, narrowly acute at apex, 2.9-6.7 x 0.2-0.4 mm, minutely puberulous or minutely and sparsely puberulous, the central longer than the lateral ones.

Leaves opposite, sessile, sometimes subtending axillary brachyblasts of 1 or 2 pairs of smaller leaves; blade narrowly elliptic to narrowly obovate, acuminate at apex, obtuse to cuneate at base, 22-66 x 5-15 mm, 2.7-5.1 times longer than wide, puberulous above and below, venation pinnate with 3-6 secondary veins on each side of the midrib, these spreading, straight curving apically near the margin of the leaf, prominent beneath, strongly sulcate above. *Inflorescences* terminal, sessile, 5-7-flowered, surrounded by a sheath ca 0.5 mm tall similar to the stipular one, and flanked by 2 short axillary branches of 1 node each bearing another inflorescence at the apex, the fertile branches and inflorescences forming a dichasial pattern. *Flowers* sessile, subtended by numerous setae, 4-merous; hypanthium turbinate, ca 1.5 mm tall, ca 0.5 mm diam, minutely puberulous, persistent in fruit, the tube ca 1.2 mm tall, the lobes strongly reflexed, narrowly triangular, narrowly acute at apex, 7.4-9 x 1-1.2 mm; corolla white, the tube 2 mm long, 1.5 mm diam at base, 2.1 mm diam at orifice, externally minutely puberulous, internally glabrous, the lobes reflexed, narrowly oblong, acute at apex 6.2-6.6 x 1.2 mm, externally minutely puberulous, internally lanate with distinctly septate hairs ca 1 mm long; stamens included, the filaments separating from the wall of corolla tube ca 1/2 way from the base, ca 0.4 mm long, glabrous, the anthers obovate, ca 1.5 mm long, glabrous, dorsifixed ca 1/4 from the base apically acute and apiculate, the apicula ca 0.2 mm long, the base obtuse; glandular disc filling the space between the corolla and the style, entire, glabrous; style as long as the disc, terete, 0.2 mm long, glabrous, the stigma bilobate, its lobes conical, spreading, 0.3-0.4 mm long, very minutely papillate. *Fruit* capsular, turbinate, 5.8-6.7 mm long, 1.8-2 mm diam, minutely puberulous; seeds narrowly oblong, obtuse at both ends, ca 2.5 x 0.7 mm, ventrally deeply and broadly grooved, dorsally convex, shining.



Fig. 18 — Isotype of *Borreria reflexa* (Anderson et al. 36482 [US]).

Borreria reflexa is unique within the genus. Its very long calyx lobes are so strongly reflexed that the apex is turned inside the curve of the lobe. The patterns of inflorescence formation and fertile branching are also unusual. The patterns of inflorescence formation and fertile branching are also unusual. The apical meristem gives rise to a sessile terminal inflorescence. Each axillary bud develops into a lateral branch with one internode. The apices of the branches follow the same pattern of development, ultimately forming the extensive dichasial system of branching shown by specimens of *Irwin et al.* 31463.

Borreria monodon and *B. cymosa* have similar patterns of inflorescence development. The fertile branches give rise to a number of inflorescences which are pedunculate and axillary. Schumann (1888) placed these two species in his section *Galianthe* characterized by an inflorescentia pluries trichotome cymosa". *Borreria reflexa* is easily distinguished from these two species by its very long reflexed calyx lobes and sessile terminal inflorescences flanked by axillary branches.

Schumann (1888) grouped together within his section *Euborreria* five species (nos. 5-9) which were mainly small, delicate herbs with narrow leaves and a distinct type of flower. This has a very short style so that only the stigma or the stigma and a little of the style protrudes above the glandular disc. Also, several of these species have corolla tubes very short relative to the whole corolla and the calyx lobes. In flower structure *B. reflexa* is similar to these species, but easily distinguished from them by its robust habit, much larger leaves and dichasial system of fertile branching.

***Sipaneopsis cururuensis* Kirkbride, sp. nov.**
(Figs. 19, 24)

Type: Egler & Raimundo 1265, 8-2-1960, Erereri, Rio Cururu, Alto Tapajós, Pará, Brasil (holotype: IAN; isotype: MG).

Herba caule scabroso vel dense scabroso trichomatibus ca 1 mm longis, folii laminae superficiebus trichomatibus 0.4-0.6 mm longis sparsim scabrosis, corollae lobis 4.2-4.6 x 1.8-2 mm extra strigosis inter congeneres notabilis.

Manipulus...



Fig. 19 — Holotype of *Sipaneopsis cururuensis* (Egler & Raimundo 1265 [IAN]).

Herb breater than 25 cm tall, the stem terete, stramineous, scabrous to densely scabrous with hairs ca 1 mm long, curved, pointed towards the apex, the internodes 2-8.5 cm long. *Stipules* bilobate with colleters at the base internally, stramineous, the lobes narrowly triangular, very narrowly acute at apex, 2-5 x 0.6-1 mm, scabrous to densely scabrous externally, sparsely so internally. *Leaves* opposite, the petiole terete, scabrous to densely scabrous, stramineous, 2-3 mm long; blade narrowly elliptic, acute at apex, attenuate at base, attenuate at base, 4-7 x 1.5-2.5 cm, 2.7-3.1 times longer than wide, the venation pinnate with 7-10 arcuate secondary veins on each side of the midrib, the prominent midrib and both secondary and tertiary veins beneath scabrous or densely scabrous and stramineous and the intercostal areas beneath and above sparsely scabrous, the midrib weakly prominent above scabrous

and stramineous. *Inflorescences* terminal, pedunculate, modified compound dichasia with scorpioid cymous branch tips, 2.5-4.5(-7) cm tall, 3-4.5(-7) cm diam, the terete peduncle 0.5-3(-6.5) cm long, scabrous to densely scabrous, stramineous, the terete branches 5-20 mm long, scabrous to densely scabrous, stramineous, each branch and flower subtended by a bract, this sessile, triangular, narrowly acute at apex, truncate at base, 2.2-5.8 x 1-2.4 mm, ciliate, charged along the margin on each side with 1-3 small glands, the abaxial surface scabrous to sparsely scabrous, the adaxial surface glabrous. *Flowers* 5-merous, the terete pedicel 0.4-0.6 mm long, densely scabrous, stramineous; hypanthium spherical, ca 1 mm diam, scabrous, stramineous, bilocular, multiovulate, the placenta discoid with a peltate stalk attached to the base of the septum; calyx lobes persistent on the fruit, narrowly ovate, narrowly acute at apex, 2-2.3 x 0.5-0.7 mm, ciliate, outside sparsely strigose, inside glabrous, with 1 or 2 small glands in each sinus; corolla pink, salverform, the tube 15.4 mm long, 0.8 mm diam at base, 1.2 mm diam at the orifice, externally strigose, internally sericeous in upper 3/4 and glabrous proximally, the lobes irregularly imbricate, 1-3 lobes interior, all elliptic, broadly acute at apex, 4.2-4.6 x 1.8-2 mm, externally strigose, internally glabrous, with a triangular appendage at the base of each lobe, this ca 0.5 mm tall, densely yellow-pilose; stamens included, the filaments separating from the corolla tube ca 2/3 from the base, ca 0.8 mm long, glabrous, the anthers dorsifixed, narrowly oblong, narrowly acute at base and apex, 1.6-1.7 mm long, glabrous; glandular disc filling the space between the corolla and the style, circular, entire, glabrous; style terete, ca 13 mm long, glabrous, the stigma raised above the androecium but included within the corolla tube, its 2 lobes appressed, lanceolate, ca 1 mm long, glabrous. *Fruit* capsular, globose, 3-4 mm diam, strigose to sparsely strigose; seeds globose, 0.5-0.8 mm diam, the cells of the seed coat polygonal with pits in the internal walls.

Sipaneopsis as described by Steyermark (1967) had six species "confined to south-

western Venezuela in Territorio Federal Amazonas, and extending into adjacent region of Colombia". *Sipaneopsis cururuensis* is known only from the valley of the Rio Cururu in the southwestern corner of Pará, Brazil. It is separated by approximately 1,600 air-kilometers from the nearest populations of *Sipaneopsis* in Venezuela.

According to Anderson (1976), *Blepharanda* of the Malpighiaceae exhibits the same type of disjunction, having one species in the southwestern corner of Para and the rest in the Guayana Highlands. Anderson suggested that this pattern reflects migration across the Amazon Valley along pathways created by contractions of the forests during dry periods of the Pleistocene and post-Pleistocene eras. Such disjunctions may also be the result of long distance dispersal to favorable habitats of adequate size. More detailed information is needed about the vegetational history of the Amazon Valley and of individual species distribution in South America before definitive conclusions can be drawn.

Sipaneopsis cururuensis is most closely related to *S. rupicola* (Spruce ex Schumann) Steyermark and *S. morichensis* Steyermark. These three species form a coherent group within *Sipaneopsis* delimited by lobate stipules, shorter corolla tubes and taller statures, and may be distinguished by the following key which can be substituted for the first half of Steyermark's key to *Sipaneopsis* (1967):

1. Some or all stipules split once or more to the base; corolla tube 6-11(-16) mm long; plants 0.3-2 m tall.
 2. Intervarium of leaf blades glabrous below and above; stems strigose; corolla lobes 3-3.5 mm long.
 1. *S. rupicola*.
 2. Intervarium of leaf blades pubescent below and above; stems either scabrous to densely scabrous with hairs ca 1 mm long or densely buff- to white-villous; corolla lobes 4.2-6 mm long.
 - 2a. Intervarium of leaf blades sparsely scabrous below and above with hairs 0.4-0.6 mm long; stem

scabrous to densely scabrous; corolla lobes 4.2-4.6 x 1.8-2 mm, strigose externally.

1a *S. cururuensis*.

- 2a. Intervenum of leaf blades densely gray-white-villosulous below, hispidulous above; stem buff- to white-villosulous; corolla lobes 4.5-6 x 2-3.5 mm, white-sericeous-pilose externally.

2. *S. morichensis*.

Gonzalagunia discolor Standley var. **danielis**

Kirkbride, var. nov.

(Figs. 20, 25)

Type: Bro. Daniel 3939, 2 Jan 1947, Páramo Sonsón, Antioquia, Colombia (holotype: F; isotype: US).

A var. *discolori* ramuli internodiis 0.5-1.5 cm longis, petiolo 0.6-0.7 mm longo, folii la-

mina anguste elliptica 4.3-7 x 1.4-2.3 mm inflorescentiarum 4-6-florarum axe 2.1-3.3 mm longo hypanthioque glabro absimilis.

Gonzalagunia discolor var. *danielis* is known only from the type collection made on Páramo Sonsón in the Cordillera Central, Departamento de Antioquia, Colombia. This páramo is situated at uncharacteristically low elevation and lacks Frailejones (*Espeletia* sp.). Probably it supports only subpáramo vegetation with a preponderance of shrubs. Many of the plants found there differ only slightly from their closest relatives which occur in either the Cordillera Occidental or Oriental (José Cuatrecasas, personal communication).

Gonzalagunia discolor var. *discolor* conforms to this pattern; it is known from three collections made in the Cordillera Occidental, Departament del Cauca, Colombia. Its original collector, Ellsworth P. Killip, indicated that it was found at 2,000-2,200 m of elevation, 800-1,000 m lower than Páramo Sonsón, in forest.

Gonzalagunia discolor var. *danielis* differs from *G. discolor* var. *discolor* mostly by the smaller size of some of its parts as given in the following key:

1. Internodes of terminal branches 3.5-6.5 cm long; petiole 4-5 mm long; leaf blade elliptic, 27-47 x 12-20 mm; inflorescences 8-28-flowered, the axis 11-80 mm long; hypanthium of flowers strigulose.

G. discolor var. *discolor*.

1. Internodes of terminal branches 0.5-1.5 cm long; petiole 0.6-0.7 mm long; leaf blade narrowly elliptic, 4.3-7 x 1.4-2.3 mm; inflorescences 4-6-flowered, the axis 2.1-3.3 mm long; hypanthium glabrous.

G. discolor var. *danielis*.

The varieties seem thoroughly distinct on the basis of four available collections without intermediates. Nevertheless, the environmental factors in the subparamo habitat may be partially or completely responsible for the more ericoid habit and apparent reduced structures of *G. discolor* var. *danielis*.



Fig. 20 — Holotype of *Gonzalagunia discolor* var. *danielis* (Bro. Daniel 3939 [F]).

Gonzalagunia congesta Kirkbride, sp. nov.
(Figs. 21, 26)

Type: **Cuatrecasas 22058**, 29 Sep 1946, Cordillera Occidental, vertiente occidental, hoya del Río Anchicayá, entre Sabaletas y la Quebrada del Tátabro, 30-60 m, Valle del Cauca, Colombia (holotype: US; isotypes: F, NY, U, VALLE, VEN).

Frutex ramis teretibus pilosis, inflorescentiis axillaribus sessilibus racemosis asperis 1.5-4 cm longis, floribus congestis spiraliter dispositis, pedunculo quoque bracteis tribus anguste obovatis anguste acutis ad apicem 5-7 x 0.8-1.7 mm utrinque glabris margine pilis longis ultra lobos calycinis procurrentibus dense ciliatis subtento inter affines notabilis.

Shrubs branched and spreading, the branches terete, glabrate to pilose. *Stipules* interpetiolar, persistent, narrowly triangular to triangular, long-acuminate to caudate at the apex, 10-16.7 x 4-8.3 mm, sparsely pilose externally and internally with numerous coleters internally near the base. *Leaves* opposite, entire; petiole terete, canaliculate axially, 5-15 mm long, pilose; blade chartaceous, elliptic to narrowly elliptic or oblong, acuminate at apex, attenuate to subobtuse at base, 11-17 x 4.5-6.5 cm, 2.4-2.9 times longer than wide, venation pinnate with 13-18 arcuate anastomosing secondary veins on each side of the midrib, pilose above and beneath. *Inflorescences* axillary, sessile, racemous, indeterminate, 1.5-4 cm long, the flowers congested, spirally arranged, the axis terete, velutinous, with 3 bracts subtending each peduncle, the bracts very narrowly elliptic to very narrowly obovate, very narrowly acute at apex, 5-7 x 0.8-1.7 mm, projecting beyond the calyx lobes and give the inflorescence a fuzzy appearance, glabrous on both faces and densely ciliate with long hairs. *Flowers* 4-merous; pedicels terete 0.7-1.5 mm long, glabrate to glabrous; hypanthium transversely oblong in outline, 0.4-0.6 mm tall, 0.8-0.9 mm diam, densely velutinous; placenta discoid pluriovulate, peltately attached to a stalk arising from the center of the inner wall of the locule; calyx glabrous, the tube 0.2-0.3 mm tall, the lobes very broadly trullate, acute at the apex, 0.7-0.8 x 0.8-0.9 mm, with 1 or 2

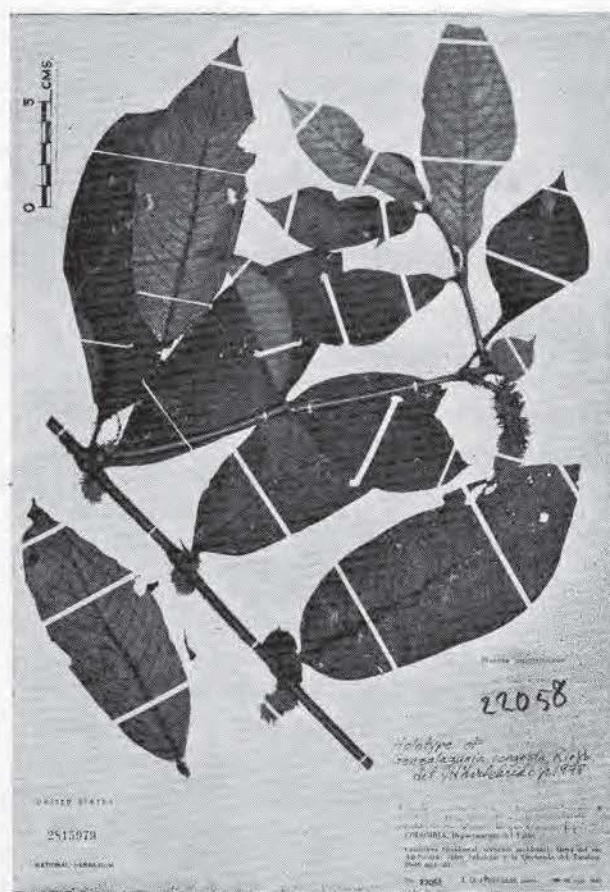
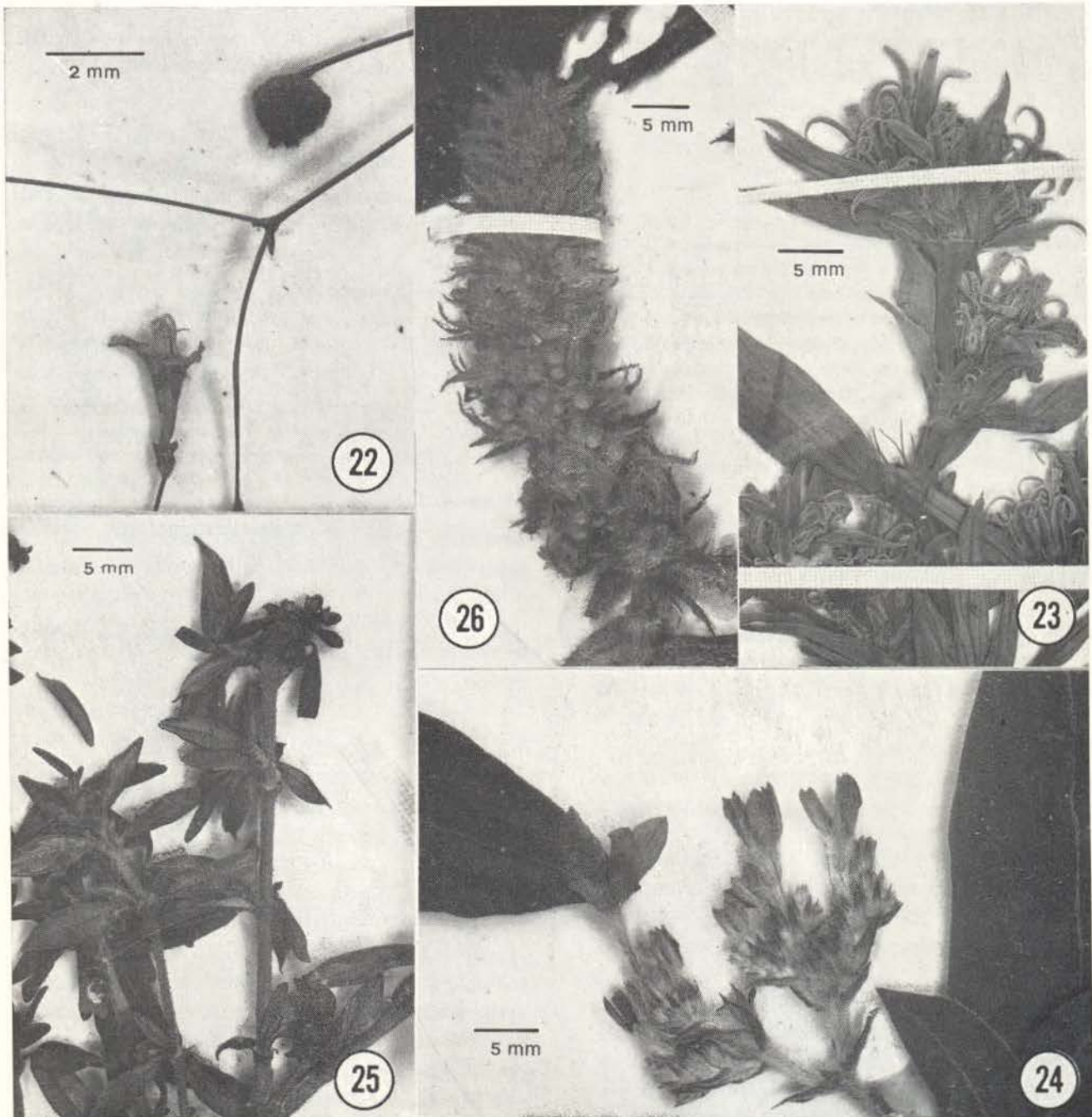


Fig. 21 — Holotype of *Gonzalagunia congesta* (Cuatrecasas 22058 [US]).

glandules in each sinus; corolla white, infundibuliform with the dilation in the upper half of the tube, the tube 3.7 mm long, 0.5 mm diam at the base, 1.7 mm diam at orifice, externally glabrous, internally in the upper 1/2 sparsely villous, the lobes depressed ovate, obtuse at the apex, 1 x 1.4-1.5 mm, sparsely velutinous outside, glabrous inside, one opposite pair interior and valvate and the alternate pair exterior and imbricate; stamens separating from the wall of corolla tube slightly above the middle, the filaments 0.2 mm long, the anthers 0.9 mm long, dorsifixed; glandular disc filling the space between the corolla and style, entire, glabrous; style terete, 2.6 mm long, glabrous; stigma 4-7-lobed, the lobes broadly ovate, ca 0.2 mm long, glabrous, forming a cup at the apex of the style. *Fruit* baccate, white, 4-lobed, transversely oblong in outline, 7-8 mm diam, sparsely velutinous.

Gonzalagunia congesta, *G. bunchosioides* Standley and *G. pachystachya* Standley have similarly pubescent branches, but in other respects *G. congesta* stands well apart from

all other species of the genus, being the only one with axillary inflorescences rough in appearance and bearing extremely congested flowers.



Figs. 22-26 — 22. One flower and one fruit of the holotype of *Perama carajensis* (Cavalcante & Silva 2632 [MG]). 23. Several inflorescences of the isotype of *Borreria reflexa* (Anderson et al. 36482 [US]). 24. Inflorescence of the holotype of *Sipaneopsis cururuensis* (Egler & Raimundo 1265 [IAN]). 25. A branch with both an infructescence and an inflorescence of the holotype of *Gonzalagunia discolor* var. *danielis* (Bro. Daniel 3939 [F]). 26. Infructescence of the holotype of *Gonzalagunia congesta* (Cuatrecasas 22058 [US]).

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Resumo

Cinco espécies novas de Rubiáceas do Brasil, *Psychotria insanae* Kirkb., *Palicourea veterinariorum* Kirkb., *Borreria reflexa* Kirkb. e *Sipaneopsis cururuensis*; cinco espécies novas de Rubiáceas da Colômbia, *Rudgea bracteata* Kirkb., *Psychotria gonzalagunioides* Kirkb., *Palicourea denslowiae* Kirkb., *Palicourea therydri* Kirkb., e *Gonzalagunia congesta* Kirkb. e uma variedade nova de Rubiáceas da Colômbia, *Gonzalagunia discolor* Standl. var. *daniellis* Kirkb., são descritas. Uma combinação nova é dada, *Psychotria cotejensis* (Standl.) Kirkb., e um nome novo é publicado, *Psychotria aviculiodes* Kirkb.

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