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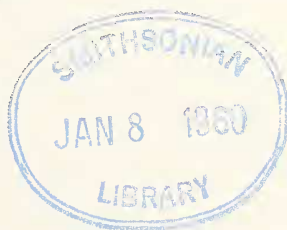
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THE MACHRIS BRAZILIAN EXPEDITION

BOTANY: PHANEROGAMAE, ACANTHACEAE

By EMERY C. LEONARD



CONTRIBUTIONS IN SCIENCE is a series of miscellaneous technical papers in the fields of Biology, Geology and Anthropology, published at irregular intervals by the Los Angeles County Museum. Issues are numbered separately and numbers run consecutively regardless of subject matter. Number 1 was issued January 23, 1957. The series is available to scientists and scientific institutions on an exchange basis. Copies may also be purchased at a nominal price.

The MACHRIS BRAZILIAN EXPEDITION from the Los Angeles County Museum was sponsored by Mr. and Mrs. Maurice A. Machris and Mrs. Maybell Machris Low. It was conducted under the auspices of the Museu Nacional do Brasil. Botanical and zoological collections were made from April through June, 1956, in the region of the headwaters of the Rio Tocantins in the state of Goiás. General accounts and itineraries are given in papers 1 and 2 of this series. Technical type specimens of new entities are deposited in the Museu Nacional in Rio de Janeiro.

HILDEGARDE HOWARD

Editor

E. YALE DAWSON

Associate Editor

THE MACHRIS BRAZILIAN EXPEDITION

BOTANY: Phanerogamae, Acanthaceae

By EMERY C. LEONARD¹

The plant specimens in this report were collected by E. Yale Dawson, Expedition Botanist. In all, 19 specimens of the family Acanthaceae were procured. Of these, numbers 14860, 14915, 14964, 15003, 15023 and 15028 were collected in the region of the southern Serra Dourada at W. Long. 48° 59'; S. Lat. 13° 45'. The others, namely, numbers 14225, 14360, 14362, 14380, 14381, 14489, 14499, 14531, 14599, 14662, 14687, 14730 and 14751e came from the region of the Chapada dos Veadeiros at W. Long. 49° 30'; S. Lat. 14° 30'. Detailed locality data for these may be found in the general account of the botany of the Expedition.²

The genera are arranged alphabetically, as are the species, when more than one, within each genus.

The first set of specimens, including isotypes of the four new species, is deposited in the Los Angeles County Museum.

Geissomeria ciliata Rizzini, *Dusenya* 3:186. 1952. 14964; 15028 The species, so far as known, is limited to Goiás and Minas Gerais. The type (A. Macedo 1852) was collected at Queixada, Jatai, in Goiás. Macedo also obtained material of it at S. Vicente, Ituiutaba, Minas Gerais.

Geissomeria dawsonii sp. nov.

Figs. 1, 2

Herba vel suffrutex, caulibus glaucis plus minusve bifariam strigosis; lamina foliorum oblongo-lanceolata, acuta vel subacuminata (apice ipso subobtusato et minute mucronulato), basi angustata et in petiolum decurrens, supra glabra, costa et venis (8-10 paribus) parce strigosis exceptis, subtus hirtella, pilis basi crassis; cystolithis nullis; petioli dense pilosi; spicae solitariae et terminales vel plures et terminales et subterminales, pedunculatae; bracteae ovatae firmatae, puberulae, pilis glandulosis et glandulosis intermixtis; bracteolae lanceolatae, subcarinatae, puberulae, pilis glandulosis et glandulosis intermixtis; calycis segmenta 4, puberula, graciliter striato-nervosa; corolla purpurea, apice aliquanto dense pubescens, pilis patulis, glandulosis, purpureis, valde articulatis, labiis aequalibus, labio superiore cucullato, emarginato, labio inferiore trilobato, lobis latioribus ovalibus rotundatis, lobo medio lato, apice valde emarginato; ovarium glabrum.

Herbaceous or suffrutescent; stems subcylindrical, glaucous, more or less bifariously strigose, the hairs upwardly subappressed, up to 0.32 mm. long; leaf blades oblong-lanceolate, up to 16 cm. long and

¹Associate Curator, Division of Phanerogams, U. S. National Museum, Smithsonian Institution, Washington, D. C.

²Dawson, E. Yale. 1957. The Machris Brazilian Expedition. Botany: General. Los Angeles Co. Mus. Contr. Sci. (2) :1-20.

5.5 cm. wide, acute or subacuminate, the tip itself subobtuse and minutely mucronulate, narrowed at base and decurrent on the petiole, moderately firm, entire or very shallowly crenate, drying olive green, the upper surface

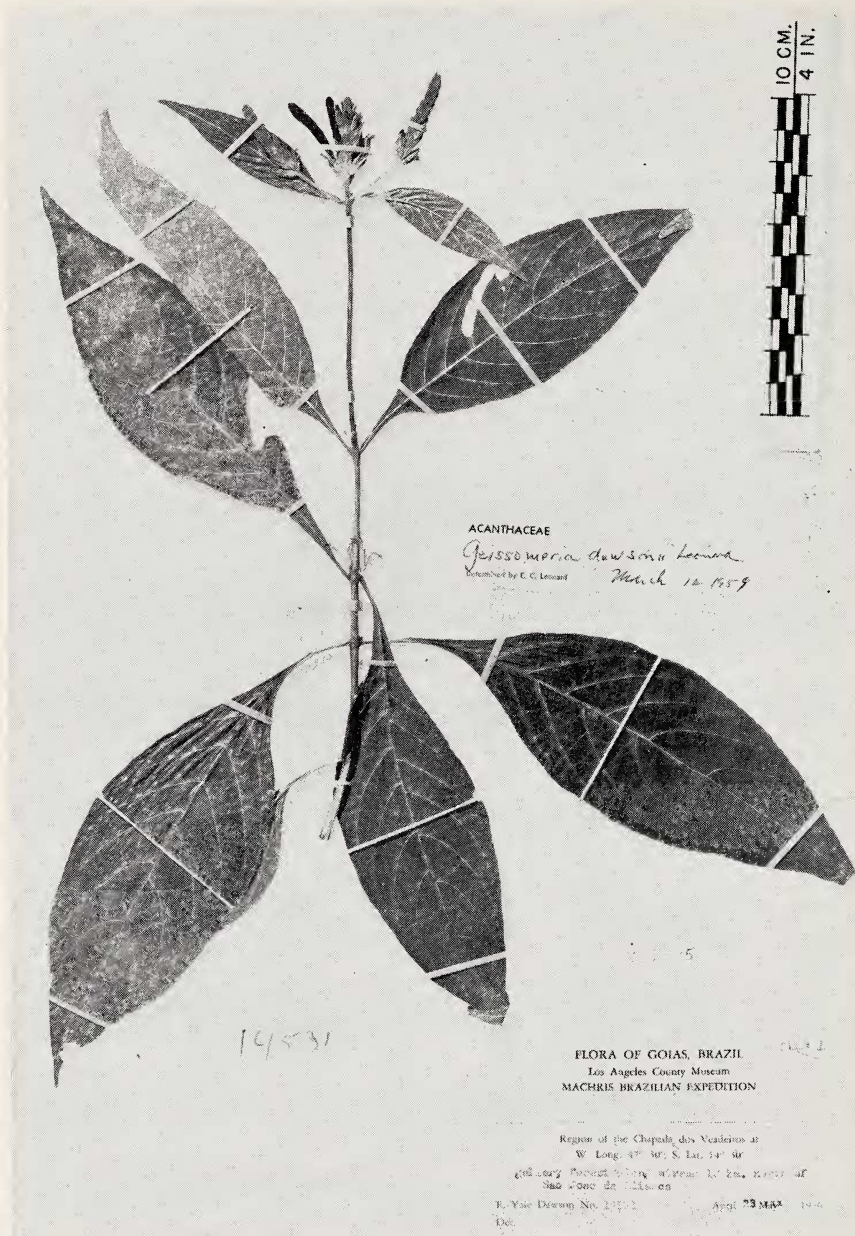


Fig. 1. *Geissomeria dawsonii* sp. nov. An isotype specimen.

glabrous or nearly so except the veins and costa, these sparingly strigose, the hairs up to 0.15 mm. long, the lower surface drying to grayish green, hirtellous, the costa densely so, the hairs ascending, arising from thickened bases, the costa and lateral veins (8 to 10 pairs) prominent beneath, less so above; cystoliths absent; petioles (unwinged portion) up to 12 mm. long, densely pilose, the hairs similar to those of the stem; young axillary branches sericeous and pale, the hairs very dense; spikes terminal and solitary or terminal and subaxillary, up to 3 cm. long, and 5 to 10 mm. broad, the subtending leaves smaller than the main stem leaves, up to 6 cm. long and 1.5 cm. wide, the peduncle of the terminal spike 4 to 8 mm. long, those of the subterminal spikes 2 cm. long, all densely and softly pubescent with yellowish white ascending hairs up to 0.48 mm. long; rachis densely pubescent with spreading or ascending hairs similar to those of the pedicels; flowers sessile, imbedded in the furrows of the rachis; bracts oblong-ovate, 7 mm. long, 4 mm. wide near the middle, firm and subcoriaceous, green, acute, puberulous with glandular and eglandular hairs intermixed, these up to 0.1 mm. long or the acute ones somewhat longer, the costa and 3 pairs of lateral nerves rather prominent, the inner surface of the bracts glabrous; bractlets lanceolate, 5 mm. long, 1.5 mm. wide, subacute, subcarinate, puberulous without, the hairs similar to those of the bracts, glabrous within, the costa obscure; calyx 4.5 mm. long, the segments oblong to lanceolate, the outermost 2 mm. wide, the medial 1.5 mm. wide, the inner 1 mm. wide, all subacute, puberulous without, the hairs similar to those of the bracts, glabrous within, finely striate-veined; corolla about 3 mm. long, and 4 mm. broad at throat, puberulous and purple, rather sparingly pilose with spreading hairs, these purple, 0.28 to 0.38 mm. long, gland-tipped, conspicuously jointed,

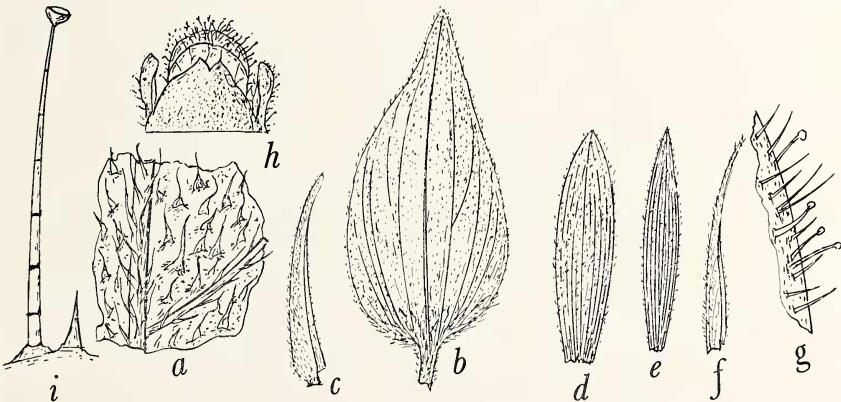


Fig. 2. *Geissomeria dawsonii* sp. nov. a. Lower surface of leaf blade enlarged to show pubescence; b, bract; c, bractlet; d, posterior calyx segment; e, one of the anterior calyx segments; f, one of the lateral segments of the calyx; g, portion of calyx segment enlarged to show character of the pubescence; h, tip of corolla; i, a glandular and an acute hair from tip of corolla.

the segments up to 0.08 mm. long, the corolla lips subequal, the upper lip cucullate, emarginate, covering the lower before expansion, the lower lip 3-lobed, the lateral lobes oval, rounded, the middle lobe broad, sharply notched at tip; ovary 1.25 mm. long, glabrous.



Fig. 3. *Jacobinia rigida* (Nees.) Lindau var. *desertorum* (Nees) Leonard. Dawson 14225.

TYPE: Museu Nacional do Brazil, Rio de Janeiro, collected in gallery forest along stream 18 km. north of the São João da Aliança, in the region of Chapada dos Veadeiros, April 23, 1956, by E. Yale Dawson (No. 14531). Isotypes in the United States National Herbarium and the Los Angeles County Museum.

Superficially, *Geissomeria dawsonii* resembles *G. ciliata* Rizz., but in that species the leaf blades are most abruptly narrowed toward the base and the bracts are more conspicuously ciliate and bear no minute gland-tipped hairs.

Jacobinia rigida (Nees) Lindau var. *desertorum* (Nees) comb. nov. 14225 Figs. 3, 4. *Sericographis rigida* Nees β . *desertorum* Nees, in Mart. Fl. Bras. 9:108. 1847. Nees cites several collections of *Sericographis rigida* var. *desertorum* in 1847 (DC. Prodr. 11:360). One of these, Riedel's no. 2413, was collected at Uberosa, Goiás.

Justicia allocota sp. nov.

Figs. 5, 6

Herba vel suffrutex, caulibus subquadrangularibus, leviter sulcatis, bifariam hirtellis, pilis curvatis; lamina foliorum oblongo-ovata vel ovato-lanceolata, apice acuta vel breviter acuminata, basi cuneata, in petiolum decurrens, (sicca) viridis, aliquanto firma, integra vel undulata, glabra vel subglabra, costa et venis lateralibus (8-10-paribus) parce puberulis (pilis curvatis) exceptis, cystolithis gracilibus; petioli puberuli; flores sessiles, plures, pare bracteis foliiformibus suffultae, capitulis pedunculatis; bracteae apice subulatae, marginibus albis, ciliatis, costa conspicue viridi; calycis laciniae 5, oblongo-lanceolatae, acutae, puberulae, ciliatae; corolla purpurea, minute pubescens, labio superiore oblongo, apice bilobato, lobis suborbicularibus, labio inferiore trilobato, lobis oblongo-ovatis, apice rotundatis; stamina leviter exserta, antheris oblique sagittatis, lobo inferiore calcarato; ovarium glabrum.

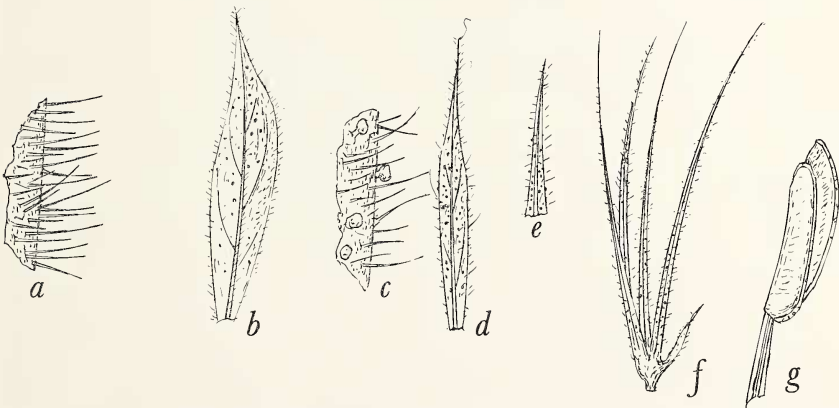


Fig. 4. *Jacobinia rigida* (Nees) Lindau var. *desertorum* (Nees) Leonard. a, Portion of stem enlarged to show hairs; b, bract; c, small portion of bractlet enlarged to show hairs; d, bractlet; e, tip of bractlet; f, calyx; g, anther.

Herbs or shrubs up to 3 meters high; stems subquadrangular, shallowly grooved, bifariously hirtellous, the hairs upwardly curved, up to 0.4 mm. long; leaf blades oblong-ovate to ovate-lanceolate, up to 15 cm. long and 6.5 cm. wide, acute to short-acuminate at tip, cuneate at base and decurrent on the petiole, drying bright green, medium firm, entire or



Fig. 5. *Justicia allocota* sp. nov. An isotype specimen.

undulate, glabrous or nearly so except the costa and lateral veins (8 to 10 pairs), these moderately to sparingly puberulous, the hairs upwardly curved, up to 0.16 mm. long, the venation of the lower surface more prominent than that of the upper, the cystoliths delicate, up to 0.16 mm. long; petioles (unwinged portion) up to 4 cm. long, the pubescence that of the costa; flowers terminal and subterminal, several, these sessile, crowded and subtended by a pair of foliaceous bracts, these bracts ovate, about 3 cm. long and 1.6 cm. wide, acute or acuminate, the color, texture, venation and pubescence that of the leaf blades, the flower clusters solitary or in pairs, the peduncles ascending, about 1.5 cm. long, subquadrangular, green, 0.75 mm. thick at base, 1.5 mm. thick at tip, the pubescence that of the stems; bractlets lance-subulate, 1.5 cm. long, 1.5 mm. wide at base, thence gradually narrowed to a long slender tip, glabrous within, sparingly puberulous without, the hairs closely and upwardly appressed, up to 0.128 mm. long, the basal portion ciliate with spreading hairs 0.15 mm. long, the margins of the bracts and bractlets white, the medial portion and the prominent costa green; calyx segments 5, oblong-lanceolate, the calyx tube 1 mm. long, the segments 11 to 12 mm. long, 1.5 wide at base, gradually enlarged to 2.5 mm. at 6 mm. above base, thence narrowed to a slender tip, glabrous within, inconspicuously puberulous without, the hairs 0.08 to 0.128 mm. long, closely and upwardly appressed, ciliate with spreading or ascending hairs up to 0.32 mm. long; corolla purple, 4 cm. long, 2.5 mm. broad at base, 4 mm. broad at about 5 mm. above base then narrowed to 3 mm., the throat 6 mm. broad, finely and inconspicuously

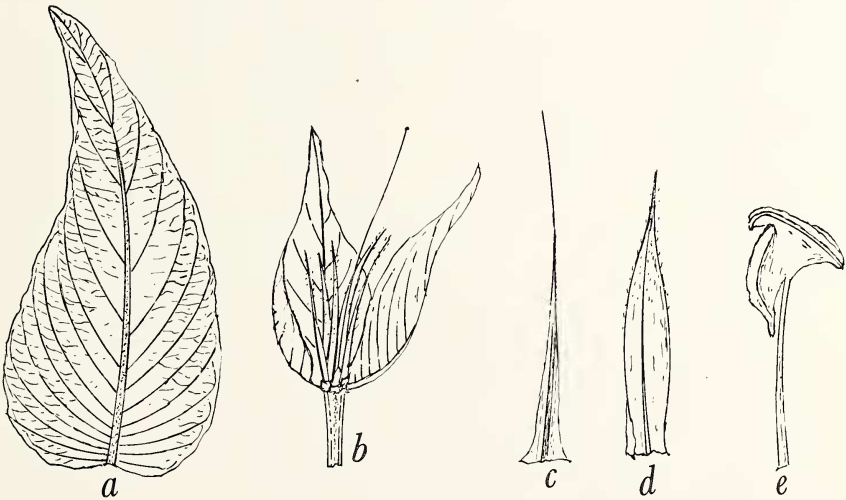


Fig. 6. *Justicia allocota* sp. nov. a, One of the two large bracts subtending the flower cluster; b, large bracts spread to show flower cluster of head; c, bractlet; d, one of the calyx segments; e, anther.

pubescent, the hairs weak, mostly spreading, up to 0.32 mm. long, the lips subequal, 22 mm. long, the upper lip oblong, 6.5 mm. wide near base, narrowed to 3 mm. at tip, 2-lobed, the lobes suborbicular, 1.5 mm. long, about 2 mm. wide, the lower lip 3-lobed, the lobes oblong-obovate, the middle lobe 9 mm. wide near tip, the lateral lobes 5.5 mm. wide, all rounded or obtuse at tip; stamens exerted about 5 mm. beyond the mouth of the corolla, the anthers obliquely sagittate, the lobes 4 mm. long, one attached to the connective slightly above the other, the lowermost calcarate, the connective 3 mm. broad near base, the filaments glabrous; ovary glabrous; style minutely and sparingly puberulous toward base, the stigma minute; capsule not seen.

TYPE: Museu Nacional do Brazil, Rio de Janeiro, collected in the forested area near Ribeirão Cristalino, 34 km. east of Formoso, May 21, 1956, by E. Yale Dawson (No. 15023). Isotypes in the United States National Herbarium and the Los Angeles County Museum.

Justicia allocota resembles in a superficial way some of the large-bracted species of *Dicliptera*. The hexagonal stems and peduncles and the contracted, flattened, fan-like cymules are characteristic of *Dicliptera*, but in this new plant the flowers are clustered and sessile, not arranged in fan-like cymules. This and the subquadrangular stems and peduncles justify its placement with *Justicia*. Two other species with similar inflorescences should be transferred to *Justicia*:

1. *Justicia involucrata* (Nees) comb. nov. *Dicliptera speciosa* Nees & Mart., Nov. Act. Nat. Cur. 11:143. 1823. *Beloperone involucrata* Nees, in Mart. Fl. Bras. 9:143. 1847 (Syntypes are cited from Sebastianopolis, Federal District, and from Bahia.)

In this species the leaves are smaller (up to 9 cm. long and 2.5 cm. wide) than those of *J. allocota*, and the enveloping bracts, shorter than the calyces, do not have the rather numerous, conspicuous lateral veins. Furthermore, the pedicelled flower clusters are solitary in the axils of the leaves, whereas in *J. allocota* they are usually in pairs.

2. *Justicia thunbergioides* (Lindau) comb. nov. *Beloperone thunbergioides* Lindau, Bull. Herb. Bois. Ser. 2, 5:372. 1905. Type: Malme 3026, in Mato Grosso, Brazil.

In this species the leaf blades are strictly ovate, that is, nearly as wide as long, definitely rounded at base and abruptly acuminate at the tip. In our new species the blades are cuneate at the base and the tips more gradually acuminate.

Justicia ixodes sp. nov.

Figs. 7, 8

Herba vel suffrutex, caulibus subquadrangularibus, bifariam pilosis et puberulis, pilis longioribus patulis, acutis vel glandulosis, pilis brevioribus retrorse curvatis, acutis; lamina foliorum oblongo-ovata apice subacuminata, apice ipso late obtuso, basi angustata, in petiolum decurrens, aliquanto firma, integra vel undulata, aliquanto pilosa et ciliata, pilis

patulis vel ascendentibus, costa et venis vix prominentibus; cystolithis nullis; petioli breves pilosi vel in canalibus dense puberuli, pilis acutis, curvatis, spicae laxae simplices vel furcatae, terminales et axillares, ascendentes, rhache pilosa et puberula, pilis longioribus patulis, acutis vel glandulosis, pilis minoribus acutis, curvatis; bractee ramos inflorescentiae subtendentes foliaceae, eae flores subtendentes parvae, pilis acutis et pilis



Fig. 7. *Justicia ixodes* sp. nov. An isotype specimen.

glandulosis intermixtis; bracteolae lineares; calycis segmenta, linearia, acuta, 3-nervata, intus glabra, extus pilosa, pilis patulis, acutis vel glandulosis; corolla purpurea, parce pilosa et puberula, pilis longioribus acutis, brevioribus glandulosis, in faucem plicata, labio superiore erecto, ovato, apice bilobato, lobis triangularibus, labio inferiore plus minusve patulo 3-lobato, lobis rotundatis; stamina vix exserta, lobis superpositis, lobo superiore dorso hirsuto, lobo inferiore calcarato, glabro, connectivo plano, lato, triangulato; ovarium parce puberulum, pilis acutis vel glandulosis.

Herbs or suffrutescent plants up to 1 meter high or more; stems subquadrangular, bifariously pilose and puberulous, the long hairs spreading, either glandular or acute, 1.5 to 2.5 mm. long, the understorey of retrorsely recurved small hairs, up to 0.25 mm. long, acute; leaf blades oblong-ovate, up to 10.5 cm. long and 3.8 cm. wide, subacuminate, the tip itself broadly obtuse, narrowed at base and decurrent on the petiole, moderately firm, entire or undulate, rather moderately pilose, ciliate, the hairs spreading or ascending, up to 0.16 mm. long, or those of the costa of the lower leaf surface up to 0.32 mm. long, the venation somewhat inconspicuous (the lateral veins 6-8 pairs); cystoliths absent; petioles up to 1 cm. long, pilose with spreading acute hairs up to 2 mm. long, the channels also densely puberulous with acute curved hairs up to 0.25 mm. long; spikes lax, simple or branched, axillary and terminal, ascending, up to 12 cm. long, the rachis both pilose and puberulous with straight spreading hairs, the longer ones mostly gland-tipped, up to 1 mm. long, the small understorey hairs curved, acute and about 0.16 mm. long; bracts subtending the branches of the inflorescence lanceolate, mostly about 1 cm. long and 1.5 mm. wide, acute, narrowed at base, pilose with spreading

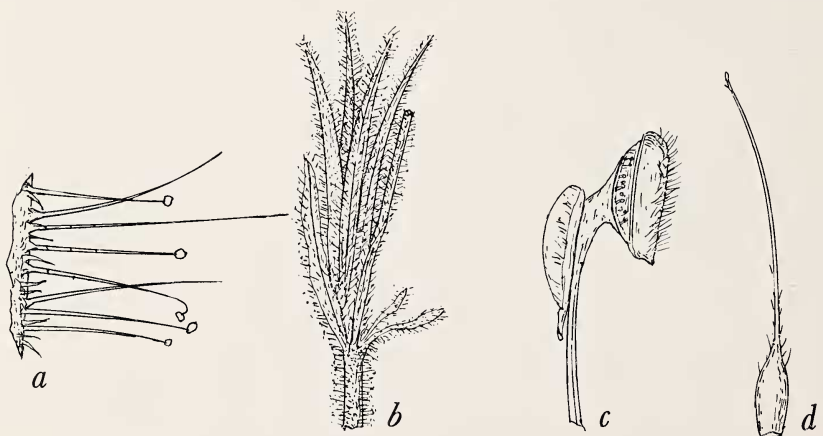


Fig. 8. *Justicia ixodes* sp. nov. a, Hairs from stem; b, node of inflorescence showing bract, bractlet and calyx; c, anther; d, pistil.

acute and gland-tipped hairs intermixed; these up to 1 mm. long, the bracts subtending the flowers spatulate, usually about 6 mm. long and 1.25 mm. wide, subobtusate at tip, gradually narrowed from above middle to base, the pubescence similar to that of the larger bracts; bractlets linear, 3 mm. long and 0.5 to 0.75 mm. wide, subacute, the pubescence similar to that of the bracts; calyx segments 4, linear, 11 mm. long, 1.5 to 1.75 mm. wide, acute, 3-nerved, glabrous within, pilose without, the hairs straight, spreading, acute or gland-tipped, up to 0.5 mm. long; corolla purple, sparingly pilose, with mostly spreading hairs up to 0.25 mm. long and more densely puberulous with short gland-tipped hairs about 0.05 mm. long, the tube 12 mm. long, 5 mm. broad at base, enlarged to 5 mm. above base and narrowed to 4 mm. 8 mm. above base, 7 mm. broad at throat, the upper lip erect, ovate, 10 mm. long, about 6 mm. wide just above base, narrowed to 1 mm. at notched tip, the lobes triangular, 0.5 mm. long and wide, acute, the lower lip more or less spreading, 10 mm. long, 3-lobed, the lobes rounded, about 5 mm. long, 3.5 mm. wide, the throat plaited; stamens exerted 4 mm. beyond the mouth of the corolla, the anther lobes obliquely attached, 2.5 mm. long and 1 mm. wide, the upper anther lobe glabrous except the dorsal ridge, this hirsute, the hairs straight and erect, 0.38 mm. long, the lower anther lobe spurred, the spur white, about 0.5 mm. long, the connective flat, triangular, 1.5 wide at base, 0.5 mm. wide at tip, the filaments flat, glabrous; ovary sparingly puberulous, the hairs acute or gland-tipped, 0.032 mm. long; style 18 mm. long, bearing a few mostly acute ascending hairs toward base, these 0.16 mm. long; stigma oblique, very short.

TYPE: Museu Nacional do Brazil, Rio de Janeiro, collected on banks and margins of small stream running through hilly cerrado 20 km. east of Formoso, May 17, 1956, by E. Yale Dawson, (No. 14915). Isotypes in the United States National Herbarium and the Los Angeles County Museum.

Justicia nodicaulis (Nees) comb. nov. 14360; 14381

Beloperone nodicaulis Nees, in Mart. Fl. Bras. 9:140. 1847. (Syntypes from Minas Gerais, Goiás and Mato Grosso are cited. A photograph of the syntype collected by Pohl in Goiás is in the U. S. National Herbarium.) *Amphiscopia grandis* Rizzini, Dusenya 3:185. 1952. Type: Macedo 1854, Queixada, Jatai, Goiás, April 14, 1949. Isotype (US).

Justicia lanstyakii Rizzini, Rev. Brasil Biol. 6:522, fig. 11-17. 1946.

14730 Limited to Minas Gerais (type) and Goiás. Some recent collections procured by A. Macedo are: 2413, 2427, and 2477 from Minas Gerais; 2612 from Goiás.

Lophostachys cyanea sp. nov.

Figs. 9, 10

Suffrutex, caulibus subquadrangularibus, dense hirsutis, pilis ascendentibus cinnamomeis; lamina foliorum ovata vel obovata, apice rotundata

vel obtusa, basi angustata, in petiolum decurrens, aliquanto firma, integra vel undulata, utrinque pilosa vel costa dense pilosa, marginibus ciliatis, pilis patentibus vel ascendentibus, cystolithis nullis vel paucis; petioli breves, pilosi; spicae 1 vel 2, floribus compactis, secundis; bracteaе, dorsales, sessiles, virides, oblongo-ovatae, breviter acuminatae basi angustatae, intus glabrae, nitidae, extus pilosae, marginibus ciliatis, costa et nervis lateralibus prominentibus; bracteolae lineari-subulatae, ciliatae, costa prominente; calycis segmenta valde inaequalia, cyanea, intus glabra, extus pilosa, marginibus ciliatis, nervis prominentibus, segmentum superius



Fig. 9. *Lophostachys cyanea* sp. nov. An isotype specimen.

ellipticum, acutum, segmentum inferius elliptico-ovatum, apice oblique bilobatum, lobis triangularibus, acutis, cuspidatis, segmenta lateralia lineari-subulata, puberula, pilis acutis subtilibus et pilis crassis patulis glandulosis intermixtis praeditis; corolla cyanea, puberula pilis minutis acutis et pilis glandulosis intermixtis, tubo angusto, labiis aequalibus, labio superiore ovato, rotundato, emarginato, labio inferiore patulo 3-lobato, lobis ovatis, rotundatis; stamina leviter exserta, antheris staminum superiorum 2-lobatis, lobis parallelis, leviter superpositis, antheris staminum inferiorum 1-lobatis; capsulae ovoideae, nitidae, glabrae, callis parce hirtellis exceptae; retinacula gracilia; semina pilosa.

Suffrutescent plants up to 1 meter or more high; stems subquadrangular, at least the upper portions densely brownish hirsute, the hairs ascending, mostly up to 1 mm. long; leaf blades ovate to obovate, up to 5 cm. long and 4 cm. wide, rounded or obtuse at apex, narrowed at the base and decurrent on the petiole, rather firm, entire or undulate, both surfaces rather sparingly pilose but more densely so on the costa of the lower surface, or the entire surface of the young leaves densely pilose, the hairs mostly up to 1.5 mm. long or a few reaching to 2 mm., spreading or ascending, the margins ciliate, the costa and lateral veins (about 4 pairs), prominent on the lower surface of the leaf blade, less so above, the costoliths present or lacking, the upper surface of the blades dull green (dry), nitid, the lower green, minutely scurfy; petioles up to 5 mm. long, yellowish pilose; spikes terminal or in pairs with one subterminal, up to 6 cm. long and 2 cm. broad, the flowers densely crowded and secund; bracts green, dorsally arranged on the spike, oblong-ovate, 14 mm. long, 7 mm. wide, briefly acuminate, narrowed to a sessile base 3 mm. wide, the inner surface glabrous, nitid, the outer pilose, the hairs subappressed, up to 0.5 mm. long, the margins ciliate, the hairs spreading, up to 1.5 mm. long, the costa and the 4 or 5 pairs of lateral nerves prominent, the bractlets up to 12 mm. long and 0.5 mm. wide, linear-subulate, ciliate, the costa prominent; calyx segments 4, very dissimilar, subhyaline, strongly nerved, the large outermost (anterior) segment elliptic-ovate, 17 mm. long, 13 mm. wide, 2-lobed at apex, each lobe triangular, 5 mm. long, 4 mm. wide at base, cuspidate, the inner surface glabrous, nitid, the outer rather densely pilose, the hairs ascending, up to 0.5 mm. long, the margins ciliate, the hairs up to 1.5 mm. long, the posterior segment elliptic, 2 cm. long, 11 mm. wide, acute, the pubescence and venation similar to that of the posterior bract; lateral segments linear-subulate, 9 mm. long, 1.5 mm. wide, puberulous, the hairs 0.25 mm. long, ciliate with similar hairs, the dorsal surface bearing in addition to the fine ascending hairs, short, erect heavy glandular ones, these about 0.2 mm. long, the costa prominent; corolla blue, rather sparingly puberulous, with both acute and gland-tipped hairs, these up to 0.16 mm. long, the corolla tube about 13 mm. long and 2 mm. broad, the upper lip erect, ovate, 5 mm. long, 4 mm. wide, rounded,

emarginate, the lower lip spreading, 3-lobed, 5 mm. long, the lobes ovate, rounded, 4 mm. long, the middle lobe 1.75 mm. wide, the two lateral ones 1.25 mm. wide; stamens 4, the longer upper pair exerted about 4 mm., the lower shorter pair exerted about 1 mm., the anthers of upper pair 2-lobed, the lobes parallel, 2.5 mm. long, 0.75 mm. wide, one slightly superimposed above the other, rounded at both ends, the anthers of the

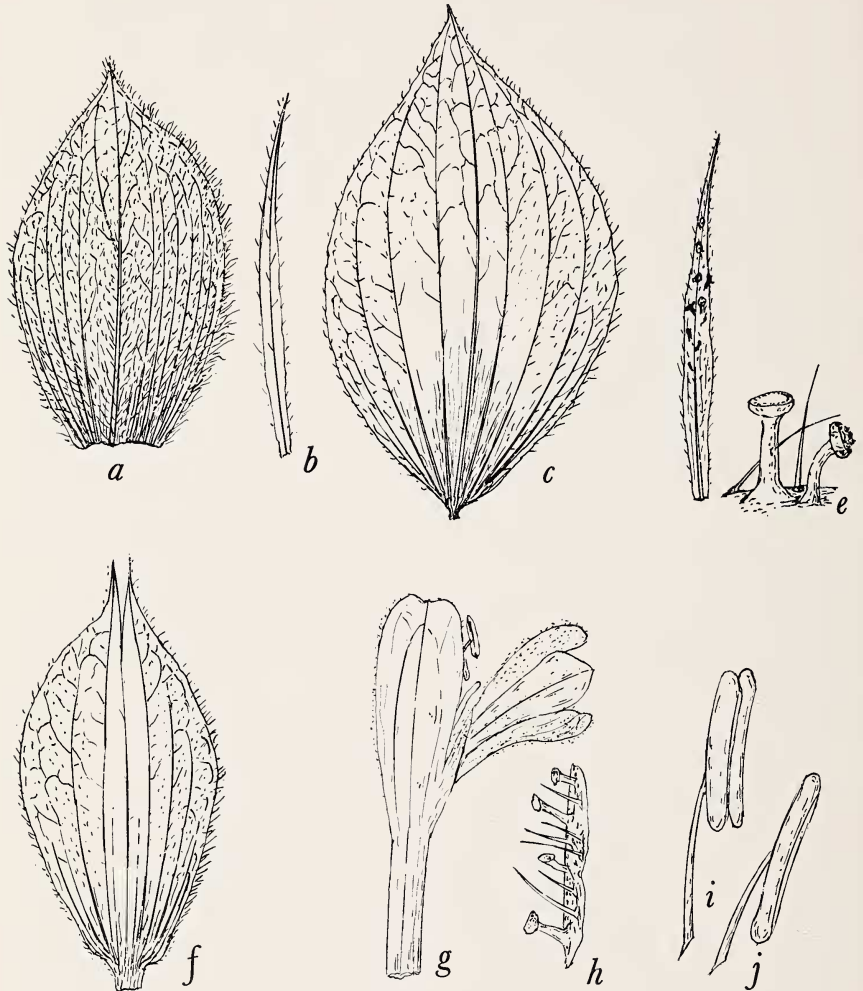


Fig. 10. *Lophostachys cyanea* sp. nov. a, Bract; b, bractlet; c, posterior calyx segment; d, one of the lateral calyx segments; e, small portion of lateral calyx segment enlarged to show pubescence; f, anterior calyx segment; g, upper half of corolla; h, small portion of corolla lobe enlarged to show pubescence; i, anther of one of the upper pair of stamens; j, anther of one of the lower pair of stamens.

lower pair of stamens 1-lobed, the lobe similar to those of the 2-lobed anthers; capsule narrowly ovoid, 13 mm. long, 4 mm. broad, about 2 mm. thick, glabrous, nitid except the callus, this bearing a few rigid acute spreading hairs about 0.128 mm. long; seeds 4, ovate (immature), 4 mm. long, 1.5 mm. broad, densely and softly pilose, the hairs more or less appressed, whitish, soft, about 0.25 mm. long; retinacula about 2.5 mm. long, gradually narrowed to a slender blunt tip.

TYPE: Museu Nacional do Brazil, Rio de Janeiro, collected in gallery forest margin along stream 18 km. north of São João da Aliança, April 20, 1956, by E. Yale Dawson, (No. 14489). Isotypes in the United States National Herbarium and the Los Angeles County Museum.

Lophostachys cyanea is different from all other previously described species in its blue flowers and bracts (dry) and in the two-celled anthers of the upper pair of stamens and the one-celled anthers of the lower pair. Its closest relative is perhaps *L. diandra* Nees, collected at Esperança, Brazil (Province unknown) by Riedel. In that species the corolla is white with blue veins and the stamens 2 in number. All other species of *Lophostachys* hitherto described have 4 didymous stamens.

Lophostachys laxifolia Nees, in Mart. Fl. Bras. 9:68. 1847.

14362; 14499; 15003 The plants of this species are both conspicuous and attractive because of their brilliant red outer calyx segments and corollas with a white tube and a red-violet throat and lip. Nees based his description on three syntypes: woods near Sumidouro, Serra dos Orgãos, Federal District, Beyrich; Mandioca, Riedel; and Engenho da Cebola, Sellow. Hugh C. Cutler found it growing in woods and old cutover and cultivated fields at Fazenda Monjolinho, 20 km. northeast of Anapolis, Goiás, altitude 1,000 meters, June 5, 1943, No. 8012 (US). Here it was reported to be poisonous to cattle. Mello Barreto collected it at Estrada de Catiara, Patos, Minas Gerais, June 19, 1936, No. 4393, (US). A photograph of the syntype collected by Sellow is in the U. S. National Herbarium.

Ruellia adenocalyx Lindau, Bot. Jahrb. Engler 25, Beibl. 60: 46. 1898. 14751e Figs. 11-12. The type came from "inter Guarirobea et Siriaeo," Goiás, Brazil. The leaves of this species are softly pilose with upwardly ascending whitish hairs up to 1 mm. long. These are dense on the upper surface of the leaf blades, but distinct. On the lower surface they are very dense and more or less matted (subtomentose). The corollas are bright red. The calyx segments are long, narrow and glandular-pilose, hence, the specific epithet.

Ruellia angustior (Nees) Lindau, Bot. Jahrb. Engler 25, Beibl. 60:46. 1898. 14599; 14662; 14687 The type (*Stemonacanthus angustior* Nees, in Mart. Fl. Bras. 9:54. 1847) was collected at "S. Felis prope fluvium Tahiras," Goiás, by Pohl. A photograph of the holotype in the

Vienna Herbarium is in the U. S. National Herbarium (Photo 32735). The panicles or racemes are narrow and few-flowered, and the corolla is bright red. The species is rather closely related to *R. adenocalyx*.

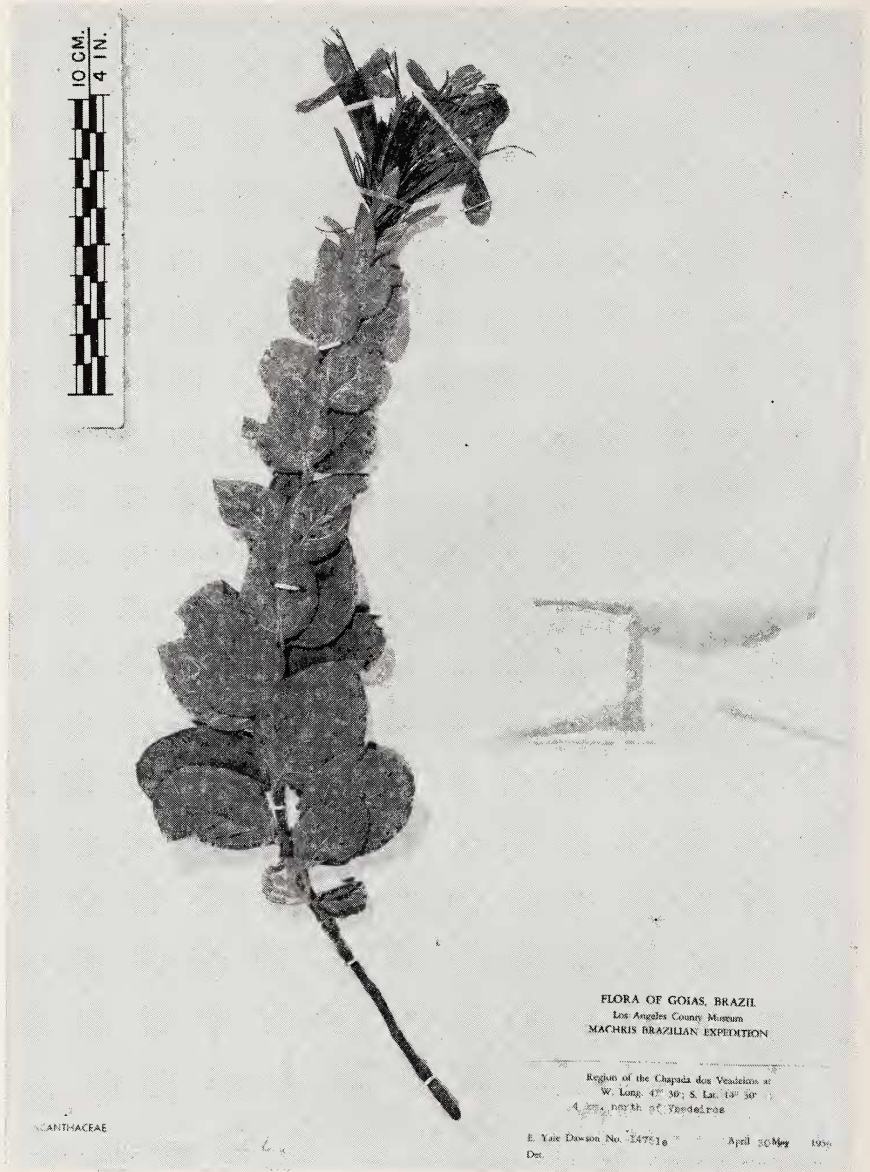


Fig. 11. *Ruellia adenocalyx* Lindau. Dawson 14751e.

Ruellia puri (Nees) Mart. ex Jackson, Index Kew. 1:775. 1893.

14380 This plant is rather widely spread in central Brazil, but is most abundant in Minas Gerais. Nees cites several syntypes of his *Dipteracanthus puri* in Martius' Flora Brasiliensis 9:35. The corollas are a clear lilac with rather long, very narrow tube. The specific epithet, *puri*, (clean, pure) may possibly allude to the attractive corollas.

Ruellia vindex (Nees) Lindau, in Engler & Prantl, Naturl. Pflanzenfam. 4,3b:311. 1895 14860 Nees cites several syntypes of his *Dipteracanthus vindex* in Martius' Flora Brasiliensis 9:42. 1847. Three of these were from Minas Gerais: one of his own specimens from Contendas, one collected at S. Lucia by Riedel, and one from Arrayal Porteira collected by Sellow. A fourth was collected from the District of Guyana in the Province of Venezuela by Otto. Several additional collections are mentioned by Nees in DeCandolle's Prodrum, 11:139. 1847. Among them is Gardener's 3954 from Campo Assayas, also in Minas Gerais. A photograph of this is in the U. S. National Herbarium (Photo 26608), and its resemblance to Dawson 14860 is close indeed. Plants of this species are low herbs with firm, glabrous leaves (hirsute in original description) and long (9 cm.) slender-tubed blue corollas. The specific epithet *vindex*, meaning a defender, protector or vindicator, is a fanciful name without any special allusion to the nature of the plant.

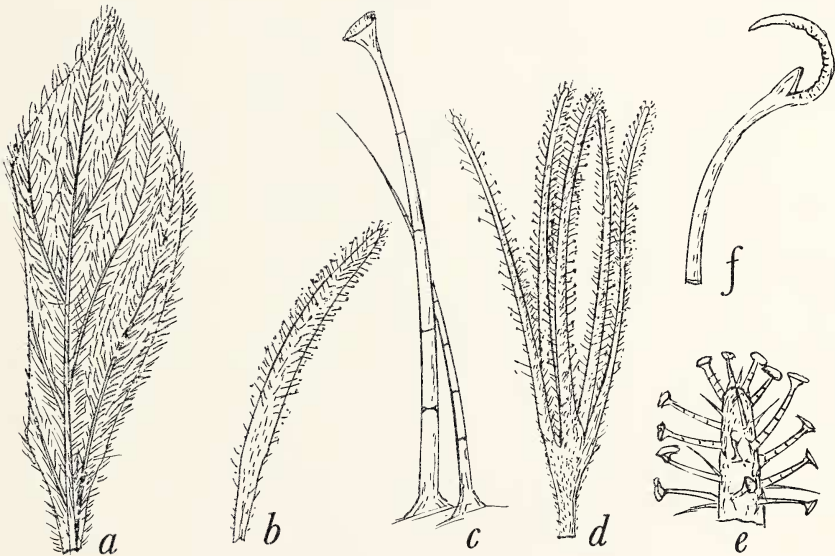


Fig. 12. *Ruellia adenocalyx* Lindau. Dawson 14751e. a, Bract; b, bractlet; c, hairs from bractlet; d, calyx; e, tip of calyx segment; f, stigma.