

the bottom of the problem) we at length find that the Indian, even by our own standards, makes more efficient use of his time than we do.

Literature Cited

Anderson, Edgar. 1949. **Introgressive Hybridization**. John Wiley & Sons, Inc., New York, 109 pp.

Sauer, Carl O. 1948. Environment and Culture during the last Deglaciation. **Proc. Amer. Philosophical Society**, 92: 65-77.

Vogt, William. 1948. **The Road to Survival**. Wm. Sloane Associates, New York, 335 pp.

FIVE NEW SPECIES OF ACANTHACEAE FROM HONDURAS

Emery C. Leonard

IN a collection of plants from Honduras, procured by Dr. Louis O. Williams and his associates during the years 1946 to 1948, there were a number of interesting specimens of the family Acanthaceae. Represented in this material are five new species, which are described in this paper.

Dyschoriste hondurensis Leonard, *sp. nov.*

Herba gracilis, caulibus adscendentibus quadrangularibus pilosis; lamina foliorum oblonga, apice subobtusata, basi angustata et in petiolum decurrens, subglabra; petioli graciles, canalibus pilosis; flores axillares; bracteae parvae, foliosae; subchartaceus, segmentis triangulo-cuspidatis, costa prominente et pilosa, marginibus pubescentibus; corolla caerulea, minute pubescens, lobis oblongis, apice truncatis; capsulae glabrae; semina dense mucoso-pilosa.

Delicate herbs up to 20 cm. high; stems ascending, quadrangular, 1 mm. in diameter, pilose, the hairs white, spreading, 0.5 mm. long, confined to the angles, the cystoliths minute and delicate; leaf blades oblong, up to 4 cm. long and 16 mm. wide, obtusish at apex, narrowed at base and decurrent on the petiole, the young leaves minutely hirsute, the hairs



Fig. 1.—*Dyschoriste hondurensis* Leonard. (Williams & Molina 11541): a, tip of branch; b, calyx. (a, slightly enlarged; b, 4 times natural size).

0.25 mm. long or less, ascending, white, the older leaves subglabrous except the margins, costa, and lateral veins (4 or 5 pairs), these minutely hirsute, the venation obscure; petioles slender, up to 1 cm. long, the channels pilose, the hairs up to 0.75 mm. long; flowers solitary or in 3's, borne on short axillary branches and subtended by small leaflike bracts up to 14 mm. long and 7 mm. wide; calyx (mature) 1 cm. long, 1.5 mm. in diameter near base, 2.5 mm. broad at base of segments (at flowering stage about 7 mm. long), subchartaceous, the segments triangular-cuspidate, 5.5 mm. long, 1.25 mm. wide at base of the calyx, pilose, the hairs white, spread-

ing, up to 1.5 mm. long, the margins of the segments ciliate, the marginal hairs up to 0.75 mm. long; corolla blue, 8 mm. long, the upper part finely and inconspicuously pubescent, the hairs spreading, up to 0.125 mm. long, the tube 3 mm. long and about 1 mm. broad, the lobes oblong, 2.5 mm. long and 1.5 mm. wide, truncate at tip; stamens reaching the base of the corolla lobes, the filaments glabrous, those of the longer pair of stamens 2.5 mm. long, the shorter 1.5 mm., the anthers 1 mm. long, about 0.75 mm. broad, the sacs slightly divergent and minutely spurred at base; ovary glabrous; capsule 1 cm. long, 1.5 mm. in diameter, glabrous; seeds (immature) flat, whitish, densely pilose when moistened, the hairs about 0.5 mm. long, ascending.

Type in the U. S. National Herbarium, N° 1,926,215, collected on edge of a dry lake near Galeras, Department of El Paraíso, Honduras, 800 meters altitude, January 5, 1947, by *Louis O. Williams* and *Antonio Molina R. 11541*.

Dyschoriste oaxacensis Kobuski, the only other species of the genus known from Honduras, reaches a height of 20 cm. and bears purple or mauve flowers 29 mm. long. Moreover the stems are uniformly pubescent and less definitely quadrangular than those of *D. hondurensis*.

***Ruellia Williamsii* Leonard, sp. nov.**

Herba, caulibus basi lignosis subteretibus, sursum quadrangularibus, puberulentis etiam pilosis, pilis parvis brunneis, recurvatis, pilis majoribus albis patulis; lamina foliorum oblongo-ovata, apice acuta vel subobtusa vel breviter acuminata, basi angustata in petiolum decurrens, ciliata, pilosa; petioli breves, puberulenti etiam pilosi; flores solitarii terminales vel subterminales; bracteae lanccolatae pilosae resinoso-punctatae; calycis segmenta caudata, pilosa; corolla magna (aliquando minuta et cleistogama), infundibuliformis, minute pubescens, lobis rotundatis; stamina inclusa; capsulae obovoideae, dense griseo-puberulentae, pilis retrorso-curvatis.

Herb up to 30 cm. high, erect and moderately branched, the lower portions of the stems subterete, woody, glabrate, about 2.5 mm. in diameter, the upper portions subquadrate, puberulous, the hairs brownish and downwardly curved, the

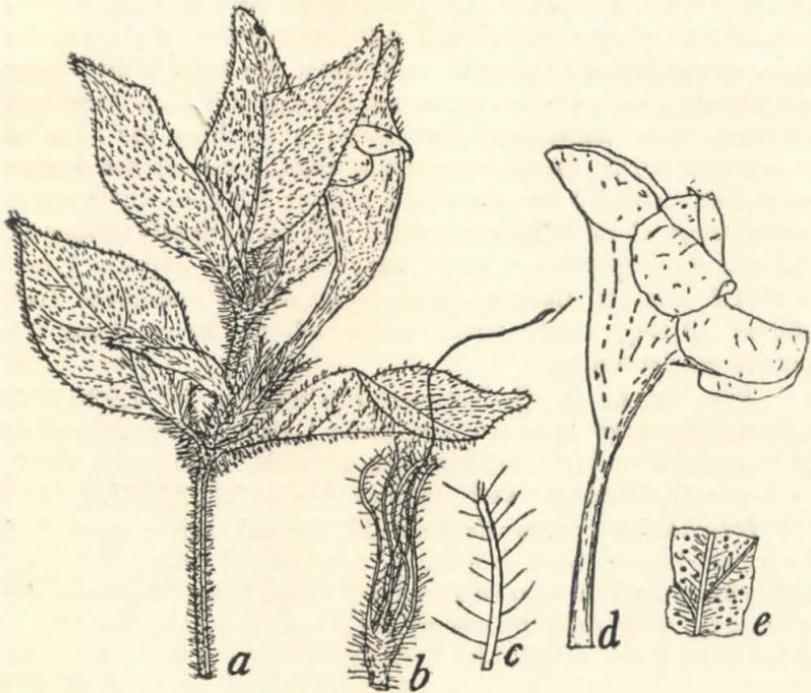


Fig. 2.—*Ruelha Williamsii* Leonard. (Williams 14187). a, tip of branch; b, calyx; c, tip of calyx segment; d, corolla; e, portion of under surface of leaf blade to show pubescence and glandular dots. (a, d, natural size; b, 4 times natural size; c, about 16 times natural size; e, twice natural size).

tips of the stems both puberulous and pilose, the longer hairs white, spreading, up to 1.5 mm. long; blades of the basal leaves (these present on young plants) obovate, 5 to 10 mm. long, about 5 mm. wide, rounded at tip, narrowed at base into a slender petiole 5 mm. long, both surfaces minutely hirsute, the hairs more or less forked at base, the blades of the main stem leaves oblong-ovate, up to 4 cm. long and 2 cm. wide, acute to obtusish or short-acuminate at apex, narrowed at base and decurrent on the petioles, the margins undulate and strongly ciliate, both surfaces pilose, the blades of the

younger leaves densely so, the hairs white, up to 2 mm. long, confined on the lower surface chiefly to the costa and lateral veins (5 or 6 pairs), the venation of the lower surface when accentuated by pilosity rather prominent, the costa of the upper surface densely puberulous, the hairs brownish and strongly recurved, both surfaces bearing scattered resinous discoid scales about 0.125 mm. in diameter; petioles about 4 mm. long, both pilose and puberulous; flowers solitary, terminal or subterminal, subsessile; bracts subtending the flowers lanceolate, 10 to 11 mm. long, 3 mm. wide near middle, pilose and resin-dotted, the marginal hairs up to 1.5 mm. long, spreading, the petioles about 2.5 mm. long, these both puberulous and pilose; calyx 1.7 mm. long, the segments 1.5 mm. long, 1.5 mm. wide at base, gradually narrowed to long caudate tips, densely pilose, the hairs up to 3 mm. long, the short tube sparingly puberulous, resin dots sparingly present; corolla 7 cm. long (the older plants sometimes bearing minute cleistogamous flowers 2.5 mm. long), infundibular, puberulous, the upper portions sparingly so, the resinous discs scattered, the lobes and throat deep blue, the tube 3 mm. broad at base, gradually narrowed to 2.5 mm. at middle, thence enlarged to 15 mm. at mouth, the limb as much as 4.5 cm. broad, this and the funnel somewhat oblique, the lobes rounded, about 2 cm. long and broad; stamens included, puberulous toward base, the filaments of the longer pair 15 mm. long, those of the shorter pair 8 mm. long; anthers oblong, 3 mm. long, 1 mm. broad, bearing in the medial region a line of minute hairs; ovary and stigma puberulous, the ovary about 4 mm. long, the single lobe of the stigma about 3.5 mm. long, narrowly linear; capsule obovoid, 7 to 10 mm. long, 4 to 4.5 mm. broad, 2 to 2.5 mm. thick, densely gray-puberulous, the hairs retrorsely curved; mature seeds not seen.

Type in the U. S. National Herbarium, N° 1,927,226, collected in pine-oak woods in barranco near Las Mesas, in the drainage system of the Río Yeguaré, Department of Morazán, Honduras, 900 meters altitude, July 11, 1948, *Louis O. Williams 14187*. A specimen bearing capsules and cleistogamous flowers was collected in the same general region, 850 meters altitude, July 21, 1946, *Williams and Molina 10120*.

Ruellia Williamsii is very closely related to *R. Hookeriana* (Nees) Hemsl. and may prove, when more ample material

can be studied, to be only a form of that species. From *R. Hookeriana* it can be separated by its dense pilosity at least in the younger plants, the prevailing smaller leaf blades and the relatively longer calyx segments. The leaf blades of *R. Hookeriana* are commonly from 5 to 6 cm. long and 3 cm. wide but the calyx segments are usually only about 10 mm. long.

***Anisacanthus tetracaulis* Leonard, sp. nov.**

Frutex debilis, caulibus arcuatis vel reclinatis, subteretibus, supra valde quadrangularibus; lamina foliorum oblongo-ovata, apice acuta vel obtusa, basi acuta vel obtusa vel rotundata, obliqua, parce pubescens; petioli tenues, canalibus pubescentibus; racemus secundus ramosus, floribus remotis, pedunculisque puberulentis, pilis nonnullis glandulosis; bracteae parvae, anguste triangulares, glanduloso-puberulae; calycis segmenta lanceolata subulata, glanduloso-puberulenta; corolla rubra, pubescens, infundibuliformis, labio superiore lineari apice obtuso, inferiore ovato, trilobulato, lobulis triangularibus; stamina glabra exserta, loculis muticis; capsulae clavatae glabrae, leviter muricatae; semina plana, alba, muricata.

Weak shrubs up to 3 meters high, the branches arching or reclining, the lower portions subterete, up to 5.5 mm. in diameter or more, the wood cream color, rather hard, the outer bark dehiscing in thin strips, the branchlets sharply quadrangular, sparingly and inconspicuously puberulous; leaf blades oblong-ovate, up to 7 cm. long and 3.5 cm. wide, obtuse to acute at apex, acute to rounded at base, the blades sometimes unevenly attached to the petiole, one side as much as 5 mm. above the other, rather thin, drying olive or light green, both surfaces subglabrous or finely and inconspicuously pubescent, the hairs up to 0.25 mm. long, the costa and lateral veins (5 or 6 pairs) rather prominent, the cystoliths on the upper surface when not obscured by pubescence numerous and conspicuous under lens, 0.25 mm. long, those of the under surface less conspicuous; petioles slender, up to 3 cm. long, the channels pubescent, the cystoliths subpunctiform, sometimes conspicuous; flowers secund, borne in loose racemes up to 6 cm. long, these forming numerous terminal and lateral

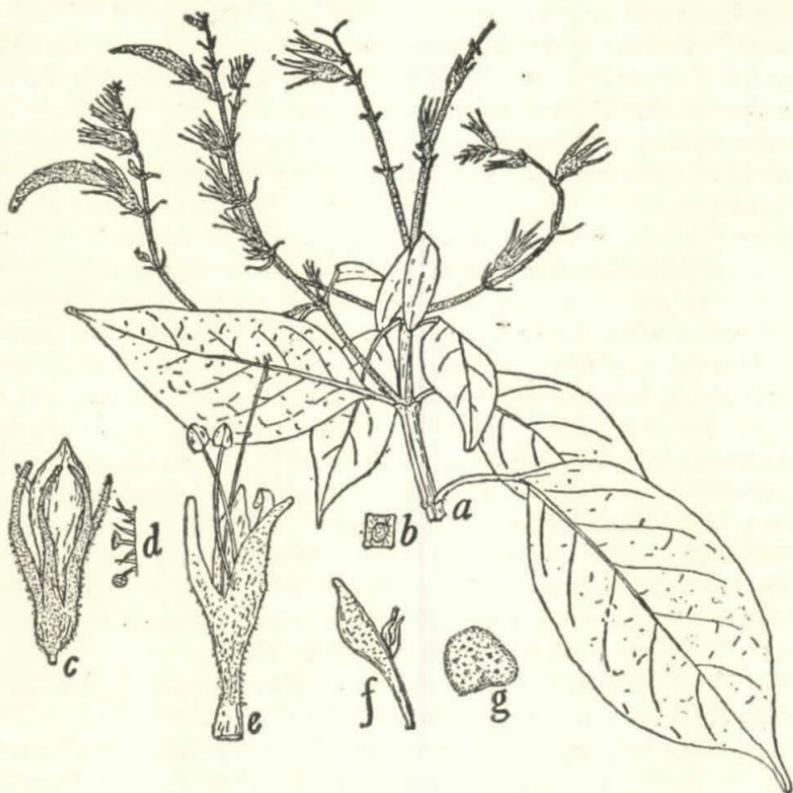


Fig. 3.—*Anisacanthus tetracaulis* Leonard. (a to f, Standley, Molina & Chacon 5012; g, Williams & Molina 12135): a, end of branch showing inflorescences; b, cross-section of stem; c, calyx and immature capsule; d, pubescence near tip of calyx segment; e, corolla; f, capsule valve showing reticulate; g, seed. (a, about natural size; b, e, f, about twice natural size; c, 4 times natural size; d, about 35 times natural size; g, about $2\frac{1}{2}$ times natural size).

1 to 3-branched panicles, the branches of the inflorescence subterete and puberulous, the lowermost internodes about 1 cm. long, the others successively shorter, the pedicels about 1 mm. long, puberulous, the eglandular hairs intermixed with scattered slightly longer glandular ones; bracts narrowly triangular, about 3 mm. long and 1 mm. wide at base, the bractlets puberulous, the glandular hairs intermixed with glandular ones; calyx 1 cm. long, puberulous, the hairs both

glandular and eglandular, the segments lance-subulate, 7 mm. long, 1.5 mm. wide at base, the margins incurved; corolla scarlet (Standley) or red (Williams), 20 to 23 mm. long, pubescent, the hairs 0.25 mm. long, spreading, the tube 12 mm. broad at base, narrowed 4 mm. above base to 1.5 mm., thence enlarged to 6 mm. at throat, the upper lip linear, 1.75 mm. wide near base, 1 mm. wide near the obtuse tip, the lower lip ovate, 12 mm. wide, 3-lobulate, the lobules triangular, 5 mm. long, the middle one 3 mm. wide at base, slightly cucullate, the lateral ones 2.5 mm. wide at base, all obtuse at tip; stamens attached 6 mm. above base of the corolla, the filaments about 2 cm. long, exerted, glabrous, the anthers oblong, about 3 mm. long and 2 mm. broad, mucicous; discs cupular, 1 mm. long; ovary 2.5 mm. long, glabrous; style exceeding the stamens, glabrous; capsules clavate, 15 mm. long, 5 mm. broad, 2.5 mm. thick, acutish at tip, glabrous, slightly roughened, the solid basal portion 6 mm. long and 2 mm. broad near base; seeds flat, white (immature), muricate, ovate, about 4 mm. in diameter, oblique at base; retinacula triangular-subulate, 2.5 mm. long, about 1 mm. broad at base, abruptly narrowed near the middle to a slender pointed tip.

Type in the U. S. National Herbarium, N° 1,926,209, collected in a dry brushy quebrada in the region of Chagüite, Department of Morazán, Honduras, 800 to 1075 meter altitude, March 5, 1947, *Paul C. Standley, Antonio Molina R. and Jaime Chacón P. 5012*. Two other specimens were collected, one in a moist thicket along stream near Suyapa, Department of Morazán, 1200 meters, November 25 to December 14, 1946, *Standley and Williams 1395*, and the other along a road near Chagüite, 980 meters altitude, March 5, 1947, *Williams and Molina 12135*.

Anisacanthus tetracaulis is a well marked species, characterized by its sharply quadrangular branchlets. Its nearest relative seems to be *A. caducifolius* (Griseb.) Lindau, but that species has terete branchlets, a shorter inflorescence, and a smaller calyx (5 mm. long).

***Averia melanosperma* Leonard, sp. nov.**

Herba, caulibus erectis vel adscendentibus, subquadrangularibus, pilosis, pilis spadiceis nonnullis glandulosis; lamina



Fig. 4.—*Averia melanosperma* Leonard. (Williams & Molina 14050).—a, tip of branch; b, lowermost bract; c, upper bract; d, pubescence toward the tip of upper bract; e, bractlet; f, calyx; g, capsule; h, seed. (a, natural size; b, c, e, twice natural size; d, about 16 times natural size; f, about 3 times natural size; g, about 4 times natural size; h, about 6 times natural size).

foliorum ovata, apice subacuminata, basi cordata, glanduloso-pilosa; petioli tenues dense glanduloso-pilosi; spicae breves terminales; bracteae subuliferae glanduloso-pilosae, rhomboidae, integrae, utrinque acutae, infimae ovatae, apice acutae, basi obtusae vel rotundatae; bracteolae lineari-lanceolatae, pilosae, pilis nonnullis glandulosis; calycis segmenta subulata,

pilosa, pilis nonnullis glandulosis; corolla parva, alba vel purpurea (?), glabra, tubo gracili, biliabiato, labio superiore oblanceolato apice rotundato, inferiore trilobulato, lobulis ellipticis apice obtusis; stamina glabra; antherae purpureae, loculis parallelis muticis; capsulae ovoideae glabrae; semina fulva, leviter muricata.

Herbs up to 30 cm. high or more; stems erect or ascending, subquadrangular, 2.5 mm. in diameter near base, pilose, the hairs about 0.5 mm. long, spreading, light brown, some of them gland-tipped; leaf blades ovate, up to 3.5 cm. long and 2.5 cm. wide, subacuminate at tip, cordate at base, drying light olive green, rather thin, both surfaces rather densely pilose, the hairs for the most part 0.25 mm. long, some of them gland-tipped, the costa and lateral veins scarcely prominent; petioles slender, up to 2 cm. long, densely glandular-pilose, the hairs up to 0.75 mm. long; flowers borne in spikes up to 2.5 cm. long and about 1 cm. broad, these terminal or borne at the tips of short lateral branches, the rachis glandular-pilose, the lowermost bracts ovate, 5 mm. long and 4.5 mm. wide, acute at apex, obtuse or rounded at base, drying green, the margins shallowly serrate, bearing 3 or 4 pairs of low teeth, the uppermost bracts slightly smaller, rhombic, acute at both ends, terminating in a brown spine about 0.5 mm. long, entire, all glandular-pilose (the hairs 0.5 mm. long), the petioles up to 3.5 mm. long, pilose, the hairs up to 1 mm. long; lateral bracts subtending the flowers linear-lanceolate, 7.5 mm. long, 1 mm. wide near base, pilose, the pubescence a mixture of glandular and eglandular hairs, the glandular ones about 0.5 mm. long, the eglandular ones, borne toward the tip, up to 1 mm. long; calyx 4.5 mm. long, the tube about 0.5 mm. long, 0.25 mm. wide, pilose, the glandular hairs up to 0.25 mm. long, the eglandular ones up to 9.5 mm. long; corolla 1 cm. long, white or purplish (?), glabrous, the tube slender, the lower portion, for the distance of about 3.5 mm., 1 mm. in diameter, thence expanding to 2 mm. at the throat, the upper lip oblanceolate, 7 mm. long, 2.5 mm. wide toward the rounded tip, the lower lip 3-lobulate, the lobules elliptic, about 5 mm. long and 2 to 2.5 mm. wide, obtuse at apex; stamens about 5 mm. long, the filaments glabrous, the anthers purple, 1.5 mm. long, 0.75 mm. broad, purple, the cells parallel and equal, muticous; ovary glabrous; capsule ovoid,

glabrous, 3.5 mm. long, 2 mm. broad, acute at tip, the sterile narrowed basal portion 0.5 mm. long; seeds ovoid, slightly flattened, dull brown, muricate, 1.75 mm. long, 1.25 mm. broad, 0.5 mm. thick; retinacula subulate, 1 mm. long.

Type in the U. S. National Herbarium, N^o 1,926,219, collected in a thicket along Choluteca River near Ojo de Agua, Department of El Paraíso, Honduras, 559 meters altitude, February 1, 1947, *Louis O. Williams* and *Antonio Molina R. 14050*.

Averia melanosperma is related to *A. serrata* Leonard, a Guatemalan species, but differs in its smaller corollas and black seeds. The corollas of *A. serrata* do not exceed 8 mm. in length and its seeds are white and sharply muricate instead of bluntly so, as in *A. melanosperma*.

***Justicia calliantha* Leonard, sp. nov.**

Frutex subscandens, caulibus subteretibus sulcatis glabris vel sursum dense vel parce pubescentibus; lamina foliorum ovata, apice breviter acuminata vel obtusa vel subobtusa, basi rotundata, firma, parce vel dense pubescens; petioli breves, canalibus breviter pilosis; spicae axillares breves subcapitatae, pedunculis brevibus, dense pilosis; bractae anguste lanceolatae, acuminatae, extus pilosae, interdum glanduliferae, intus glabrae; calycis segmenta 4, glanduloso-pubescentia, lanceolato-subulata; corolla rubra, minute pubescens, bilabiata, labio superiore erecto, ovato, apice rotundato vel emarginato, inferiore lineari-oblongo trilobulato, lobulis brevibus; stamina glabra, antherarum lobis parallelis, basi breviter apiculatis; capsulae clavatae puberulentae glanduliferae; semina brunnea valde muricata.

Subcandent shrubs up to 50 cm. high; stems subterete, sulcate, the grooves drying green, the intervening areas light brown, the tips of the stems sparingly to rather densely pubescent, the hairs 0.5 to 0.75 mm. long, spreading, straight or slightly curved, whitish; leaf blades ovate, up to 5 cm. long and 3 cm. wide, obtuse, obtusish, or short-acuminate at apex, rounded at base, rather firm, both surfaces sparingly to rather densely pubescent, the hairs erect or ascending, straight to slightly curved, up to 0.75 mm. long, the costa and lateral veins (5 or 6 pairs) rather prominent; petioles up to 5 mm.

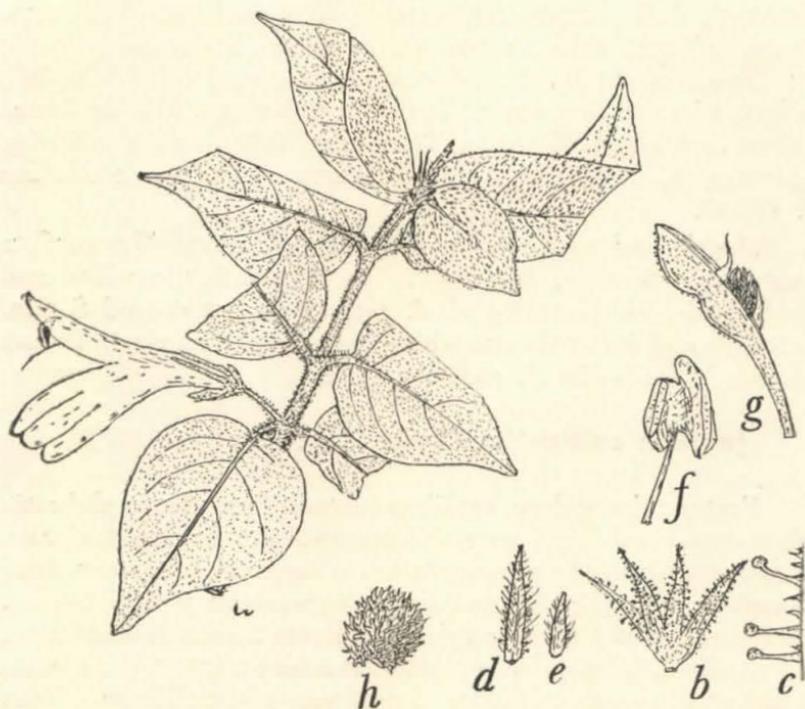


Fig. 5.—*Justicia calliantha* Leonard. (a to f, Williams & Molina 10971; g, h, Williams & Molina 11537): a, tip of branch; b, calyx opened to show segments; c, pubescence of calyx lobe; d, bract; e, bractlet; f, anther; g, valve of capsule; h, seed. (a, natural size; b, g, twice natural size; c, about 40 times natural size; d, e, about 5 times natural size; f, about 10 times natural size; h, about 4 times natural size).

long, the pubescence similar to that of the leaf blades; flowers usually 3, borne in short axillary subcapitate spikes, the peduncle slender, 5 mm. long, densely pilose, the hairs straight and spreading, up to 1 mm. long; flowers subtended by about 6 narrowly lanceolate bracts 3.5 to 5 mm. long and 0.75 to 1.5 mm. wide near base, all of them acuminate, glabrous within, pilose without, the hairs straight and spreading, up to

1 mm. long, at least the innermost bracts bearing, intermixed with the longer eglandular hairs, short capitate ones about 0.125 mm. long; calyx 4-parted, 8 mm. long, glandular-pubescent, the gland-tipped hairs 0.125 mm. long, these interspersed with much shorter eglandular ones, the segments 6.25 mm. long, 1.5 mm. wide near base, their inner surface punctulate; corolla red, finely pubescent except the basal portion, the hairs 0.25 mm. long, a few of them gland-tipped, the corolla, measured from base to tip of the upper lip, about 2 cm. long, the tube 1.5 cm. long, 2 mm. broad at base, narrowing 2 mm. above the base to 1.5 mm., thence expanding to 6 mm. at throat, the upper lip erect, ovate, 1 cm. wide near base, gradually narrowed to a rounded or shallowly emarginate tip, the lower lip equaling the upper, linear-oblong, about 7 mm. wide, 3-lobulate at tip, the lobules 1.5 mm. long, rounded, the middle one 2.25 mm. wide, somewhat cucullate, the lateral ones 1.25 mm. wide; stamens lying in the upper lip and terminating 4 mm. below its tip, the filaments glabrous, the anthers 2.5 mm. long, their cells parallel, the basal lobes short-apiculate; style 29 mm. long, glabrous; ovary 1.5 mm. long, inconspicuously puberulous; capsule clavate, about 2 cm. long, 5 mm. broad, and 4 mm. thick, acutish at tip, the middle portion of the seed-bearing part depressed, the sterile basal portion 1 cm. long, 2 mm. broad at base, expanding to 3.5 mm. at base of cavity, the entire capsule puberulous; seeds 4, lenticular, 3.5 mm. in diameter, 1.5 mm. thick, the base oblique, the surface light brown, strongly muricate, some of the protuberances spinelike and as much as 0.5 mm. long; retinacula 2.5 long, rounded, thin and fimbriate at tip.

Type in the U. S. National Herbarium, N^o 1,926,212, collected on a rock knoll along the Río Yeguaré near San Francisco, Department of Morazán, Honduras, 800 meters altitude, November 24, 1946, *Louis O. Williams* and *Antonio Molina R. 10971*.

Justicia calliantha has, apparently, no close relatives in Central America. It should be easy to recognize by its large (for *Justicia*) red flowers apparently solitary but actually borne in short subcapitate spikes. *United States National Museum, Washington, D. C.*