



## Additions to the Flora of Sinaloa and Nuevo Leon

Howard Scott Gentry

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## ADDITIONS TO THE FLORA OF SINALOA AND NUEVO LEON

HOWARD SCOTT GENTRY

This paper is the fifth dealing with the author's studies of the Sinaloa flora.<sup>1</sup> Several collecting localities described in two of these papers are habitats of plants described below. Chief among the localities are Sierra Surotato and Sierra Tacuichamona. These and other important collecting localities, as the Cerro Tecomate monadnock (including Cerro Llano Redondo), can be located on maps published in the *Bulletin of the Torrey Botanical Club* (73: 360, 452. 1946). Fifteen species and two varieties are proposed as new. All are based on the author's collections made in 1939-1940, 1941, and 1945. Besides new species and varieties several plants are noted because of their distributional or other significance. One plant, *Dyschoriste poliodes*, from Nuevo León is proposed as new. E. C. Leonard of the U. S. National Herbarium generously collaborated in naming the Acanthaceae.

The mountains of Sinaloa have been neglected by collectors. The higher ones in northern Sinaloa had apparently never been visited by botanists until my trip to Sierra Monterey in the Surotato range in 1940. Jesus Gonzales Ortega and J. N. Rose visited some mountain localities in southern Sinaloa, but the flora of none of them is well known. These collectors and others have mainly collected along the coastal plain and valleys, a minor exception being the highly interesting take of Brandegee on Cerro Colorado, a low mountain in central Sinaloa. Ortega's collections, including those of Montez and Salazar, are the most extensive. My field work to date indicates that when a really representative collection of Sinaloa plants is finally brought together, the flora will prove to be one of exceptional richness.

Sinaloa is a land of trees, being covered with short to tall ones from one end to the other. Indeed, it is still nearly possible to walk from north to south through the state, an airline distance of about 350 miles, without ever leaving a forest formation, the principal exceptions being the man-made clearings. The most abundant tree is *Acacia cymbispina*. The Warihios (a primitive Indian tribe of the adjacent Sonoran-Chihuahuan barrancas) call this low, flat-crowned, lacey-leaved tree sinalá, which suggests that Sinaloa may be derived from that name. Such a derivation would certainly be appropriate because Sinaloa is more than any other area the land of the sinalá.

## BERBERIDACEAE

**Mahonia longipes** (Standley) Gentry, comb. nov.

*Olostemon longipes* Standl., Proc. Biol. Soc. Wash. 31: 133. 1918.

Known previously only from the type locality, San Ramon, Durango, it is now represented in Sinaloa by the following collections. Sierra Tacuichamona summit, Feb. 1940, *Gentry 5675*; Puerta á Tamiapa, March 6-8, *Gentry 5838*; above La Jolla, Sierra Surotato, March 17-24, *Gentry 7262*; Ocurahui, Sierra Surotato, Sept., 1941, *Gentry 6439*.

All the spring specimens are fruiting, while the September collection is sterile,

<sup>1</sup> Sierra Tacuichamona—a Sinaloa plant locale. Bull. Torrey Club 73: 356-362. 1946. Notes on the vegetation of Sierra Surotato in northern Sinaloa. Bull. Torrey Club 73: 451-462. 1946. *Anomalosicyos*, A new genus in Cucurbitaceae. Bull. Torrey Club 73: 565-569. 1946. The genus *Mimulus* in or adjacent to Sinaloa. Madroño 9: 21-25. 1947.

indicating the flowering period as late fall or winter. It was observed as an uncommon plant in all the above localities. It forms a slender shrub or small tree with dark brown bark often clearly fissured. The branches are short, few, and spreading, making an open crown. The leaves are distinctive by their remote and narrow leaflets forming open clusters at the ends of the branchlets. The leaflets, while fairly consistent for a given tree or collection, are quite variable from one locality to another; entire (5838) closely undulate (7262), irregularly undulate to dentate (5675), and dentate (6439). The fruits are characteristically bluish and glaucous, borne on long pedicels. The inner bark is bright yellow and at Ocurahui was reported to yield a yellow dye for coloring wool, the tree being known as palo amarillo.

In Sinaloa this distinctive species occupies the central mountains with oaks and pines at elevations ranging from 4000 to 6000 feet, usually on exposed or open rocky slopes.

#### HAMAMELIDACEAE

#### *Distylium sinaloense* Standley & Gentry, sp. nov. (*f. 1*).

Arbor alta ramulis glabratis, novellis dense stellato-pubescentibus; foliis breviter petiolatis, ovato-lanceolatis, remote denticulatis vel subintegris, ad basim asymmetricis rotundatis brevissime peltatis, subtus subsparse minuteque stellato-lepidotis, inflorescentiis axillaribus interdum cum petiolis coalitis, racemosis, 2-3.5 cm. longis, dense stellato-pubescentibus; perianthio rotato, lobis 1.5-2 cm. longis; capsula dense pilis longis stellatis pubescenti, late ovoidea, ad apicem depressa; stigmatibus 2-3, glabris, 2-3 mm. longis.

Slender tree up to 15 or 20 m. high with gray bark. Branchlets sturdy, grayish, tuberculate with prominent nodes about 1 cm. apart, glabrate, pustulate, young twigs brownish with dense, stellate pubescence; leaves with petioles mostly 1 cm. long, densely lepidote-pubescent, the blades ovate-lanceolate, acute to obtuse, distally somewhat unevenly marginate or slightly denticulate, asymmetrically decurrent and usually subpeltate at rounded bases, mostly 8-10 cm. long, 4-5 cm. wide, sclerophyllous, glaucous and glabrous above, with sparse, minute, lepidote, silvery scales below; veins prominent below, lepidotely pubescent, glabrate, laterals 4 or 5, tertiaries scalariform, reticulately anastomosing; inflorescence axillary or petiolar, racemose, 2-3.5 cm. long, densely stellate-pubescent; peduncles stout, with lanceolate, deciduous, pubescent bracts 2 mm. long subtending the short, stout pedicels 1-2 mm. long; corolla rotate, the lobes 1.5-2 mm. long, ovate-cucullate, densely stellate-pubescent; stamens 5, conspicuous, purple, glabrate, 2 mm. long, emarginate, 2-celled, 4-lobed, persistent, on filaments 2 mm. or more long; fruit (immature) yellow, densely long-stellate-pubescent, broadly ovoid, 7-8 mm. in diameter, 8-10 mm. high, depressed apically and bearing 2 or 3 persistent, glabrous stigmas 2-3 mm. long.

TYPE: *Gentry 7254* canyon above La Jolla, Sierra Surotato, Sinaloa, Mexico, March 17-24, 1945, in herb. Univ. Mich. Duplicates in herb. Chi. Mus., Gentry, Inst. Biol. Mex.

*Distylium sinaloense* appears closely related to *D. guatemalense* Radlk. but differs in; (1) the more consistently acuminate leaves, actually or tending to be distally dentate, (2) the veins more prominent below, the laterals numbering usually 4 or 5 instead of 5 or 6; (3) the sparse, minute, deciduous lepidote scales, (4) the usually distinctly subpeltate leaf bases. The indument of *D. guatemalense* is of stellate hairs readily perceptible with a pocket lens while that of *D. sinaloense* is not. In its distinctly subpeltate leaf bases the Sinaloa tree suggests the



Explanation of figure 1

*Distylium sinaloense*. Fruiting branchlet (ca.  $\frac{2}{3}$  natural size) and detail of fruiting inflorescence ( $\times 4$ ). Drawn by Eduardo Salgado from the type specimen.

Honduran *D. hondurensis* Standl. The latter cannot be compared in detail because all the known Honduran specimens are imperfect, but their leaves are very conspicuously peltate and are densely and persistently stellate-pubescent beneath with much longer hairs than those of *D. sinaloense*.

In some genera these characters would hardly be considered sufficient to accord specific rank. However, in view of the apparent distinct distributions of the three species, it appears preferable to treat them as separate species until more material is available for study in new collections.<sup>2</sup> The presence of the genus in northern Sinaloa, a first record for Mexico, is very remarkable when we consider that the other two North American species, *D. guatemalensis* and *D. hondurensis*, are known from their respective countries only.

Another collection, *Gentry 7257*, from another tree in the same canyon shows little or no variation from the type, except that the inflorescence is younger and without fruit. An earlier collection of 1940 from Sierra Monterey, *Gentry 5894*, was also flowering in March. It differs from the type in the more acuminate dentate leaves, some of which are dentate to near the base. This collection also shows more leaf indument below correlated with the densely pubescent galls scattered over the lower surface. The gall pubescence is larger, coarser, and brownish or ferruginous in color, while the normal lepidote scales are smaller and whitish when viewed under a microscope.

The occasional insertion of the peduncle on the petiole is noteworthy, suggesting a pristine affinity between leaf and inflorescence. Other unstable conditions in the inflorescence, such as both perfect and monoecious flowers on the same plant and the occasional fusing of the filaments, when combined with the distribution of *Distylium*, suggest that we are dealing with a very old and conservative genus. It is found in the tropics and subtropics of Asia and North America. Record of it should eventually be found in the geologic column.

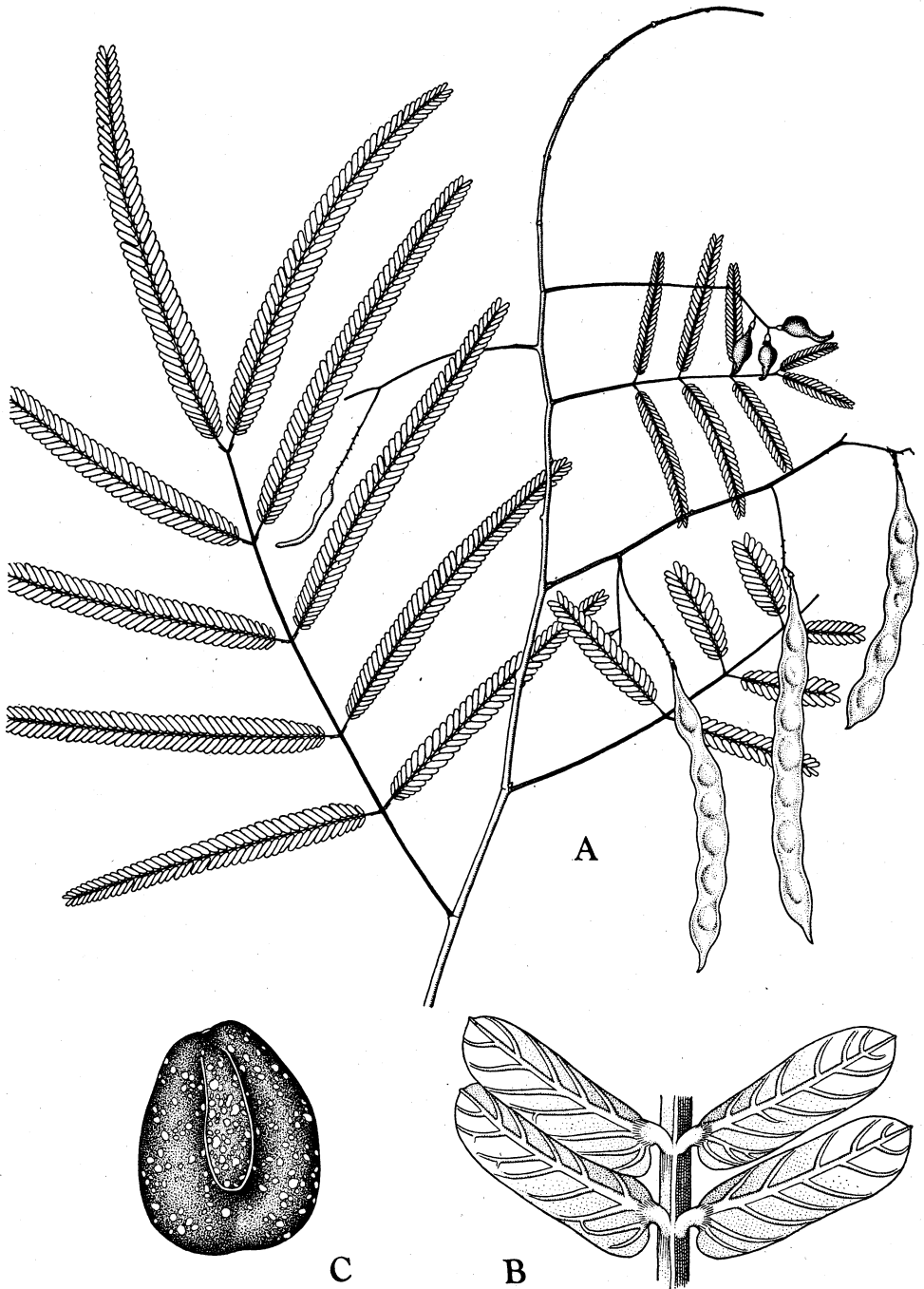
#### MIMOSACEAE

##### *Acacia barrancana* Gentry, sp. nov. (*f. 2*).

Frutex gracilis 2 m. altus, inermis, glabra; foliis bipinatis; petiolo 2–3 cm. longo; pinnis 4–5-jugis oppositis, remotis, 7–10 cm. longis; foliolis 30–50-jugis, oblongis, obtusis, 4–5 mm. longis, 1–2 mm. latis; venis prominentibus; panicula composita laxa terminali; calyce persistenti, lobis brevissimis; corolla ignota; leguminibus stipitatis, 6–8 cm. longis, 7–8 mm. latis, glabris, cartaceis, inermibus; seminibus oblongis quadrangularibus, bruneis colore viride maculatis, 4 × 3 × 2 mm.

Slender monopodial shrub 2 m. tall, glabrous, with sulcate, brownish-purple stems, slender, spreading, openly-leaved branches, and thin, pendulous pods. Leaves glabrous, bipinnate, petioles 2–3 cm. long, the rhachis 8–12 cm. long, double-ribbed above; pinnae 4–5 opposite in remote pairs, 7–10 cm. long, the rhachilla quadrangular with 4 thin ribs, the upper pronounced, and a thickened rugose base bearing 2 strictly ascending, subulate stipels 1–2 mm. long; leaflets 30–50 pairs, glabrous, 4–5 mm. long, 1–2 mm. wide, oblong, asymmetrically lobed below at base, obtuse, margin whitish above middle; veins prominent, palmately branched below, pinnately above base, the midvein very broad, eccentric, lateral veins 6–9, branched near margin; petiolules 0.5 mm. long, whitish, flaring, gland-like; inflorescence an open compound panicle, terminal, the secondary peduncles 4–8 cm. long alternating with uppermost smaller leaves; tertiary peduncles 1–2

<sup>2</sup> Compare Walker's discussion of this genus, *Jour. Arnold Arb.* 25: 319 (1944).



**Explanation of figure 2**

*Acacia barrancana*. A, Branchlet (ca.  $\frac{2}{3}$  natural size). B, Detail of leaflets ( $\times 10$ ). C, Seed ( $\times 8$ ). Drawn by Eduardo Salgado from the type specimen.

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cm. long; pedicels 1–2 mm. long; calyx persistent, cupular, the lobes very low and broadly rounded; corolla unknown; pods stipitate, the stipe 5–8 mm. long, valves 6–8 cm. long, 7–8 mm. wide, glabrous, chartaceous, depressed between the seeds, unarmed, light green to purplish-brown, maturing yellow, beaked; seeds quadrangular-oblong, obliquely depressed at hilum and apically, with clearly marked, prominent lateral keels on both sides, brown with dull greenish spots,  $4 \times 3 \times 2$  mm.

TYPE: *Gentry 5298* collected on Sierra Tres Picos, Durango, Mexico, December 20, 1939, altitude 3500 feet, in herb. Univ. Mich. Duplicates in herb. Univ. Ariz., Nat. Arb., Mo. Bot. Gard., N. Y. Bot. Gard., Stan. Univ., Inst. Biol. Mex., Gentry.

This is a graceful appearing plant of the wand-shrub type found growing with palms and oaks. The habitat and location is described below under *Mimosa barrancana*. It appears to be a distinctive species, and I have been unable to determine its near relations in the genus. In Britton & Rose's contribution to the N. A. Fl. **23**: 97, it keys to *Acacia hartwegi* Benth. of Durango and Jalisco, but that is a pubescent plant with only 12–15 pairs of leaflets, and of which I have seen no material.

**Acacia Ortegae** (Britt. & Rose) Gentry, comb. nov.

*Senegalia Ortegae* Britt. & Rose, N. Am. Fl. **23**: 119. 1928.

Cerro Colorado, Sinaloa, November 27, 1939, *Gentry 5067*, December 7, 1939, *Gentry 5134*. It forms a large vine or liana 20 to 30 m. long running up and over the crowns of such trees as *Brosimum alicastrum*. It was found growing in a canyon bottom on the southwest side of the cerro. The basal stems are deeply 4-angled, deeply fissured, with gray to yellowish bark, and the mature stems are 2–4 inches in diameter. Flowers are whitish, late fall. No. 5134 was collected from a shrub with wide-spreading, stiff, long branches, like leaders reaching for a tree upon which to run, and located in a fallow clearing. The local name is "gatuña."

The above-cited collections differ from the type description in showing no trace of the lanate pubescence ascribed to the branches and the leaf rachis, and in bearing two glands rather than one on the petioles.

**Mimosa barrancana** Gentry, sp. nov.

Frutex gracilis 2–3 m. altus; spinis geminatis, 2–3 mm. longis; stipulis subulatis, pubescentibus, 1–2 mm. longis; foliis bipinnatis; pinnis 2–4, 3–6 cm. longis; rhachillis 1–2.5 cm. longis; foliolis 3–5-jugis, glabris, oblongis, mucronatis, plerumque 6–10 mm. longis, 3–4 mm. latis; costa obscura, excentrica; inflorescentia capitata; floribus glabris pubescentibus, breviter pedicellatis; staminibus 10; legumine 4–5 cm. longo, 5–6 mm. lato, tenui, cartaceo, glabro, inermis; seminibus bruneis, 4 mm. diam.

Slender shrub 2–3 m. high with reddish brown, sulcate, glabrous, irregularly pustulate stems, sparsely armed; spines paired below leaf axils, sometimes single or wanting, 2–3 mm. long, straight or descending, with broad, low, oval base bearing an anterior branch across leaf base joining stipules; stipules subulate, brownish, 1–2 mm. long, slightly pubescent; leaves bipinnate, the rachis 2–4 cm. long; petioles glabrous 8–15 mm. long, sulcate above, the broadened base gland-like; pinnae 2–4, the rhachilla 1–2.5 cm. long with a gland-like base and 2 gland-like stipules 1 mm. long; leaflets 3–5 pairs, glabrous, oblong, mucronate, round-angulate at base, mostly 6–10 mm. long, 3–4 mm. wide; midvein obscure, eccentric

with ascending branch near base; petiolule gland-like, brownish,  $\pm 1$  mm. long; inflorescence capitate; peduncles 2.5–3 cm. long, eglandular; flowers short-pedicellate, glabrous, persistent; calyx cupular, serrulate, 0.5 mm. long; corolla 2 mm. long, 5-lobate, the lobes 1.2 mm. long, broadly lanceolate, acute; stamens 10; legume at maturity 4–5 cm. long, 5–6 mm. wide, thin, chartaceous, arcuate, mucronate, glabrous, the valves separating at maturity and with exfoliating margins, unsegmented, unarmed; seeds smooth, flat, orbicular, brownish, 4 mm. in diam.

TYPE: *Gentry 5288*, collected on Sierra Tres Picos, Durango, Mexico, December 20, 1939, altitude about 3500 feet, in herb. Univ. Mich. Duplicates in herb. Univ. Ariz., Nat. Arb., Mo. Bot. Gard., N. Y. Bot. Gard., Stan. Univ., Inst. Biol. Mex., Gentry.

This appears to be related to *Mimosa filipes* (Britt. & Rose) Gentry, comb. nov. (*Mimosopsis filipes* Britt. & Rose, No. Am. Fl. **23**: 177. 1928), material of which I have not seen, but differs in the straight spines, fewer pinnae (2–4, not 3–6), the larger, oblong leaflets (6–10 mm. long, not 1.5–2.5 mm.), the longer glabrous peduncles (3–4 cm. long, not 15–20 mm.), and the larger, unarmed legumes.

Its native habitat so far as known is the semi-arid oak zone of the Barranca Region of western Durango, and from which it takes its name. The Barranca Region of northwestern Mexico has been characterized in an earlier paper (Rio Mayo Plants, Carn. Inst. Wash. Publ. **527**: 9. 1942). At the type locality it was associating with oaks, palms, and another wand-like shrub, *Acacia barrancana*. This graceful virgate habit is recurrent in such other sub-dominants under or with the oaks, as, *Triumfetta Goldmanii*, *Acacia crinita*, and *Tephrosia leiocarpa*, which with coarse grasses inhabit the arid rocky soils. The locality, Sierra Tres Picos, is near the Sinaloa–Durango boundary (see map, Bull. Torrey Club **73**: 357. 1946).

### *Calliandra gentryi* Standl.

This shrub or small tree has been known only from the Rio Mayo country of western Chihuahua (Gentry, l.c. 122). Three collections from Sierra Surotato bring the plant into the Sinaloa flora: Las Mesas, August 25, 1941, *Gentry 6156*, Quebrado de Mansana, Sept. 10–14, *Gentry 6524a*, *6524*. The latter number bears young fruits, the first collected. Although immature, they show distinguishing characters; linear, slightly curved, up to 5 cm. long, 3–4 mm. wide, apiculate, and glabrous. The calyx and corolla are persistent. The plant from which these fruits were collected was noted as a “small slender pliant tree.”

As in the Rio Mayo country, the plant on Sierra Surotato was found to be a barranca dweller, occurring with the under-story in slope forest of the deep canyons; shade tolerant. The natives call it “guaje” or “huaje” and my arriero stated it was not used for wood because the smoke causes the women to lose their hair.

### *Pithecolobium mexicanum* Rose.

A collection of this mesquite-like tree was picked up near Comanito, 20 miles or so north of Pericos, and established the range of the plant to central Sinaloa (*Gentry 5927*). It grew in an open cultivated valley with a floor of deep granitic alluvium, forming a large symmetrical tree. In 1939 it was collected in northern Sonora, *Gentry 5927*, south of Carbó along the highway to Hermosillo. It was reported locally to grow also near Santa Ana, Sonora. The range of the species is now established on the mainland as, northern Sonora to central Sinaloa, where it occupies the foothill valleys, preferably in the deep alluviums.



## CAESALPINACEAE

**Bauhinia andrieuxii** Hemsl.

Cerro Llano Redondo, west of Caymanero, Sinaloa, April 26, 1944, *Gentry 7018*. This is in the small coastal range of Cerro Tecomate. It was noted in the field as a small tree with white flowers tinged with lavender, growing on the basaltic cerro slope in Thorn Forest between 50 and 500 feet elevation. The foliage is sparse and small, nourished only by the light winter rains. I have seen no specimens of this species, but the material matches the description of Britton and Rose (N. Am. Fl. **23**: 205, 1930). The distribution given by those authors is Oaxaca, so its appearance in Sinaloa apparently signifies a long gap in its distribution and it can be considered a relic element.

## FABACEAE

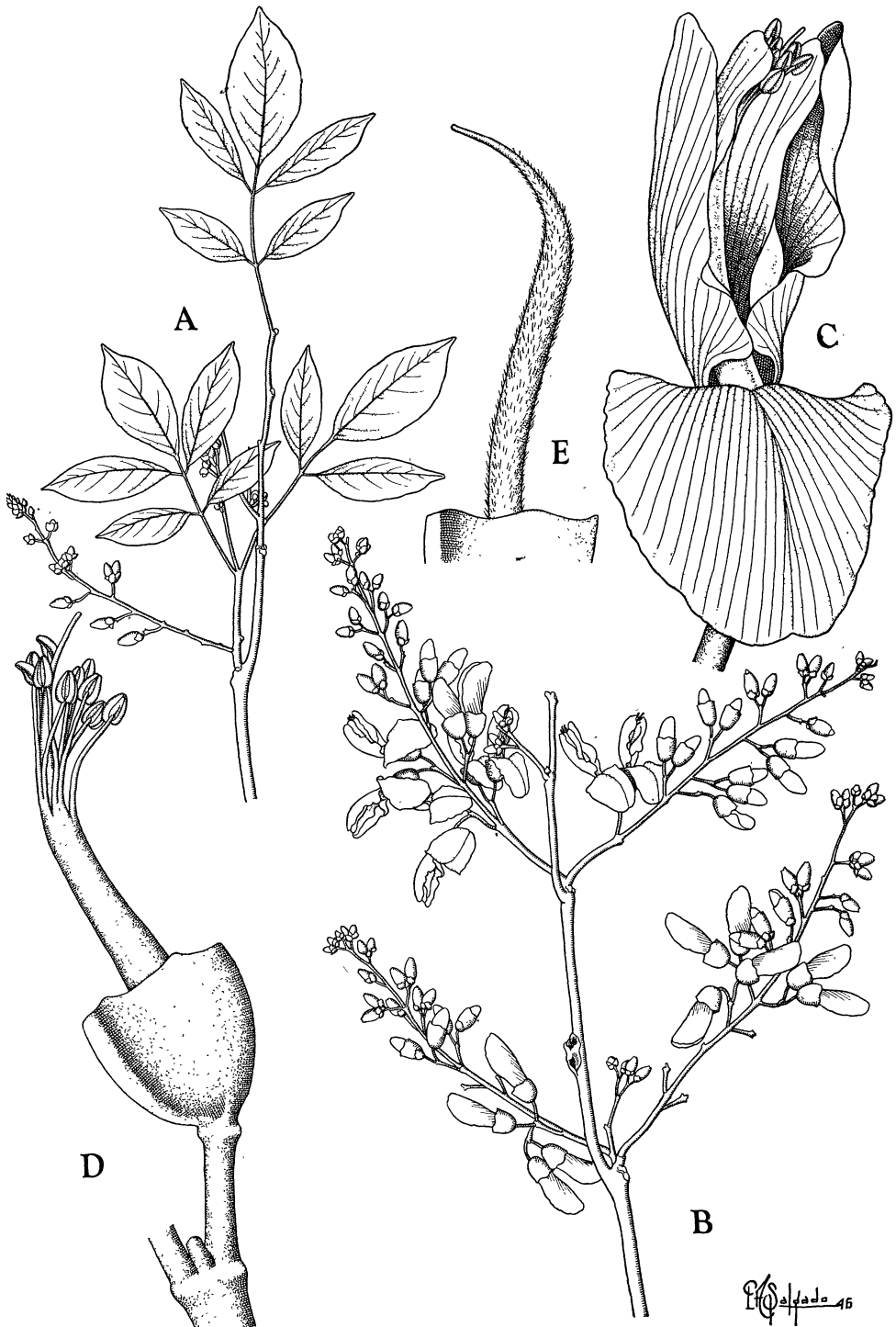
**Piscidia sinaloensis** Gentry, sp. nov. (*f. 3*).

Arbuscula 3-6 m. alta; foliis pinnatis 6-8 cm. longis; petiolo 1.5 cm. longo, sparse albi-pubescenti; foliolis 1-2-jugis ovatis, breviter acuminatis vel subacutis, tenuibus, sparse puberulentibus, lateralibus 2-3 cm. longis 1.2-1.4 cm. latis, terminali 3.5-4 cm. longo, 2-2.5 cm. lato; inflorescentia terminali paniculata dense sericea; pedicellis ca. 5 mm. longis bifloris; floribus 17-18 mm. longis, bracteolis 2 dense pubescentibus subtentis; calyce rubro cinereo sericeo cupulato ca. 5 mm. alto; corolla violacea puberulenta unguibus 7 mm. longis; stylo hispiduloso; ovario dense albo pubescente; legumine ignoto.

Slender shrub or small tree 3-6 m. tall with bark brownish gray to greenish. Branchlets brownish, sparsely white-pubescent, somewhat flexuous; leaves pinnate, 6-8 cm. long; petiole about 1.5 cm. long, sparsely white-pubescent; leaflets 3 to 5, ovate, shortly acuminate with rounded tips, thin, sparsely, finely white-pubescent above and below, more densely so along the veins, 2-3 cm. long, 1.2-1.4 cm. wide, the terminal leaflet larger, 3.5-4 cm. long, 2-2.5 cm. broad; mid-vein regularly pinnately branched; lateral veins 5-6 bending upward away from the midvein to 50° or 60° angle, all more prominent below than above; inflorescence terminal, paniculate, with dense, short, dull pubescence; peduncles 7-10 cm. long; pedicels about 5 mm. long, commonly 2-flowered; flowers at anthesis 17-18 mm. long, subtended by 2 grayish, densely pubescent, round bracts 2.5 mm. long; calyx dull reddish, densely grayish-pubescent, cupular, about 5 mm. high, 5-7 mm. broad at rim; banner lavender with a greenish-yellow tinge on the middle, orbicular, 17-18 mm. long, wider than long, emarginate to an apical gland; wing petals pink-lavender, falcately ovate, broadly rounded at apex, broadly lobed on the upper margin near the middle and more acutely lobed at base, pubescent outside, joined to the keel below the middle of the blade, blade 10 mm. long, claw 7 mm. long; keel petals pink-lavender, blades falcate-oblong, apex rounded, 9 mm. long, claw 7 mm. long, pubescent within and without along the lower margins; style hispidulous within 2 mm. of stigma; ovary densely white-pubescent; legume unknown.

TYPE: *Gentry 5525*, collected at Cofradia, 7 miles east of Imala, Sinaloa, Mexico, February 7, 1940, in herb. Univ. Mich. Duplicates in herb. Univ. Ariz., Nat. Arb., Mo. Bot. Gard., Harvard Univ., N. Y. Bot. Gard., Stan. Univ., Inst. Biol. Mex., Gentry.

Another collection, *Gentry 5937*, Alicama, Municip. de Badiraguato, Sinaloa, March 23, 1940, shows that the plant flowers through February and March. This latter locality is also in central Sinaloa and indicates the native habitat is in the



Explanation of figure 3

*Piscidia sinaloense*. A, Branchlet with immature leaves (ca.  $\frac{2}{3}$  natural size). B, Inflorescence (ca.  $\frac{2}{3}$  natural size). C, Corolla ( $\times 6$ ). D, Calyx and stamens ( $\times 6$ ). E, Pistil ( $\times 6$ ). Drawn by Eduardo Salgado from the type specimen.

cerro and valley region of the foothills. At both localities it grew in sandy granitic soil, at Cofradia in an abandoned milpa, near Alicama along a country road. It was not abundant in either locality, but scattered in disturbed areas. The leaves described above grew in response to light winter rains. It is probable that vernal foliage has a considerably larger leaf, which may also differ in pubescence. The native name given at Alicama was beco.

This plant is related to *P. communis* Blake, a Mexican Gulf Region species, but differs in the fewer, smaller leaflets, in the sparse pubescence and its character, in the larger, lighter-colored flowers, wider, nearly flat-rimmed, more persistent, bracteolate calyx, and hispidulous style. *P. mollis* Rose is the only other species of the genus known to occur in Sinaloa, but its known distribution is northward of the localities for *P. sinaloensis*. *P. mollis* has been observed by the author in the latitude of Guamuchil, but not appreciably south of there. From Guamuchil northward it is common through the foothill valleys to about Ures in central Sonora, also in the sandy valley alluviums. Because of its oak-like habit and rather dense foliage of ashy-tomentose leaves it cannot easily be confused with the proposed new species. The ranges of the two may eventually be found to overlap in northern Sinaloa.

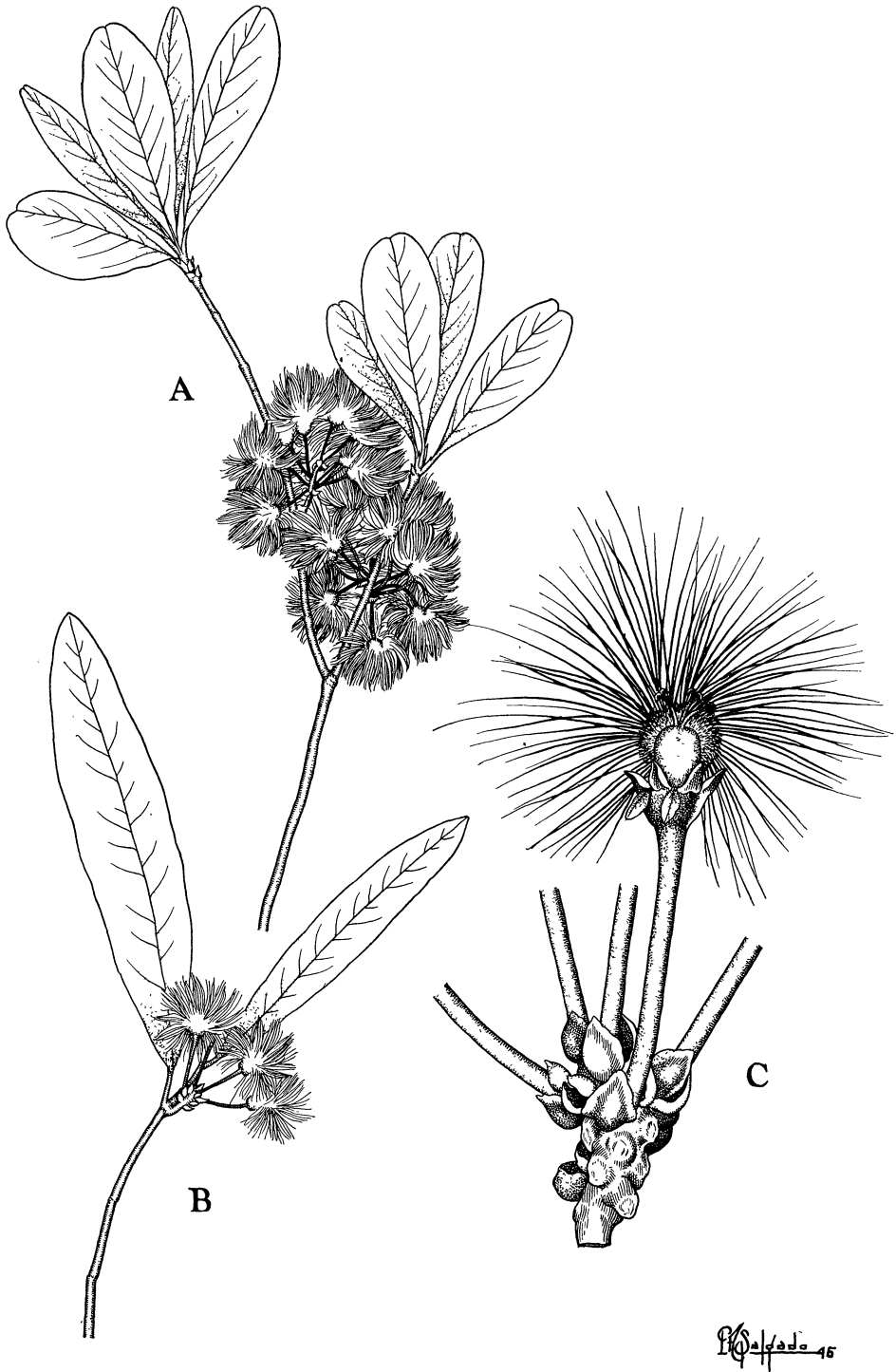
## MALPIGHIACEAE

**Lasiocarpus ferrugineus** Gentry, sp. nov. (*f.* 4).

Arbor 8–10 m. alta; foliis breviter petiolatis, dimorphis, aut ovatis vel obovatis apice emarginatis, aut lati lanceolatis acutis, supra albo-lanatis, 4–6 cm. longis, 1.5–2 cm. latis; stipulis scariosis deciduis 2–3 mm. longis; inflorescentia dioecia; floribus persistentibus, eglandulosis, 2–3 mm. altis; fructu globoso, 1–2-carpellato (1 aut 2 carpelis abortivis), ca. 5–6 mm. diam., dense pubescentibus, extus setifero, setis ferrugineis ca. 1 cm. longis.

Tree 8–10 m. tall with scaly, gray bark and branches symmetrically spreading into an oval crown. Branchlets dark purple, white-pustulate, wrinkled; nodes well defined, glabrous; petioles 2 to 3 mm. long, lanate; stipules brown, scarious, ovate, white-lanate, 2 to 3 mm. long; leaves opposite, dimorphic, either ovate to obovate and emarginate at apex and cuneate below, or lanceolate and acutish, white-lanate above and puberulent below in youth, glabrate, thin, 4–6 cm. long, mostly 1.5–2 cm. wide, green above, pale below; veins pinnately branched, midvein prominent below, laterals numerous, small, branching repeatedly towards margins, tertiaries reticulate; inflorescence dioecious, appearing umbellate but actually short-racemose, at leafless nodes along branchlets below foliage; rhachis densely white-lanate, 1 cm. long; pedicels 10 to 13 mm. long, puberulent, subtended by 2 deciduous, unequal, cucullate-ovate bracts, puberulent on back, with a broad, chartaceous, purple margin which is glabrous except for ciliate edge, the larger bract about 2 mm. high, the smaller about 1 mm. high; sepals ascending, linear to ovate, pubescent, 2 mm. long, eglandular; petals persistent, reflexed, 3 mm. long, cuneate-obovate, variously lobed at apex, 1-veined, claw 0.5 mm. long; ovary globose, densely pubescent, tricarpellate; ovule 1, pendulous; styles 3, distinct, stigma biligulate; fruits seated on a calloused receptacle, finally 1–2-carpellate by abortion; carpels about 5–6 mm. broad, densely pubescent, long-prickled; prickles numerous, ferruginous, 8–10 mm. long. Male flowers not seen.

TYPE: Gentry 5376 "25 miles SE. of Culiacan, on road to Comedero, Sinaloa, Mexico, January 26, 1940," in herb. Univ. Mich. Duplicates in herb. Harvard Univ., Mo. Bot. Gard., Univ. Ariz., Nat. Arb., N. Y. Bot. Gard., Inst. Biol. Mex., Stan. Univ., Gentry.



Explanation of figure 4

*Lasiocarpus ferrugineus*. A, Twig with immature leaves, from Gentry 5376. B, Twig showing mature leaves, from Gentry 5376a. C, Fruiting inflorescence ( $\times 5$ ). Drawn by Eduardo Salgado from the type specimen and Gentry 5376a.

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The leaves described above are immature leaves of the spring season. *Gentry 5376a* from another pistillate tree at the same locality bears old mature leaves apparently dating from the summer rains 7–8 months previous. They are 7–12 cm. long, 1–2.5 cm. wide, rather sclerophyllous, glabrous, narrowly lanceolate, acute, and with persistent, glabrous, brown, lanceolate stipules 4 mm. long. These leaves and stipules are markedly different from the short, cuneate-ovate, thin, emarginate, lanate leaves and the broad, hollow bracts of the type specimen. The inflorescences, fortunately, show them to belong unquestionably to the same species. Whether this marked dimorphism is due to the different seasons, individual variation, or to differing stages of ontogeny cannot be settled from existing evidence.

This genus has previously been known only from southern Mexico, Niedenzu (Pfl. 4: 564–566) cited three species of only four collections; *L. multiflorus* from Chiapas, *L. salicifolius* from Oaxaca, and *L. ovatifolius* from Puebla. *L. ferrugineus* is most closely related to *L. ovatifolius*, both being dioecious, but the latter is described with mature leaves smaller, pubescent, evenly ovate with base and apex rounded, and apparently without pubescence on the fruit. These differences, with the distinct distributions, make it desirable to separate the Sinaloa plant as a distinct species.

The known habitat of *L. ferrugineus* is in the foothill region of central Sinaloa, where cerro and valley typify the topography (see map, Bull. Torrey Club 73: 357. 1946). Only five or six trees were observed in partially cleared "monte" along the road from Culiacan to Comedero. They were growing in the deep alluvial granitic soil in Short-tree Forest country. On a subsequent trip along this road in 1943 I was not able to relocate the plants and it is possible that they had been cut down. It appears to be a very rare plant. The tree fruits abundantly and the aggregate clusters of ferruginous fruits make it conspicuous.

#### ANACARDIACEAE

**Schmaltzia allophyloides** (Standl.) Barkley, Am. Midl. Nat. 24: 656. 1940.

Now represented in Sinaloa collections by *Gentry 5818*, Puerto a Tamiapa, March 1940, and *Gentry 7192*, Pucheros, Sierra Surotato, March 1945. The latter number is atypical in being nearly glabrous and in the large terminal leaflets, up to 11 cm. long, with broadly crenate margins. These collections confirm the habitat as indicated in "Rio Mayo Plants" (Carn. Inst. Wash. Publ. 527: 171) as the moist swales of the montane Oak Forest between 3500 and 5500 feet elevation. It is a low, openly spreading shrub, 0.5–2 m. high, tolerant to the shade of the forest trees.

**Schmaltzia allophyloides** var. *surotatensis* Gentry, var. nov.

Frutex 1–1.5 m. altus; ramulis densis pubescentibus; foliis trifoliatis, laminis ovatis supra crispo-pubescentibus, subtus dense pubescentibus crenatis dentatis, lateralibus 3.5–5 cm. longis, terminali sessili, 5–7 cm. longa; petiolis 1.5–2.5 cm. longis; petiolulis quam in f. crassioribus et longioribus; floribus purpureis vernicosis pubescentibus.

TYPE: *Gentry 6238*, Ocurahui, Sierra Surotato, Sinaloa, Mexico, 6000–6500 feet elevation; Sept. 1–10, 1941, in herb. Univ. Mich. Duplicates in herb. Univ. Ariz., Mo. Bot. Gard., Harvard Univ., N. Y. Bot. Gard., Inst. Biol. Mex., Gentry, Stanford Univ.

Also referable to this species is another collection from the same locality and of the same date, *Gentry 6427*. Although clearly related to *S. allophyloides* this

plant differs in the small leaflets more pubescent below, the sessile, terminal leaflet, shorter petioles, the vernicose, purple inflorescence, and the other minor characters. Barkley believes the vernicose nature of the inflorescence to be caused by galls, but none were observed on the two sets of specimens. The plant was rare in the mountain and by its more strict habit of branching and the densely tomentose leaves was immediately recognized as differing from the more widely distributed *S. allophyloides*. Also it apparently occupies higher elevations than the latter.

## RHAMNACEAE

**Rhamnus surotatensis** Gentry, sp. nov.

Frutex 1–1.5 m. altus; ramulis brunneis; foliis petiolatis, coriaceis, 5–10 cm. longis, 2.5–4 cm. latis, anguste ovatis vel lanceolatis, acuminatis, glabris vel pubescentibus, integris; petiolis 1 cm. longis, nervis validis, pinnatis, 8–11-jugis; floribus solitaribus vel geminatis; pedicellis puberulentibus, 5–8 mm. longis; fructu globoso, 6 mm. longo, 7 mm. diam., sparse puberulenti vel glabrato.

Spreading, leafy, sclerophyllous shrub 1–1.5 m. high, colonial; branches chocolate-brown, glabrous or pubescent, wrinkled; leaves alternate, sparsely or densely pubescent, blades narrowly ovate or lanceolate, acuminate, base obtuse sometimes slightly decurrent, 5–10 cm. long, 2.5–4 cm. wide, entire or rarely remotely serrulate, sclerophyllous, venation pinnate, midvein strong, laterals 8–11 on each side; petioles mostly 1 cm. long, sparsely or densely pubescent; flowers single or geminate in the leaf axils, apparently apetalous; pedicels 5 to 8 mm. long, glabrous or pubescent; calyx lobes connate to near the tips, forming a cap over the ovary, 1–2 mm. long, densely strigillose; ovary pilose below around the base, glabrous apically; stigma 0.5 to 1 mm. long; fruit tricoccus, sparsely pubescent or glabrate, globose, 6 mm. high, 7 mm. diam. transversely near apex.

TYPE: *Gentry 6236*, Ocurahui, Sierra Surotato, Sinaloa, Mexico, Sept. 1–10, 1941, in herb. Univ. Mich. Duplicates in herb. Univ. Ariz., Mo. Bot. Gard., Harvard Univ., N. Y. Bot. Gard., Stanford Univ., N. Y. Bot. Gard., Stanford Univ., Inst. Biol. Mex., Gentry.

The series of 11 sheets represented by the type number was collected at random from two shrubs out of a colony along a canyon bottom in deep rocky soil marginal to a stream. One shrub is glabrous, the other pubescent, densely so on young growth. No other essential differences are apparent. This plant is related to *R. capraefolia* Schlecht., to which it keys in Wolf's monograph of the genus (*Rn. Sta. Ana Bot. Gard. Monog. No. 1. 1938*), but differs in the smaller non-serrulate leaves, the 1–3-flowered inflorescences (instead of 10–15-flowered), smaller flowers, and the ovary glabrous at the apex. The herbarium specimens resemble those of the variable *R. betulaefolia* Greene, but that species has pedunculate umbels, larger and glabrous fruits.

## VITACEAE

**Cissus brevicaulis** Gentry, sp. nov.

Herba perennis nonvinea erecta 3–5 dm. alta, monopoda, lignea ad basim; cirrhi nullis; cauli brunneo-pustulato crispo-tomentoso; foliis petiolatis, laminis orthogono-oblongis acuminatis 6–9 cm. longis, 4–7 cm. latis, ad basim truncatis, pubescentibus; petiolo 1–2 cm. longo; inflorescentia ad folia superiora opposita; pedunculo pubescenti 10–12 mm. longo, bracteato ad apicem; petalis 4 viridis coriaceis lato-lanceolatis 1.5 mm. longis, in galero caduceo connatis glabris; staminibus 4; ovario 1 fertili, 3 abortivis.

An erect perennial herb 3–5 dm. high, simple, woody at the base above a

tuberous root, rather succulent, without tendrils, non-twining; stem unbranched, flexuous, brown-pustulate, curly-tomentose; internodes 2–3 cm. long; leaves undivided, irregularly dentate, rectangular-oblong, bluntly acuminate, truncate at base, 6–9 cm. long, 4–7 cm. wide, palmately 5–7-nerved, the secondaries and tertiaries ending in marginal dentations, white-pubescent below especially along veins, sparsely so above, slightly scabrous; petioles 1–2 cm. long, pubescent; inflorescence cymose, terminal, and opposite upper leaves, the peduncles strong, pubescent, 10–12 mm. long, bearing distally and at base of secondary peduncles, chartaceous, brown, ciliate, acuminate bracts 1 mm. long; petals 4, greenish, coriaceous, broadly lanceolate, 1.5 mm. long, connate into a caducous cap, glabrous; stamens 4; ovary 1-celled, 1 ovule developing, 3 aborting.

TYPE: *Gentry 6516*, "Quebrado de Mansana, Sierra Surotato, Sinaloa, Mexico, Sept. 10–14, 1941," in herb. Univ. Mich. Duplicates in herb. Univ. Ariz., Mo. Bot. Gard., Harvard Univ., Gentry.

The non-vine habit, low simple stature, oblong-rectangular leaves, and 1-celled ovary set this plant apart distinctly. The caducous, connate, petal-cap would unite it with *Vitis* rather than with other genera of the *Vitaceae*, but otherwise it is cissoid in character. It was rare in the locality of collection, only five plants being found in two places 2–4 miles apart. The author's sheet has the most mature berries, 4 mm. in diameter, but most of them are sterile. The nearest relative appears to be *C. Arsenii* Standl. (*Contr. Nat. Herb.* 23: 730. 1923), a species not seen by the author, but described as leaves sessile or very short-petiolate (key) or 2–7 cm. long (description), cymes dense, few-flowered.

#### LOASACEAE

#### *Mentzelia isolata* Gentry, sp. nov.

Planta annua erecta, gracilis, simplex, 4–8 dm. alta; caulibus obscure stramineis, teretibus striatis pubescentibus et barbatibus; foliis alternis, ascendentibus, scabris, plerumque 5–7 cm. longis, 5–10 mm. latis, angusto-lanceolatis, ad basim lobis variabilibus deltoideis obtusis praeditis, marginibus varie serratis; inflorescentia corymbosa, 1–3 dichotoma; sepalis distinctis, anguste lanceolatis, longe acuminatis, 6 mm. longis; petalis luteis, ovatis, ad basim angustatis, 8 mm. longis; staminibus 10–15, omnibus ut videtur fertilibus, simplicibus.

An erect slender simple annual 4–8 dm. tall with ascending narrow leaves, branched only in the inflorescence. Stems dull straw-colored, terete, striate, pubescent and sparsely hispid with barbate hairs; leaves alternate, ascending, scabrous, mostly 5–7 cm. long, 5–10 mm. wide, linear-lanceolate with two variable deltoid, obtuse lobes at base, margins variably serrate, dark green and strigose above, light green, finely pubescent, and strigose below, venation pinnate, the midvein strong; inflorescence dichotomously branched 1–3 times, the later ones subtended by leaves or leaf-like bracts, pubescent and hispid; sepals distinct, narrowly lanceolate, long-acuminate, 6 mm. long, with a minute callous at apex; petals yellow, ovate, narrowed at base, 8 mm. long, nearly glabrous at apex; stamens 10–15, apparently all fertile, filaments simple, 4–5 mm. long; capsule sessile, linear, strongly barbate-hispid, 17–23 mm. long; seeds irregularly ribbed, striate, tuberculate.

TYPE: *Gentry 6577*, Quebrado de Mansana, Sierra Surotato, Sinaloa, Mexico, Sept. 10–14, 1941, in herb. Univ. Mich. Duplicates in herb. Univ. Ariz., Harvard Univ., Mo. Bot. Gard., N. Y. Bot. Gard., Stanford Univ., Inst. Biol. Mex., Gentry.

This plant belongs in the section *Erumentzelia* of Torrey and Gray and is related to *M. texana* Urb. & Gilg., a species of north central Mexico which has

been little collected. It differs from the latter by its narrow, lanceolate leaves, by the calloused-tipped sepals, the nearly glabrous petal-apices, the fewer stamens, and the longer capsules. The epithet was suggested by the plant's apparent isolation from its near relatives to the north and east. *M. isolata* was observed only in one locality where about a dozen plants were scattered along a mountain trail, suggesting they had been established there by seeds dropped from fruits snared in the hair of passing animals.

## SOLANACEAE

***Lycianthes surotatensis* Gentry, sp. nov.**

Frutex 2 m. altus. Folia superiora geminata valde inaequalia, membranacea, pilis rigidulis albidis vestita; petiole 1–1.5 cm. longo; lamina foliorum majorum ovata, acuminata, 8–15 cm. longa, 4–7 cm. lata, ad apicem 3–5-dentata vel integra, ad basim cuneate; lamina foliorum minorum 3–6 cm. longa, 1.5–3 cm. lata. Calyce persistente ca. 3 mm. alto, 7 mm. lato, strigilloso, paulo infra marginem dentibus 10 subaequalibus lineari-subulatis, 7–9 mm. longis, praedito. Bacca globosa rubra glabra 9–11 mm. diam.; pedicellis ternis vel quaternis fasciculatis, ca. 2.5 cm. longis, pilosis.

Shrub 2 m. tall with slender, flexuous branches, irregularly dentate leaves, and 3–4-flowered inflorescences. Branchlets slender, flexuous, grayish, coarsely pubescent with simple hairs; internodes regular, short, mostly 2–3 cm. long; petioles 1–1.5 cm. long, strigillose; larger leaf blades 8–15 cm. long, 4–7 cm. wide, ovate, distally irregularly 3–5-dentate or entire, thin, strigillose along the pinnately arranged veins & anastomosing veinlets below, simply strigillose & hispidulose above; smaller leaf blades like the larger, 3–6 cm. long, 1.5–3 cm. wide; inflorescence 3–4-flowered, pedicels 2.5 cm. long, strigillose; calyx strigillose, the teeth unequal, linear-lanceolate, 7–9 mm. long; corolla unknown; fruit red, globose, glabrous, 9–11 mm. in diameter; seeds discoid, flattened along raphe, light yellow, 2 mm. in diameter, muricate, shiny, minutely white-hispidulous.

TYPE: *Gentry 6620*, collected at Las Mesas, Sierra Surotato, Sinaloa, Mexico, Sept. 15, 1941, in herb. Univ. Mich. Duplicates in herb. Univ. Ariz., Mo. Bot. Gard., Harv. Univ., N. Y. Bot. Gard., Inst. Biol. Mex., Gentry.

The slender, flexuous branches, apically dentate leaves, and simple hairs of the pubescence are the main characters distinguishing this species in a neglected genus, members of which in Mexico have commonly been treated as *Solanum*. Standley and Morton in the *Flora of Costa Rica* (Field Mus. Bot. Publ. 18: 1056) have pointed out the advisability of recognizing Dunal's genus *Lycianthes*, forming a natural segregate clear of *Solanum*, differing in the 5–10 subulate teeth (not calyx lobes) on the calyx; the upper leaves are of two distinct sizes, but this character is sometimes present in *Solanum*.

## ACANTHACEAE

***Ruellia leucantha* Brandg. var. *postinsularis* Gentry, var. nov.**

Planta a varietate genuina differt foliis, ramulis, corollis, et calycibus glabri-  
oribus, viridioribus, resinosis; foliis, minoribus.

TYPE: *Gentry 5739* "Cerro Tecomate, west of Pericos, Sinaloa, Mexico, Feb. 28, 1940," in herb. Univ. Mich. Duplicates in herb. Univ. Ariz., Inst. Biol. Mex., Harvard Univ., N. Y. Bot. Gard., Mo. Bot. Gard., Nat. Arb., Gentry.

The type material and *Gentry 7024* differ from typical peninsular material of *R. leucantha* (Brand. *Zoe* 5: 109. 1911) in the smaller, glabrate, more resinous



leaves and the general lack of the dense white pubescence that covers the young stems, the leaves, bracts, and calyx of *R. leucantha*. The calyx lobes of the variety are greenish and sparsely strigillose, while those of *R. leucantha* are pallid and long-flocculose. The resin appears in the form of minute droplets excreted from pitted glands on both leaf surfaces. Because of the sparse pubescence on the glabrate leaves of the variety, the crystal clear droplets appear more prominent.

*Gentry 7024*, taken several miles east of the type locality for the variety, at Cerrito de Caymanero in late April, 1944, has older nearly glabrous leaves, otherwise agreeing well with the type. These older leaves show the ephemeral nature of the sparse pubescence shown in the type, and also a glutinous character similar to that more strongly displayed in *R. peninsularis*. This latter species with *R. californica* and *R. leucantha* are all low, twiggy, xerophytic shrubs distributed about the Gulf of Lower California. They appear to be closely related and evolved from a common ancestor. The history of their speciation is to be correlated with the physiographic and climatic events of the Lower California Gulf Region. In late Miocene times the lengthening of the gulf northward (Schuchert, *Historical Geology of Antillian-Caribbean Region*. 1936) and increasing aridity caused respective peninsular, insular, and mainland populations to be disjunct or isolated. Hence the several distinct populations (Cape District, mid-peninsular area, Cerros about Guaymas, Cerron near Bachoco each of Cajeme, Cerro Tecomate) inhabiting the coastal cerros are now specifically diverging and a close study should disclose several subspecific differences correlated with long-isolated populations. This same situation is exemplified in other genera of the Gulf Region. *R. leucantha postinsularis* appears to have diverged from the peninsular *R. leucantha* by reason of its long isolation on Cerro Tecomate, which during most of its existence in the Upper Tertiary was an island. Though now an integral part of the mainland, its flora reflects its past insular nature. When the geology and flora of the Gulf Region are well understood and integrated with the development of the physiography, we shall be able to take the measure of plant evolution in the area.

**Holographis pallida** Leonard & Gentry, sp. nov. (*f. 5*).

Frutec. ca. 1 m. altus; ramis gracilibus glabris; ramulis canis hispidulosis; foliis fasciculatis, subsessilibus lanceolatis plerumque 20–25 mm. longis, 5–7 mm. latis, glabris, margine pubescenti ciliata excepta; spicis subsessilibus; bracteis pallidis pubescentibus apiculatis 1–1.5 mm. longis, imbracatis ad basim; calycis lobis 6 mm. longis lanceolatis dorsaliter pubescentibus, ad marginem longe pubescentibus; corolla alba vel, pallide lavendulacea, 10–12 mm. longa, bilabiata; staminibus geminatis inaequalibus, antheris binis lateraliter minute connatis vel cohaerentibus; filamentis pubescentibus; ovario glabro; stigmatibus glabris.

Low, irregularly branched shrub with open crown about 1 m. high; branches slender, light yellowish to dark gray, glabrous, nodes prominent; branchlets finely hispid, grayish, leaves fasciculate, sessile or nearly so, lanceolate, mostly 20–25 mm. long, 5–7 mm. wide, glabrous except for minute, sparse pubescence along margin, minutely punctate below; midvein prominent below, pinnately branched, laterals obscure, often branched near base, reticulately anastomosing; inflorescence sessile at nodes, short-spicate, 1–3 cm. long, bearing an imbricated series of straw-colored, pubescent, apiculate bracts 1–1.5 mm. long at base; calyx subtended by 2 bractlets 3–4 mm. long similar to calyx lobes; calyx lobes 6 mm. long, lanceolate, pubescent, the tips firmly subuliferous, distinctly margined with long pubescence, glabrous within; corolla white to pale lavender, pubescent, 10–12 mm., long, bilabiate, lobes 5, conspicuously parallel-veined, the upper three

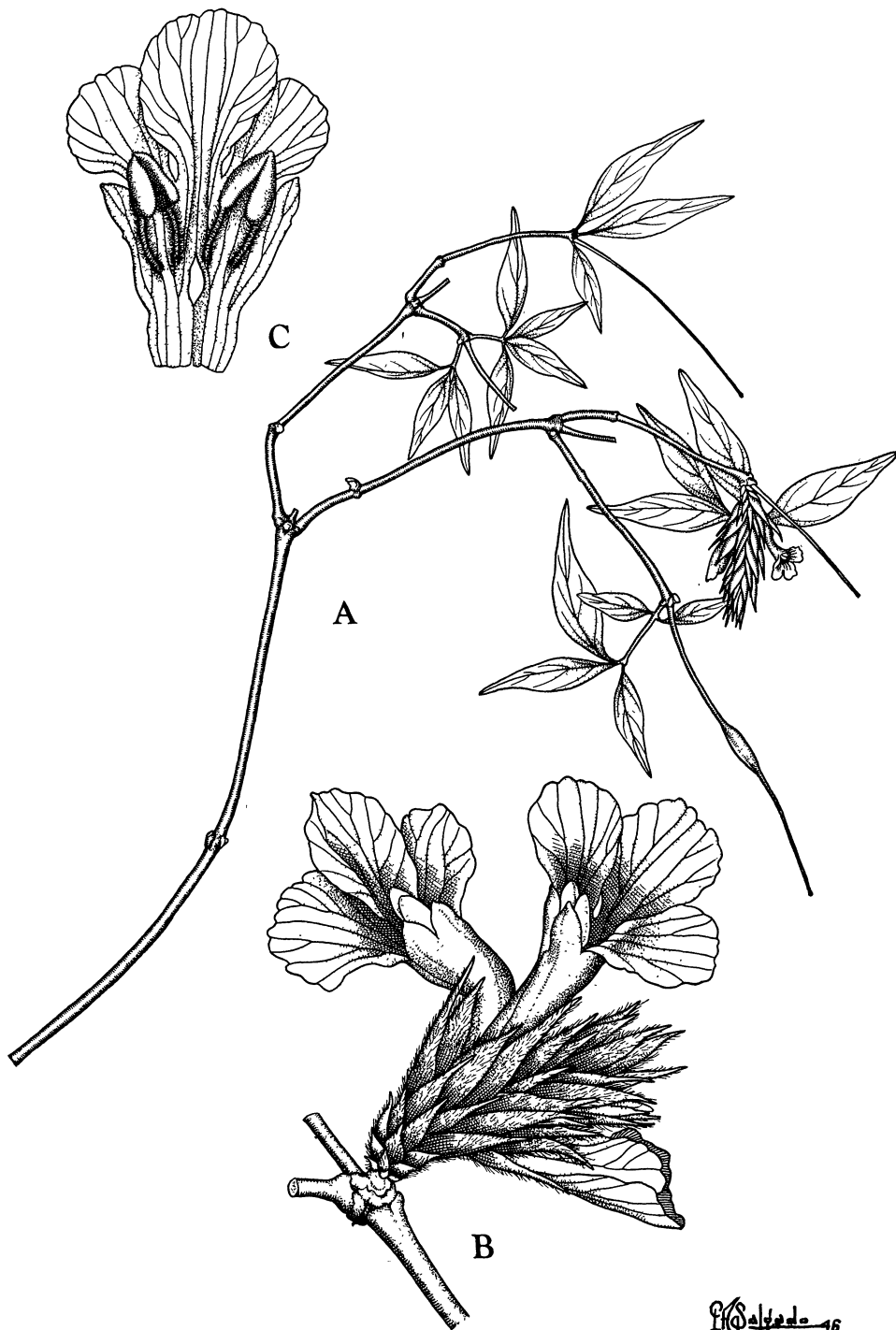


FIG. 5. *Holographis pallida*. A, Habit with one twiglet showing a gall. B, Inflorescence ( $\times 5$ ). C, Corolla opened to show detail of stamens ( $\times 5$ ). Drawn by Eduardo Salgado from the type specimen.

clawed, broadly ovate-orbicular, the upper two much shorter, acute from a triangular base; stamens attached midway in corolla tube; anthers 4, in two lateral pairs each united near apex; filaments unequal, distinct, one of each lateral pair pubescent, the other glabrous; ovary and stigma glabrous, the latter typically marginate.

TYPE: *Gentry 7022* in herb. Univ. Mich., collected at Cerro Llano Redondo, west of Caymanero, Sinaloa, Mexico, April 25, 1945. Duplicates in herb, U. S. Nat., Gentry.

The plant was collected in the dry season on the basaltic cerro slope of the Tecomate monadnock in Sinaloa Thorn Forest. Owing to the arid spring season, the foliage is considerably sparser and relatively pauperized to what may be expected in the wet summer and fall season. This is the third species in a rather obscure genus confined to northern Mexico. *H. pallida* is distinguished by the minutely pelucid-dotted lanceolate leaves, glabrous below, by the subuliferous tips of the calyx lobes, and by the paired anthers connivent at their apices. This character is apparently unique in our Acanthaceae, and since anthers are of importance in generic segregation in the family, it is possible the plant may eventually prove to be worthy of generic status. It is similar to members of the genus *Berginia*. It is doubtful if the latter, represented by *B. Palmeri* in Baja California and *B. virgata* in Sonora, can be kept separate from the older genus *Holographis* Nees.

**Dyschoriste poliodes** Leonard & Gentry, sp. nov.

Herba, caulibus decumbentibus dense pilosis; laminis foliorum ellipticis, ad apicem rotundatis vel subobtusis, ad basim angustatis et in petiolum decurrentibus, integris vel subintegris, dense pilosis; petiolis brevibus pilosis; floribus axillaribus, sessilibus, bracteis foliaceis suffultis; calycis segmentis subulatis, pilosis; corolla purpurea, extus minute pilosa, lobis ovatis; capsulis linearibus glabris.

Grayish, decumbent herb; stems up to 40 cm. long or more, densely pilose, the hairs up to 1 mm. long, mostly spreading; leaf blades elliptic, up to 1.8 cm. long and 9 mm. wide, rounded or obtusish at apex, narrowed at base and decurrent on the petiole, entire or subentire, both surfaces densely pilose, the hairs spreading, straight or curved, up to 0.75 mm. long, the costa and lateral veins (4 pairs) distinct but obscured by the heavy pubescence; petioles up to 3 mm. long, pilose; flowers usually solitary, sessile, axillary or terminating short axillary branches and subtended by foliaceous bracts similar to the leaf blades but smaller; calyx up to 14 mm. long, the lobes 7–8 mm. long, 1 mm. wide at base, subulate, carinate, the costa prominent, the margin and outer surface pilose, the hairs spreading, various in length, some as much as 1.5 mm. long, the inner surface minutely strigose; corolla (immature) purple, 15 mm. long, the narrow portion of the tube about 6 mm. long and slightly more than 1 mm. in diameter, glabrous, the expanded portion about 3 mm. broad at mouth (the ovate lobes about 4 mm. long and 3.5 mm. wide), glabrous within, minutely pilose without, the hairs straight, spreading, or the lowermost retrorse; filaments of the longer pair of stamens 4 mm. long, those of the shorter pair 3.5 mm. long, all glabrous; lower anthers about 1 mm. long and 0.75 mm. wide, the upper ones slightly larger; capsule cylindric, glabrous, 1 cm. long; seed not seen.

TYPE in the U. S. National Herbarium, no. 1,892,411, collected on forested hills 3 miles west of Montemorelos, Nuevo León, Mexico, August 14, 1942, by Howard Scott Gentry (no. 6721). Isotype in the Gentry herbarium.

In its general habit, its shape of leaf blades and type of inflorescence this species seems to be nearest *D. microphylla* Kuntze of southern Mexico but is easily distinguishable from that species by its dense, grayish pilosity. The epithet *poliodes* is from the Greek *πολιώδης*, meaning grayish, and alludes to the color given by the dense, white pubescence to the entire plant.

**Carlowrightia sinaloensis** Leonard & Gentry, sp. nov.

Suffrutex, caulibus albidis, subquadrangularibus, glabris vel subtiliter pubescentibus; laminis foliorum ovato-lanceolatis, acuminatis, ad basim rotundatis vel truncatis, tenuibus, supra parce pilosulis, subtus minute canescenti-pubescentibus; petiolis tenuibus, pubescentibus; inflorescentia paniculata, spicis laxis plus minusve curvatis, rachidibus glanduloso-puberulentibus; bracteis et bracteolis subulatis, parce puberulentibus; calycis segmentis subulatis, subglabris; corolla alba, parva, parce pubescenti; capsula fortasse abnormali, clavata, bifurcata, stipite exili.

Suffrutescent herb up to 1 m. high; stems whitish, subquadrangular, glabrous or sparingly and finely pubescent, the hairs white, up to 0.5 mm. long, the lower internodes about 8 cm. long; the uppermost 2-3 cm. long; leaf blades ovate-lanceolate, up to 8 cm. long and 4 cm. wide, acuminate, obtuse or rounded at base, thin, drying green above and grayish-green beneath, the upper surface sparingly pilosulous, the hairs segmented, appressed or ascending, up to 0.5 mm. long, beneath softly and rather densely pubescent, the hairs minute and mostly spreading, the margin ciliate, the cystoliths minute and inconspicuous; petioles slender, up to 2.5 cm. long, finely and rather densely pubescent, the hairs spreading, up to 0.5 mm. long or a few of them as much as 1 mm. long; flowers borne in lax, more or less curved spikes up to 5 cm. long, these forming leafy terminal panicles up to 15 cm. long, the rachises puberulous, the hairs straight, the longer ones gland-tipped, the smaller submicroscopic and prickly-like, the lower portions of the inflorescence in addition to the above types of hairs bearing also longer, eglandular hairs, the lower internodes of the spikes 10 mm. long, the internodes successively shorter toward tip; bracts subulate, 2-3 mm. long, each bearing a few minute glandular hairs and subtending 1-several flowers, these flanked by a pair of subulate bractlets 1.5-2 mm. long; calyx 3 mm. long, the segments subulate, 2-2.5 mm. long, sparingly and minutely pubescent; corolla (immature or possibly cleistogamous) white, up to 5 mm. long, sparingly and finely pubescent, the anthers 1.5 mm. long and 0.5 mm. broad; capsule (abnormal?) 13 mm. long, glabrous or sparingly pubescent at tip, clavate, bifurcate, the lobes short and rounded, the stipe slender, 10 mm. long; seed not seen.

TYPE in the U. S. National Herbarium, no. 1,892,419, collected under thorn trees on a slope at Cerro Prieto, vicinity of Culiacan, Sinaloa, Mexico, altitude 50-170 m., November 30, 1944, by Howard Scott Gentry (no. 7111). Isotype in the herbarium of the University of Michigan.

This new species is closest to *C. costaricensis* Leonard but differs chiefly in the glandular pubescence of the inflorescence. The rachises of *C. costaricensis* are minutely and eglandularly puberulent to subglabrous. The slenderly clavate, bifurcate capsules, if not originating from the effect of some gall-producing agent, are certainly unique.

**Justicia phlebodes** Leonard & Gentry, sp. nov.

Herba, caulibus subsulcatis, supra subquadrangularibus, bifariam pubescentibus; laminis foliorum ellipticis, ad apicem rotundatis, obtusis, vel subacuminatis,

ad basim angustatis, in petiolum decurrentibus, integris vel undulatis, supra glabris vel parce hirsutis, subtus subglabris, costa venisque prominentibus, venis pubescentibus; petiolis pubescentibus; spicis gracilibus, subsessilibus aliquando peniculas terminales formantibus; bracteis oblongis, acutis, imbricatis, glanduloso-puberculentibus, cilatis, interdum pilis raris longioribus, eglanduliferis instructis, venis prominentibus; bracteolis subulatis; calycis segmentis 4, lineariibus; corolla purpurea, minute pubescentis, angusta, bilabiata, labio superiore oblongo, inferiore trilobo, lobis ellipticis rotundatis; staminibus breviter exsertis; antherae loculis valde superpositis, superiore grandiore rotundato, inferiore calcarato; ovario glabro.

Herb up to 1 m. high; stems subsulcate, light green, the upper portions subquadrangular, pubescent in 2 lines, the hairs white, retrorsely curved, 0.5–1 mm. long, the lower portions of the stem subterete and subglabrous; leaf blades elliptic, 7–12 cm. long, 3.5–6.5 cm. wide at or near the middle (those subtending the inflorescence smaller), rounded, obtuse or subacuminate at tip, narrowed, sometimes abruptly so at base and decurrent on the petiole, entire or undulate, both surfaces drying green, the upper glabrous or sparingly beset with stiff, slightly curved, multicellular hairs, the veins scarcely prominent, the lower surface subglabrous except costa and veins (6 to 10 pairs), these greenish-white, very conspicuous, moderately pubescent with fine, white, curved hairs, the cystoliths straight or slightly curved, slender, 0.5 mm. long, inconspicuous on both surfaces; petioles (unwinged portion) 5 to 20 mm. long, finely pubescent to subglabrous, the hairs curved; flowers borne in slender, subsessile, erect or suberect spikes 2–5 cm. long, these simple, terminal or axillary, sometimes forming a terminal, crowded panicle, the bracts closely imbricate, oblong, up to 7 mm. long and 2.5–3 mm. wide, acute, the pubescence a mixture of scattered, slender, straight or slightly curved hairs 0.5 mm. long and minute, straight, glandular ones, the margin ciliate, the costa and veins prominent; bractlets linear-subulate, 6 mm. long, 0.75 mm. wide, minutely pubescent, the hairs glandular or pointed at tip, sometimes with a few slender ones intermixed; calyx 4.5 mm. long, divided nearly to the base, the segments linear, 0.5–0.75 mm. wide, the pubescence similar to that of the bracts and bractlets; corollas bright purple, 10–14 mm. long, minutely pubescent, the tube slender, the lower lip 3-lobed, the lobes elliptic, 4 mm. long, 2.5 mm. wide, rounded at tip, the upper lip oblong, entire, about 6 mm. long; stamens exserted slightly beyond the throat of the corolla, the anther lobes strongly superposed, one about 0.75 mm. above the other, the upper lobe elliptic in outline, 1.5 mm. long, and barely 1 mm. wide, the cells rounded at base, the lower anthers much smaller than the upper, these including the short spur, about 1 mm. long and 0.5 mm. wide; filaments glabrous; ovary glabrous; capsules not seen.

TYPE in the U. S. National Herbarium, no. 1,780,678, collected in a shady canyon under heavy *Brosimum-Ficus* forest near Africa, Sierra Tacuichamona, between Culiacan and Mazatlan and south of the Río San Lorenzo, Sinaloa, Mexico, altitude about 600 m., February 17, 1940, by Howard Scott Gentry (no. 5652). Isotype in the herbarium of the University of Michigan. Also of the same species are *Gentry 7307*, collected in mixed tropical vegetation in deep wooded canyon (Cañon de Tarahumare), Sierra Surotato, Sinaloa, Mexico, altitude 1000 to 1300 m., March 17 to 24, 1945, and *M. Narvaez Montes & Antonio E. Salazar's 757* collected in a moist place at Cerro de la Ventana, San Ignacio, Sinaloa, Mexico, altitude 750 m., February 13, 1919.

Readily distinguished from other species of *Justicia* of western Mexico by its strongly veined leaves, slender spikes with their imbricated, strongly veined

bracts, and by its distantly superposed anthers. It is like certain other Mexican and Central American species in having four calyx segments. The specific name is derived from the Greek  $\phi\lambda\epsilon\beta\acute{\omega}\delta\eta\varsigma$ , meaning with conspicuous veins.

**Cyclanthera monticola** Gentry, sp. nov.

Herba plerumque glabra, gracilis, scandenta; petiolo 4–8 cm. longo, ligulato; foliis membranaceis, supra sparse scabroso-hispidulis, latis cordatis, in medio angulatis, ad basim late emarginatis, ad apicem acuminatis et mucronatis, laminis 6–10 cm. longis, 5–10 cm. latis; cirrhis glabris, bifidis; pedunculos masculino 5–7 cm. longo, glabro, paniculato, 15–20-floridato; corolla masculina alba, campanulata, 2–3 mm. lata; pedunculo femineo accrescenti ad 3–4 cm. longo; corollae feminae tubula campanulata, minute hispidulosa, 5–6 mm. longa, 2–3 mm. lata; fructo orbiculari, 4 mm. diam.; aculei 1–2 mm. longi.

Slender, mesophytic, nearly glabrous herb with cordate, angular leaves, the petioles long and flat, long-pedunculate male panicles, and orbicular fruits setaceously prickled. Stems sulcate, slender, sparsely hispidulose at nodes; petioles 4–8 cm. long-ligulate, 1–2 mm. wide, sulcate; leaves thin, glabrous below, sparsely scabrous-hispidulous above, broadly cordate, sharply angulate in the mid-blade, broadly emarginate at base, 6–10 cm. long (along midrib), 5–10 cm. wide, acuminate, mucronate, denticulate with extruding veinlets; midvein pinnately branched, 2 basal laterals branching dichotomously, tertiaries finely anastomosing throughout; tendrils subequally bifid, the stems 3–4 cm. long, flattened; male peduncles at anthesis 5–7 cm. long, glabrous, paniculate, 12–20-flowered, the pedicels 1–1.5 mm. long, sparsely hispidulous; male corollas white (yellowed with drying), 2–3 mm. broad, the lobes triangular-acute; androecium 1 mm. in diameter, filament minutely papillose below the head; female flowers long-pedunculate, the peduncles accrescent to 3 cm. or more, narrowly tubular, tube 0.2 mm. wide, 4 mm. long; corolla rotate, 2–3 mm. broad, minutely hispidulous, lobes short-triangular; fruits (immature) orbicular, 4 mm. in diameter; prickles setose, 1–2 mm. long, hispidulous at base; beak very slender, 4 mm. long, inserted far below apex.

TYPE: *Gentry 6311*, collected near Ocurahui, Sierra Surotato, Sinaloa, Mexico, Sept. 1–10, 1941, in herb. Univ. Mich. Duplicates in herb. Univ. Ariz., Harvard Univ., N. Y. Bot. Gard., Mo. Bot. Gard., Inst. Biol. Mex., Stan. Univ., Gentry.

The habitat of this plant is a high moist slope of northern exposure in the Pine Forest zone, 6000–6500 feet elevation. Other associated plants forming a low cover included: *Crotalaria mollicula*, *Erythrina montana*, *Scutellaria pseudo-coerulea*, *Lathyrus leucantha*, *Vicia pulchella*, *Phaseolus esperanzae*, *Festuca amplissima*, *Tephrosia* sp., and *Euphorbia plummarae*. The orbicular fruits, long peduncles, long strap-like petioles, and broad, thin, membraneous leaves quickly characterize this apparently endemic species.

COMPOSITAE

**Hofmeisteria sinaloensis** Gentry, sp. nov.

Herba perennis suffrutescens decumbens; ramis 3–4 dm. longis, fragilibus; petiolo 2–3 cm. longo; foliis dense alternantibus, 3–5 cm. long, adscendentibus, 3–5-foliolatis; petioliulis 4–6 mm. longis; lobis ovatis vel lineari-lanceolatis 8–16 mm. longis, sparse hispidulosis; capitulis longe pedunculatis, multifloris, campanulatis, 7–8 mm. altis; phyllariis ca. 60, aculeatissimis glabris; corolla viridi-alba 3.4 mm. longa; achaeniis nigris 1.5 mm. longis, 5-angulatis, strigosis; setis pappi 5 puniceis, 3.5 mm. longis, antrorse barbatis.

Suffrutescent, decumbent, cespitose herb forming an irregular spreading clump 3–4 dm. high; branches sagging, brittle, brownish; diffusely branched distally, leafy, the older wood glabrous, the younger white-pubescent. Leaves closely alternate, 3–5 cm. long including petiole 2–3 cm. long, ascending, pinnately dissected into three or rarely 5 petioluled, variously lobed, thin, acutish leaflets finely, sparsely, and shortly hispid above and below; peduncles slender, 7–9 cm. long, sparingly, finely hispid; heads many-flowered, broadly campanulate, 7–8 mm. high, 6–7 mm. wide; bracts about 60, glabrous, lucid, finely acute, 5-striate, with a median brown streak; corolla greenish-white, narrowly tubular, 3.5 mm. long, lobes minute, blunt; pappus of 5 pinkish awns, finely antrorsely barbed, as



FIG. 6. *Hofmeisteria fasciculata pubescens* on a vertical rock face by the sea near Bahia San Carlos, Sonora; spring, 1938.

long as or slightly longer than the corolla, and with alternating simple or lacinate paleae; achenes black, 1.5 mm. long with 5 angles sparsely and finely strigillose and basal disk-like callous.

TYPE: *Gentry 5615*, collected at Capadero, Sierra Tacuichamona, Sinaloa, Mexico, February 18, 1940, in herb. Univ. Mich. Duplicates in herb. Univ. Ariz., Nat. Arb., Inst. Biol. Mex., Mo. Bot. Gard., N. Y. Bot. Gard., Stand. Univ., Gentry.

The type collection represents one or two thriving plants growing on a cliff in a rich pocket of soil shaded by trees at about 3000 feet elevation. Accompanying trees were representatives of the montane subtropical deciduous highly mixed canyon forest. *Gentry 5581* is also this species taken in the same locality, but upon a more arid cliff where the plants were smaller, more erect, and less leafy.

Its place in the genus is in the section *Euhofmeisteria* next to *H. filifolia* Johnston (Proc. Cal. Acad. IV. **12**: 1185. 1924). The present entity differs from that species by its glandless branches, bractless peduncles, 5 instead of 3 awns on the achenes, etc. This new find marks a considerable southern extension for the genus and so far as known to the author is the first collection in Sinaloa. This interesting genus is endemic to the Gulf of California area and was not well known until Johnston made his collections and review of the genus. Its range is now known to be from Inyo County, California, to central Sinaloa, Mexico. The species are often cliff-dwellers, many are salt-tolerant, as *H. fasciculata*, which the author observed near Santa Rosalia and near Guaymas on the cliff rocks sometimes within reach of the flying sea spray (fig. 6). Johnston reports *H. pluriseta* as growing on gypsum. Other Sinaloa localities are to be expected.

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