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ACACIA ANGUSTISSIMA (MILL.) KUNTZE AND ITS NEAR RELATIVES

By Ira L. Wiggins

When an attempt was made to construct a key to the species of *Acacia* occurring in the Sonoran Desert a complex consisting of *A. angustissima* (Mill.) Kuntze and closely related entities presented a puzzling problem. There was little uniformity in the application of names to the specimens involved, for duplicates of the same collections appeared in different herbaria under different names. Some of the characters used to separate the several "species" seemed too trivial to be reliable, so an intensive study was begun to determine the reliable characters, and, if possible, to untangle the taxonomic position of the species and subspecies involved.

A large amount of material belonging to this complex was made available to me through the kindness of the curators of the herbaria at the following institutions: California Academy of Sciences (C.A.), Field Museum (F.), Gray Herbarium of Harvard University (G.), New York Botanical Garden (N.Y.), United States National Herbarium (U.S.), and the University of California at Berkeley (U.C.). I extend my sincere appreciation to the curators of these herbaria for the privilege of borrowing and studying material in their care. Specimens cited from the collections in the Dudley Herbarium of Stanford University are indicated by the abbreviation (D.).

For about half a century many botanists have considered *Acacia filicioides* (Cav.) Trel., published as *Mimosa filicioides* in 1791, synonymous with *A. angustissima* (Mill.) Kuntze. The latter had been published under *Mimosa* in 1768. This view was held in spite of the fact that Miller described *M. angustissima* as "glabrous" while Cavanilles described and figured his plant as pilose. At first I was inclined to accept this view since a large set of specimens of "*A. angustissima*" showed both glabrous and pilose plants with numerous intergrades. It seemed possible that the small number of pinnae depicted in Cavanilles' plate¹ represented a small-leaved variant of *A. angustissima* although the latter usually possesses 9-20 pairs of pinnae. Or, one might argue that the artist had been more interested in preparing an artistic plate than in showing accurately the exact number of pinnae and leaflets on a leaf.

But when one compared other plates of Cavanilles' with species now well known the degree of accuracy exhibited in these plates exposed the weakness of the latter argument. Furthermore, a sheet borrowed from the Field Museum presented strong evidence that *Mimosa filicioides* Cav. was distinct from *M. angustissima* Miller. This sheet bears three branches which match Cavanilles' plate of *M. filicioides* so perfectly that the drawing might have been made from one of them. The sheet bears two labels, one reading "Ex antiquo herbario generali Herbarium Horti Botanica Matritensis in hort Madrid ex Mexico," and the other, a faded label in an unidentified hand, reads, "*Mimosa filicioides* Cav. ic. Pl. ex Hort Reg. Matr. Anno 1800." Of the seven leaves present, one has seven pairs, three have five pairs, and three have six pairs of pinnae. These specimens differ from *A. angustissima* in having longer, more numerous and more rigidly spreading hairs on the stems, rachises and petioles; in having 5-7 instead of 9-20 pairs of pinnae; and in having longer and more lanceolate pinnae than does *A. angustissima*.

¹Antonio Jose Cavanilles, *Icones et Descriptiones Plantarum* 1: 55. pl. 78. 1791.

Since Cavanilles described his plant from specimens grown in the botanical garden at Madrid, the seed having come from Mexico, it seems reasonable to assume that the specimens collected from garden plants in 1800 were compared with his original specimens and even might have been taken from the same plant. At any rate, I feel confident that the specimens mentioned above represent *A. filicioides* and that Cavanilles' species is a valid one.

There is no longer any uncertainty concerning the identity of *Acacia angustissima* (Mill.) Kuntze. The following notes are from a letter written to Dr. N. L. Britton by A. B. Rendle on October 7, 1927: "As regards the points raised in your letter (1) *Mimosa angustissima* Mill. I enclose a note and sketch from M'Baker which will, I hope, be adequate. If you still wish I will have the plant photographed, but it seems unnecessary as M'Baker says it is a common species."

The note from Baker reads: "The type of *Mimosa angustissima* Miller, from Vera Cruz, Houston 1731, is in Herb. Mus. Brit. It is *Acacia filicina* Willd. There is a determination on it in Bentham's hand——'A. glabrata Schlecht'."

"Below is a tracing of the pods. It agrees with Purpus 1878, from Vera Cruz. We should not describe the pod as pointed."

The tracings accompanying Baker's note agree well with the pods of much of the material of *angustissima* from Mexico and southern Texas. (See Plate LII, fig. 1, 2). Since the Purpus material mentioned by Baker was widely distributed, several sheets of it have been available for comparison.

There are seven entities involved in the complex which seem to be worthy of nomenclatorial recognition. It is possible that some additional "species" in central and southern Mexico should be referred to this group, but if so they are still imperfectly known to me and any change in their status is deferred. Several other entities are recognizable as one studies the group, but they have neither sufficient constancy of differentiating characters nor great enough magnitude of these characters to warrant giving them names. These unnamed strains are treated as "Minor Variations" in a sense similar to that used by Hall and Clements.² When an entity has been recognized as a variety I have not transferred that trinomial to a subspecies.

The following key indicates the general relationships of the entities to which it seems advisable to give names.

Key to Species and Subspecies

Pinnae oblong to narrowly obovate in outline, 1-3 (rarely 4) cm. long; leaflets appressed-ciliate or glabrous on the margins.

Shrubs 2-5 m. high.

Pods not glandular, 6-12 mm. wide; leaflets sparingly short-ciliate.
Pinnae 10-25 pairs; leaflets 1-1.2 mm. wide, 1-veined; pods 8-12 mm. wide.

Pinnae 5-12 pairs; leaflets 1.5-2.5 mm. wide, mostly pinnately veined; pods 6-9 mm. wide.

Pods bearing small sessile glands, 4-7 mm. wide; leaflets copiously long-ciliate.

la. *A. angustissima* subsp. *typica*.
lb. *A. angustissima* subsp. *Lemmonii*.
lc. *A. angustissima* subsp. *Smithii*.

²H. M. Hall and Frederic C. Clements, *The Phylogenetic Method in Taxonomy. The North American Species of Artemisia, Chrysothamnus, and Atriplex*. Washington, 1923.

February, 1942

Suffrutescent or
Twigs coarsely
lets of

Twigs finely s
Pinnae 10-17
acute
Pinnae 2-5 ()
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Pinnae narrowly la
ciliate on

1a. ACACIA I

Mimosa angustissima
Acacia glabrata Sol
Acacia angustissima
Acaciella angustiss
Acaciella brevitrace
Acaciella salvadore

Openly bran
late, glabrous to h
fugaceous; leaves 1
pinnae 9-25 pairs, :
linear, 4-6.5 mm. l
margins, slightly e
and axillary racemes
brous to hirsutulous
turbinate, 0.8-1 mm.
pressed hairs near t
glabrous, imperfectl
rarely faintly pinki
broadly cuneate and
apiculate at the ape
simple hairs; seeds
flattened, brownish,

Type locality

Britton and R

cies. In the light o
above, Vera Cruz, no
a definite locality ;
a definite locality ;
twenty-third species
species in the follow

"Most of the c
ingenious Dr. William
sent the seeds of mos
in the physic-garden
and plenty of seeds."

Since he mentio

³Britton, N. L. an

Suffrutescent or herbaceous plants 1 m. high or less.
Twigs coarsely striate with dark ridges and light-colored grooves; leaflets often faintly pinnately veined.

ld. *A. angustissima* subsp. *suffrutescens*.
Twigs finely striate, usually uniformly reddish brown or dark gray.

Pinnae 10-17 pairs, 2-3.5 cm. long; leaflets ciliate on the margins, acute, 20-30 pairs. le. *A. angustissima* var. *hirta*.

Pinnae 2-5 (sometimes 8) pairs, 1-2 cm. long; leaflets often eciliate, obtuse at the apex, 9-20 pairs.

Pinnae narrowly lanceolate in outline, 4-8.5 cm. long; leaflets spreadingly ciliate on the margins. 2. *A. cuspidata*.
3. *A. filicioides*.

1a. ACACIA ANGUSTISSIMA (Mill.) Kuntze, subsp. TYPICA, n. nom.

Mimosa angustissima Mill., Gard. Dict. ed. 8. no. 19, 1768.

Acacia glabrata Schlecht., Linnaea 12: 569. 1838.

Acacia angustissima Kuntze, Rev. Gen. Pl. 3^a: 47. 1896.

Acaciella angustissima Britt. & Rose, N. Am. Fl. 23: 100. 1928.

Acaciella breviracemosa Britt. & Rose, N. Am. Fl. 23: 99. 1928.

Acaciella salvadorensis Britt. & Rose, N. Am. Fl. 23: 101. 1928.

Plate LII, figs. 1-12, Plate LIII, figs. 1-6.

Openly branching shrub or small tree 2-4 m. high with striate-angulate, glabrous to hirsute branches; stipules linear to subulate, 4-8 mm. long, fugaceous; leaves 10-25 cm. long, the rachis glabrous to moderately hirsute; pinnae 9-25 pairs, 2.5-4.5 cm. long; leaflets 30-60 (sometimes to 90) pairs, linear, 4-6.5 mm. long, glabrous on both surfaces, appressed-ciliate on the margins, slightly eccentrically 1-veined, acute; heads globose, in terminal and axillary racemes 1-3 dm. long; peduncles 1-2.5 cm. long, striate, glabrous to hirsutulous; pedicels slender, about 1 mm. long; calyx broadly turbinate, 0.8-1 mm. high, faintly 5-lobed, glabrous, or with a few appressed hairs near the base; petals 5, or rarely 4, 1.8-2.4 mm. long, acute, glabrous, imperfectly separated at the base; stamens white or pale cream, rarely faintly pinkish, 5-6 mm. long; legume 8-12 mm. broad, 4-7 cm. long, broadly cuneate and short-stipitate at the base, acute and often slightly apiculate at the apex, reddish brown, glabrous or bearing a few scattered simple hairs; seeds ovoid, 3.5-4 mm. long, two-thirds as broad, moderately flattened, brownish, mottled with buff or greenish flecks, sublustrous.

Type locality: Vera Cruz, Mexico.

Britton and Rose³ gave Campeche as the type locality of this species. In the light of Baker's note accompanying Rendle's letter mentioned above, Vera Cruz, not Campeche, is the type locality. Miller did not give a definite locality for this species in his Gardners' Dictionary. He gave a definite locality as the source of each of the first thirteen and the twenty-third species treated and made a blanket statement covering the other species in the following words:

"Most of the other sorts here mentioned, were collected by the late ingenious Dr. William Houstoun, in Jamaica, at Vera Cruz and Campeachy, who sent the seeds of most of them into Europe; many of which are now growing in the physic-garden at Chelsea, where some of them have produced flowers and plenty of seeds."

Since he mentioned Vera Cruz as well as Campeche as one of the sources

³Britton, N. L. and Rose, J. N., North American Flora 23: 100. 1928.

of the Acacias he described I have no hesitancy about accepting Vera Cruz as the type locality.

Distribution: Middle elevations in central Sonora to Texas and southward to Guatemala and Costa Rica.

Representative specimens:—Uvalde, Uvalde County, Texas, *E. J. Palmer* 33619, (N.Y.); Austin, Texas, *C. B. Tharp* 128A, (N.Y.); Pinal, Sierra Charuco, Sonora, *Gentry* 1701, (F., N.Y., U.C., U.S.); Batopilas, Rio Mayo, Chihuahua, *Gentry* 2610 (D., U.C.); Parras, Coahuila, *Edward Palmer* 436, 1898, (G., N.Y., U.S.); Las Canoas, San Luis Potosi, *Edward Palmer* 218, 1902, (N.Y., U.S.); vicinity of Pueblo Viejo, 2 km. so. of Tampico, Vera Cruz, *Edward Palmer* 445, 1910, (N.Y., U.S.); Zacuapan, Vera Cruz, *Purpus* 1878, 1906, (F., G., N.Y., U.C., U.S.); Mt. Ovando, Chiapas, *Matuda* 3975, (N.Y.); Pocoboch, Yucatan, *Gaumer* 1444, (F., U.S.).

It is possible that what is considered here as a single subspecies represents more than that, for specimens placed here grew at elevations between 500 and 5,000 feet above sea level. However, it has been impossible to detect characters of sufficient constancy and magnitude to warrant segregation of additional specific or subspecific entities. The subspecies does include several minor entities, but they intergrade by such imperceptible degrees that it seems inadvisable to give them nomenclatorial rank. The following are the chief variants.

Minor variation 1. (Plate LII, figs. 9-12).—The young branches, rachises of the leaves, and branches of the inflorescences are pilose with spreading hairs. (Pl. LII, fig. 9-10). No other characters are apparent by which these specimens might be separated from *typica*. The variation appears at random throughout the range of the species. Representative specimens:—Coahuila, *Edward Palmer* 310, 1880, (U.S.); region of San Luis Potosi, *Parry & Palmer* 218, 1878, (U.S.); Valle de Cuernavaca, Morelos, *Lyonet* 643, (U.S.); Mayito, Tabasco, *J. N. Rovirosa* 681, 1889, (U.S.); Yucatan, *Gaumer* 24307, (U.S.); near San Cristobal, Chiapas, *Nelson* 3147, (G., U.S.); Yaveo, near Rio Yaveo, Oaxaca, *Ines Mezia* 9209, (F., G., N.Y.).

Minor variation 2.—(*Acaciella brevifracemosa* Britt. & Rose) (Pl. LIII, figs. 1-6). The pubescence on the young branches is of fine, curved, closely appressed hairs and is concentrated in the grooves in tomentulose lines. In some specimens the heads are short-racemose, but this character is inconstant, even on the same plant, so is of no taxonomic significance. This variant shows a tendency for the calyces to be slightly more puberulent than those of most plants of *typica* (Pl. LIII, fig. 1), but this character also is unstable. The following specimens are representative:—La Mina Verde, 30 km. W. of Cumpas, Sonora, *Wiggins* 7416, (D.); Guayanopa Canyon, Sierra Madre, Chihuahua, *M. E. Jones*, Sept. 24, 1903, (D.); Sierra Tacuichamona, Sinaloa, *Gentry* 5677, (D., N.Y.); Guadalajara, Jalisco, *Edward Palmer* 647, 1886, (U.S., type of *A. brevifracemosa*); Puerto a Tamiapa, Sinaloa, *Gentry* 5853, (D., N.Y.); Toro Muerto, Guerrero, *Hinton* 14,857, (D., G.).

1b. ACACIA ANGUSTISSIMA subsp. LEMMONII (Rose) n. comb.

Acacia Lemmonii Rose, Contr. U.S. Nat. Herb. 12: 409. 1909.

Acaciella Lemmonii Britt. & Rose, N. Am. Fl. 23: 103. 1928.

Acaciella Shrevei Britt. & Rose, N. Am. Fl. 23: 105. 1928.

Acacia hirta var. *Shrevei* Kearney & Peebles, Jour. Wash. Acad. Sci. 29: 482. 1939.

Plate LIII, figs. 8-15.

February, 1942

Shrubby, 1-2.5 m. high; leaflets 1-3.5 cm. long, pairs; leaflets oblong, or rarely faintly so, on both surfaces in young specimens conspicuously hirsute.

Type locality:

Distribution: Middle elevations and southward in central Sonora.

Representative specimens:

Sierra Madre, Sept. 18

County, Arizona, *Lemmon*

Noria, Sonora, *Wiggins*

Corona, Sonora, *Drouet*

Chihuahua and Sonora,

This subspecies

and northern Sonora it

fewer pinnae; by the presence

hirsute stems; and in young

corolla is usually fused

subspecies (Pl. LIII, fig. 1)

variable, for on the same

traces of lateral veins (Pl.

ranged lateral veins (Pl.

variable also, for the

pod is nearly glabrous. A

conspicuously hirsute

eye (Pl. LIII, figs. 8,

gradation between this

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Minor variation 1

var. *Shrevei* Kearney &

obtuse at both ends, or

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nomenclatorial recognition

Shrevei deposited in the

shows a vigorous young

puberulent on both surface

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spray on the same sheet

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respects with *Lemmonii* and

Chihuahu Mountains of Arizona

species or subspecies. The

grades completely with *Le*

Representative specimens:

County, Arizona, *Shreve*

Quiveri Mountains, Pima

D.).

accepting Vera Cruz

to Texas and south-

Texas, E. J. Palmer

; Pinal, Sierra Cha-

batopilas, Rio Mayo,

, Edward Palmer 436,

, Edward Palmer 218,

so. of Tampico, Vera

n, Vera Cruz, Purpus

chiapas, Matuda 3975,

a single subspecies

grew at elevations

it has been impos-

magnitude to warrant

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representative specimens:—

in Luis Potosi, Parry

Lyonet 643, (U.S.);

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t. & Rose) (Pl. LIII,

line, curved, closely

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is:—La Mina Verde,

Sierra Pinal, Sierra

Tacuichamona,

Edward Palmer 647,

Sierra Pinal, Sinaloa, Gentry

(D., G.).

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. Acad. Sci. 29:

Pl. LIII, figs. 8-15.

Shrubby, 1-2.5 m. high with conspicuously striate, hirsutulous stems; petioles 1-3.5 cm. long, these and the leaf-rachises hirsute; pinnae mostly 5-9 pairs; leaflets oblong-linear, 1.5-2.5 mm. wide, distinctly pinnately veined or rarely faintly so, glabrous except on the margins or rarely hirsutulous on both surfaces in youth; pods 5-7 (sometimes to 9) mm. wide, sparsely to conspicuously hirsute on both surfaces.

Type locality: Huachuca Mountains, Arizona.

Distribution: Mountains of south-central Arizona at middle elevations and southward into northern Sonora.

Representative specimens:—Huachuca Mountains, Cochise County, Arizona, Lemmon, Sept. 1882, (D., isotype); Hermitage, Rucker Valley, Cochise County, Arizona, Lemmon, Sept. 1881, (F., U.C.); arroyo 20 miles west of Noria, Sonora, Wiggins 6174, (D.); in canyon west of Rio Sonora, near Baviacora, Sonora, Drouet, Richards, & Lockhart 363, (F.); Carretas, border of Chihuahua and Sonora, Stephen C. White 2584, (G.).

This subspecies grades into typical *A. angustissima*, but in Arizona and northern Sonora it can usually be separated from that subspecies by its fewer pinnae; by the pinnately veined leaflets; by the more conspicuously hirsute stems; and in many cases, by the conspicuously hirsute pods. The corolla is usually fused for a greater distance above the base than in other subspecies (Pl. LIII, fig. 11). The pinnate venation of the leaflets is variable, for on the same plant one may find leaflets showing only slight traces of lateral veins, and older leaflets with distinctly pinnately arranged lateral veins (Pl. LIII, fig. 12). The hirsute nature of the pods is variable also, for the hairs appear to fall with age, leaving the mature pods nearly glabrous. An isotype of *A. Lemmonii* in the Dudley Herbarium has conspicuously hirsute pods, the hairs being readily visible to the unaided eye (Pl. LIII, figs. 8, 14), but other specimens show all degrees of intergradation between this and those with almost glabrous mature pods. The hirsute twigs and petioles suggest minor variation of subspecies *typica*, but *Lemmonii* differs from that variant in having a smaller number of pinnae per leaf, pinnately veined leaflets, and more conspicuously hirsute pods.

Minor variation 1:—(*Acaciella Shrevei* Britt. & Rose; *Acacia hirta* var. *Shrevei* Kearney & Peebles). A shrub about 1 m. high; leaflets oval, obtuse at both ends, or short-apiculate at the apex. The oval shape of the leaflets is of insufficient taxonomic value in this genus to warrant giving nomenclatorial recognition to this minor variation. An isotype of *Acaciella Shrevei* deposited in the herbarium of the California Academy of Sciences shows a vigorous young shoot which has leaflets that are distinctly hirsutulous on both surfaces as well as along the margins. These hairs are deciduous early in the development of the leaves, however, and a second spray on the same sheet has the typical ciliate leaflets with surfaces otherwise glabrous. Since this variant agrees so closely in all save these minor respects with *Lemmonii* and since it comes from the same region in the Huachuca Mountains of Arizona, I see no justification for retaining it as a species or subspecies. The material at hand indicates that *Shrevei* intergrades completely with *Lemmonii*.

Representative specimens:—Miller Canyon, Huachuca Mountains, Cochise County, Arizona, Shreve 5064, (C.A., isotype of *Acaciella Shrevei*); Baboquivari Mountains, Pima County, Arizona, M. E. Jones 25024, 1929, (C. A. D.).

1c. ACACIA ANGUSTISSIMA subsp. SMITHII (Britt. & Rose) n. comb.

Acaciella Smithii Britt. & Rose, N. Am. Fl. 23: 101. 1928.*Acaciella ciliata* Britt. & Rose, N. Am. Fl. 23: 101. 1928.

Plate LIII, fig. 7.

Shrub; twigs, young branches, leaf-rachises and inflorescences finely and sparsely to copiously pilose, with few to many short-stipitate or subsessile glands intermingled with the simple hairs; pinnae 10-19 pairs, leaflets numerous, narrowly oblong to broadly linear, 2-4 mm. long, 1-1.5 mm. wide, glabrous on both surfaces, the margins copiously ciliate with hairs half as long as, or equaling, the width of the leaflets; pods linear, 4-5 (or 7) mm. wide, 4-6 cm. long, acute to acuminate at the apex, rounded to cuneate at the base, long-stipitate, bearing numerous, small, subsessile glands, these becoming obscure in age.

Type locality: Monte Alban, Oaxaca.

Distribution: Oaxaca to Tamaulipas.

Representative specimens: *Tamaulipas*; Jaumave, von *Rozynski* 526, (F., N.Y.); Sierra near San Lucas, von *Rozynski* 526, (U.S.). *Oaxaca*; Las Sedas, *Conzatti* 2521, (F.); Cerro de Nuevas Puntas, Matatlan, *Conzatti* 1494, (F.); Valley of Oaxaca, *Nelson* 1218, (G., U.S.); Monte Alban, *Charles L. Smith* 349 (U.S., type of *Acaciella Smithii*); 6 miles above Domingullo, *Nelson* 1588, (G.); vicinity of La Parada, alt. 7500-8500 ft., *Nelson* 995, (U.S., type of *Acaciella ciliata*; G., isotype); Guanajuato, *Alfredo Dugés*, Sept. 1897, (G.).

The pods on the type specimen of *Acaciella Smithii* are distinctive in being only 4-5 mm. wide, but other specimens obviously belonging here have pods as much as 7 mm. wide. The number and size of the pinnae is well within the range of variation exhibited by *angustissima* and the general facies of *Smithii* is that of the widely ranging *typica*. Since one must examine minutely the pods and young growth of the Oaxacan plant in order to ascertain the glandular character of pods and twigs it seems inadvisable to separate the entity entirely from the *angustissima* complex. However, since there is a fairly good correlation between the geographic distribution and the glandular character of the plant it is retained as a subspecies of *angustissima*.

Acaciella ciliata is reduced to synonymy because an examination of the type specimen of that species revealed the characteristic glands on pods, twigs, and inflorescences, and because the young branches of *ciliata* are not glabrous, as described by Britton and Rose, but have lost most of the hairs owing to the cracking of the epidermis accompanying the formation of large, irregular lenticels and through the erosive forces to which twigs are normally subjected toward the end of the growing season. The ciliation on the leaflets of the types of the two entities is virtually the same, that of *ciliata* being only a trifle denser than that on *Smithii*.

1d. ACACIA ANGUSTISSIMA subsp. SUFFRUTESCENS (Rose) n. comb.

Acacia suffrutescens Rose, Contr. U.S. Nat. Herb. 12: 409. 1909.*Acaciella suffrutescens* Britt. & Rose, N. Am. Fl. 23: 103. 1928.*Acacia hirta* var. *suffrutescens* Kearney & Peebles, Jour. Wash. Acad. Sci. 29: 482. 1939.

Plate LIV, figs. 1-3.

February, 1942

Suffrutescent branches each year; inflorescences sparsely pilose; leaflets linear, 3.5-5 mm. long, pinnately veined, the leaflets 6-8 mm. wide, sparsely ciliate.

Type locality:

Distribution: the vicinity of Tucson to New Mexico.

Representative

Apache Trail, *Eastwood* Reservation, Pima County, U.S.; rich bottom land, *Toumey* 530a, (D.); *Thornberg*, Aug. 15, 1907.

It is often distinguished

by characteristics which make it differ from *typica*. It differs from *typica* in that it has a difference in the number of leaflets on each pinna. *Lemmonii* and *Smithii* are distinctively different from *typica* in that the leaflets on each pinna are smaller than is given by the figure.

Yet the very fact that the close relationship between *typica* and the other subspecies is evident in the pods are essentially the same shape, the slight difference being *typica* sometimes being more southern than *Smithii*.

1e. ACACIA ANGUSTISSIMA subsp. HIRTA (Nutt.) Britt.

Acacia hirta Nutt., in*Acaciella hirta* Britt.

Herbaceous or suffrutescent, dark red or brown; pinnae 10-17 pairs, 2-3 cm. long, margined; pods 7-10 mm. long, dark reddish brown, distally beak-like.

Type locality: "

Distribution: Plateau of central Arizona to Texas; localities eastward along the Colorado River toward into northern Mexico.

*Sprague, T. A. The *Acacia* of Mexico. Oxford 1940.

& Rose) n. comb.

1928.

1928.

Plate LIII, fig. 7.
 and inflorescences finely
 short-stipitate or sub-
 mnae 10-19 pairs, leaf-
 2-4 mm. long, 1-1.5 mm.
 usly ciliate with hairs
 lets; pods linear, 4-5
 at the apex, rounded to
 ous, small, sessile

von Rozynski 526, (F.,
 S.). *Oaxaca*; Las Sedas,
 a, *Conzatti 1494*, (F.);
 lban, *Charles L. Smith*
 ve Domingullo, *Nelson*
 t., *Nelson 995*, (U.S.,
 , *Alfredo Dugés*, Sept.

Smithii are distinctive
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ca. Since one must ex-
 acan plant in order to
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 e geographic distribu-
 tained as a subspecies

use an examination of
 characteristic glands on
 ung branches of *cili-*
 e, but have lost most
 accompanying the forma-
 osive forces to which
 ing season. The cili-
 ties is virtually the
 that on *Smithii*.

ose) n. comb.

409. 1909.

103. 1928.

r. Wash. Acad. Sci.

Plate LIV, figs. 1-3.

February, 1942

ACACIA ANGUSTISSIMA (MILL.) KUNTZE

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Suffrutescent, usually 1 m. high or less, dying back to the basal branches each year; twigs, petioles and rachises of leaves and inflorescences sparsely pilose; pinnae 5-9 (rarely 12) pairs, 1.5-3 cm. long; leaflets linear, 3.5-5 mm. long, 0.8-1 mm. wide, acute, 1-veined or faintly pinnately veined, the margins sparsely appressed-ciliate; pod 3-6 cm. long, 6-8 mm. wide, sparsely strigulose to nearly glabrous.

Type locality: Santa Cruz Valley, Arizona.

Distribution: Along water courses and canyons below 3500 feet, from the vicinity of Tucson, Arizona, into northern Sonora and eastward about to New Mexico.

Representative specimens:—Mazatzal Mountains, near the Mercury Mine, Apache Trail, *Eastwood 17,104, 17,496*, (C.A., G.); near Sells, Papago Indian Reservation, Pima County, Arizona, *Pebbles, Harrison & Kearney 2740*, (C.A., U.S.); rich bottom land along Rio San Pedro, Cochise County, Arizona, *J. W. Toumey 530a*, (D.); near Santa Cruz River, Tucson, Pima County, Arizona, *Thorner*, Aug. 15, 1901, (D.).

It is often difficult to put into words the nearly intangible characteristics which make up the "facies" of a particular plant.⁴ One recognizes a difference in two entities, but tries in vain to describe it. Both subspecies *Lemmonii* and *suffrutescens* are separated from typical *angustissima* by comparatively slight differences in these facies. Both of the former are distinctive, however, in that they have fewer pinnae per leaf and fewer leaflets on each pinna than does subspecies *typica*. The smaller number of leaf-parts gives one an impression of a more open, slightly coarser plant than is given by the finer, more numerous leaflets and pinnae of *typica*.

Yet the very facies which make it possible for one to distinguish between *typica* and these other two subspecies also indicate unmistakably the close relationship between them and *typica*. In all three of these entities the pods are essentially the same, the differences being the comparatively insignificant one of variation in pubescence; the leaflets have the same shape, the slightly larger size of those of *Lemmonii* and *suffrutescens* sometimes being equaled by the leaflets of otherwise typical *angustissima* from more southern localities.

1e. ACACIA ANGUSTISSIMA var. HIRTA (Nutt.) Robinson, *Rhodora* 10: 33. 1908.

Acacia hirta Nutt., in Torr. & Gray, *F. N. Am.* 1: 404. 1840.

Acaciella hirta Britt. & Rose, *N. Am. Fl.* 23: 102. 1928.

Plate LIV, figs. 4-5.
 Herbaceous or suffrutescent at the base, 1 m. high or less, with striate, dark red or brownish red, hirsute or glabrous twigs and stems; pinnae 10-17 pairs, 2-3.5 cm. long, leaflets 20-30 pairs, acute, ciliate-margined; pods 7-10 mm. wide, sparingly hirsutulous to glabrous, shining, dark reddish brown, distinctly veined.

Type locality: "Plains of the Arkansas and Red Rivers."

Distribution: Plains and middle altitudes in the mountains from east-central Arizona to Texas, Oklahoma, Arkansas and Missouri; at scattered localities eastward along the Gulf of Mexico to northern Florida; southward into northern Mexico.

⁴Sprague, T. A. *The New Systematics*, edited by Julian Huxley, p. 448. Oxford 1940.

There is comparatively little variation in this species, though some specimens from Arizona have pinnae slightly longer than those of most of the plants from Texas and Mexico. The smaller size of the individual flowers as well as the shorter pinnae help to separate this from *A. angustissima* var. *hirta*. Specimens of the glabrous form of the latter are often found labeled "*A. texensis*." The more woody, somewhat zig-zag, light gray branches of *A. cuspidata* also help to separate it from the other plants of low stature.

The identity of Schlechtendahl's plant is not yet fully established, but since the range of *A. texensis* extends to the vicinity of Mexico City, whence came the type of *A. cuspidata* Schlecht.; since his description is quite full and fits the material of *A. texensis* as well as does that of Torrey and Gray's; and since the use of his name involves no changes in the nomenclature other than an exchange in the position of the two names in the synonymy, I prefer to use the older of the two names until the question can be answered by an examination of Schlechtendahl's type—if such an opportunity ever occurs.

Representative specimens:—Santa Cruz Valley, near Tucson, Pima County, Arizona, *Pringle*, 1881, (F.); Mangus Springs, Grant County, New Mexico, *Metcalfe* 254, (N.Y., U.S.); Mogollon Mountains, New Mexico, *Rusby* 117, 1881, (F., N.Y.); Franklin Mountains, El Paso County, Texas, *Ferris & Duncan* 2409, (D., N.Y.); rocky hills near Chihuahua City, Chihuahua, *Pringle* 686, 1885, (F., N.Y., U.S.); Durango City and vicinity, Durango, *Edward Palmer* 323, 1896, (F., U.S.); Bucuachi, Sonora, *Thurber* 383, 1851, (N.Y.); vicinity of San Luis Tultitlanapa, Puebla, near Oaxaca, *Purpus* 2664, 1908, (F.).

3. ACACIA FILICIOIDES (Cav.) Trel., Rep. Ark. Geol. Surv. 1888⁴: 178. 1891.

Mimosa filicioides Cav., Ic. Pl. 1: 55. pl. 78. 1791.

Acacia filicina Willd., Sp. Pl. 4: 1072. 1806.

Mimosa ptericina Poir. in Lam. Encycl. Suppl. 1: 74. 1810.

Acaciella filicioides Britt. & Rose, N. Am. Fl. 23: 100. 1938.

Slender shrub 2-3.5 m. high, with light brown, hirsute, moderately striate branches and broad leaves with pilose petioles and rachises; stipules lanceolate-linear, 4-7 mm. long, deciduous; leaves broadly oblong in outline, 10-18 cm. long; pinnae 5-7 pairs, linear-lanceolate, 4-8.5 cm. long; leaflets 40-70 pairs, 4-6 mm. long, 1-1.5 mm. wide, spreadingly ciliate on the margins, glabrous on both surfaces, dark green above, lighter beneath, 1-veined, acute at the apex; heads globose, axillary and in short racemes; pedicels 1 mm. long; calyx 1-1.2 mm. long, petals 2-2.5 mm. long, glabrous; pods not seen.

Type locality: "Mexico."

Distribution: Known to me only from specimens grown in the Botanical Garden at Madrid.

Representative specimen:—"ex Hort. Reg. Matr., anno 1800" (F.).

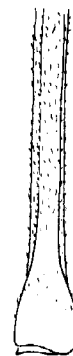
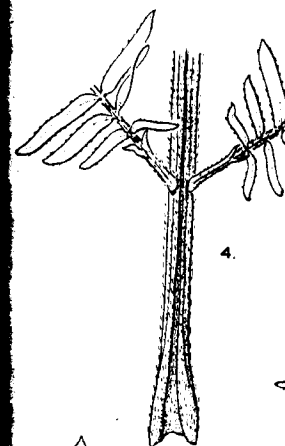
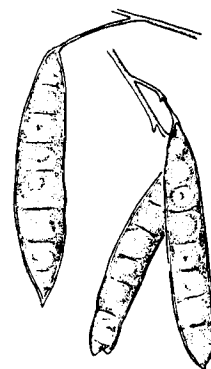
EXPLANATION OF PLATES

PLATE LII: *Acacia angustissima* subsp. *typica*; fig. 1, copy of tracing of pods from type of *Mimosa angustissima* Miller, X 0.65; fig. 2, tracing of pods from specimen collected at Vera Cruz, Purpus 1878, 1906, X 0.65; fig. 3, view of lower surface and side of floral bractlets, X 13; fig. 4, base of leaf with appressed pubescence, X 1.75; fig. 5, section of pod and seed, X 13; fig. 6, flower shortly after anthesis, X 13; fig. 7, lower surface of leaflet, X 13; fig. 8, lateral view of base of petiole, X 1.75. *A. angustissima* subsp. *typica*, minor variation 1; fig. 9, lateral view of base of petiole, X 1.75; fig. 10, base of leaf with spreading pubescence, X 1.75; fig. 11, section of pod and seed, X 6.5; fig. 12, tracing of pod, X 0.65.

PLATE LIII: *Acacia angustissima* subsp. *typica*, minor variation 2; fig. 1, flower at anthesis, X 13; fig. 2, corolla with two lobes fused nearly to apex, split open and spread out, X 13; figs. 3-5, bractlets from flowering head, X 13; fig. 6, pistil at anthesis, X 13. *A. angustissima* subsp. *Smithii*; fig. 7, peduncle showing glands intermingled with the simple hairs, X 6.5. *A. angustissima* subsp. *Lemmonii*; fig. 8, base of pod with conspicuous spreading hairs, X 3.25; fig. 9, floral bractlets, X 13; fig. 10, young pistil shortly after anthesis, X 13; fig. 11, flower, X 13; fig. 12, lower surface of leaflet, X 13; fig. 13, calyx split open, X 13; fig. 14, tracing of pod, X 0.65; fig. 15, corolla split open, X 13.

PLATE LIV: *Acacia angustissima* subsp. *suffrutescens*; fig. 1, flower just after anthesis, X 13; fig. 2, calyx split open, X 13; fig. 3, pistil at about time of anthesis, X 13. *A. angustissima* var. *hirta*; fig. 4, flower just after anthesis, X 13; fig. 5, lower surface of leaflet, X 13. *Acacia cuspidata*; fig. 6, section of pod and seed, X 6.5; fig. 7, peduncle and pedicels, X 13; figs. 8-9, floral bractlets, X 13; fig. 10, lower surface of leaflet, X 13; fig. 11, flower just after anthesis, X 13; fig. 12, pistil just after anthesis, X 13; fig. 13, calyx split open, X 13; fig. 14, corolla split open, X 13.

PLATE L



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PLATE LII ACACIA ANGUSTISSIMA SUBSPECIES TYPICA (MINOR VARIATION I, FIGS. 9-12).

1, copy of tracing
 fig. 2, tracing of
 6, X 0.65; fig. 3,
 3; fig. 4, base of
 n of pod and seed,
 7, lower surface
 X 1.75. *A. angus-*
 al view of base of
 ubescence, X 1.75;
 ng of pod, X 0.65.
 minor variation 2;
 lobes fused near-
 actlets from flow-
angustissima subsp.
 the simple hairs,
 with conspicuous
 ; fig. 10, young
 3; fig. 12, lower
 fig. 14, tracing
 s; fig. 1, flower
 3; fig. 3, pistil
 a; fig. 4, flower
 let, X 13. *Acacia*
 7, peduncle and
 10, lower surface
 ; fig. 12, pistil
 fig. 14, corolla

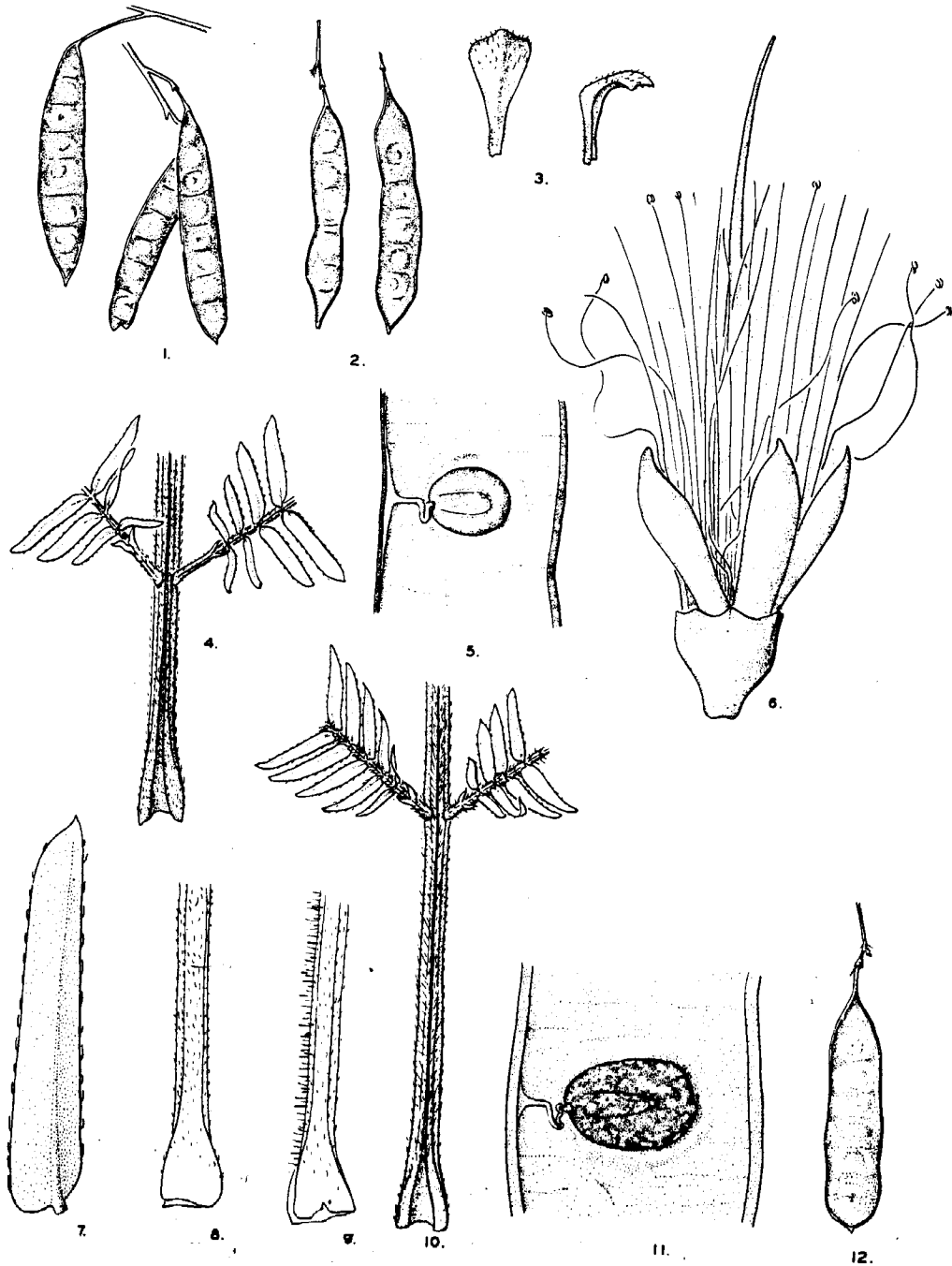
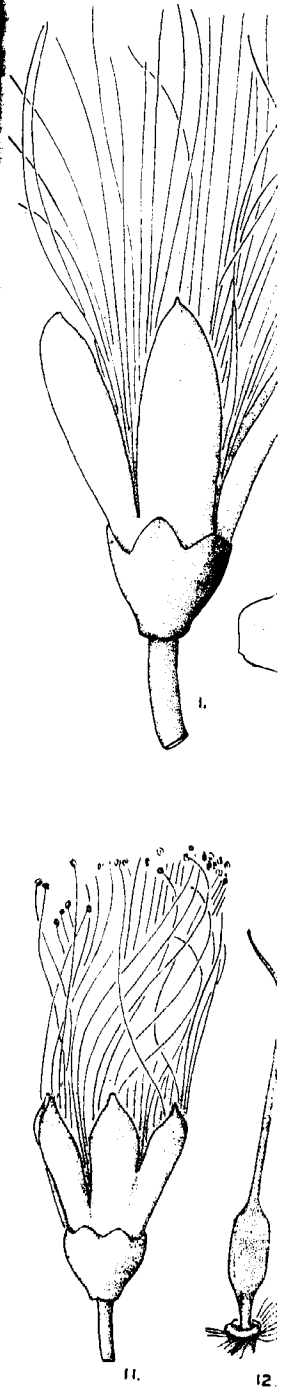
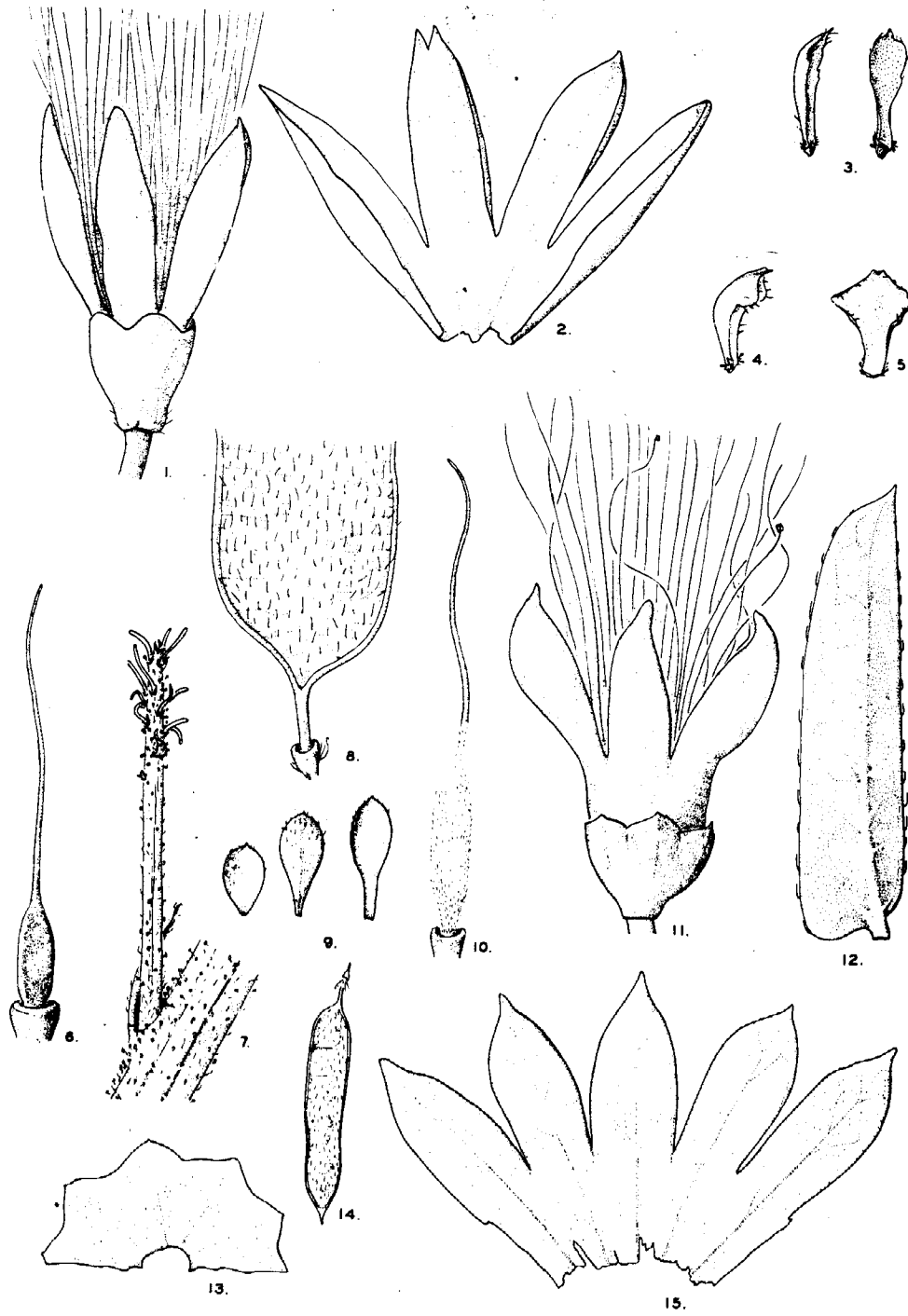


PLATE LIII ACACIA ANGUSTISSIMA SUBSPECIES TYPICA MINOR VAR. 2, (FIGS. 1-6):
SUBSPECIES SMITHII (FIG. 7): SUBSPECIES LEMMONII (FIGS. 8-15).



...OR VAR. 2, (FIGS. 1-6):

PLATE LIV ACACIA ANGUSTISSIMA SUBSPECIES SUFFRUTESCENS (FIGS. 1-3):

... 8-15):

VARIETY HIRTA (FIGS. 4-5): ACACIA CUSPIDATA (FIGS. 6-14):

