

STUDIES OF MEXICAN AND CENTRAL AMERICAN PLANTS—NO. 2.

By J. N. ROSE.

PREFATORY NOTE.

To the collections of Palmer, Pringle, and Nelson, upon which the first part of this paper was chiefly based, is to be added my own collection made in Mexico in 1897. This collection embraces 2,569 numbers (1,200 to 3,768, inclusive) and comes from fifteen States and Territories, but chiefly from Sinaloa, Territorio de Tepic, Durango, Jalisco, and Zacatecas. I was four months in making this collection (June to September), and I was especially fortunate in duplicating at the type localities many species which have only once before been collected. This was particularly true of some of Palmer's species from Guaymas and La Paz, Seemann's species from the Sierra Madre, Hartweg's species from Bolanos and vicinity, and Palmer's and Pringle's species from Guadalajara and vicinity. The collection is especially rich in Umbelliferae, among which an unusual proportion are undescribed; in Agave, of which genus it contains 75 sheets, while in the National Herbarium there are only 38 sheets from Mexico; and in Orchidaceae, with 67 sheets, Compositae, with 271 sheets, and Quercus, with 47 sheets.

Besides the herbarium specimens, a very respectable collection of roots, bulbs, seeds, etc., was sent to the Botanical Garden.

Of these the following have flowered since arriving in Washington:

Mr. Rose's plants which have flowered in Washington.

Name.	Date of flowering.	Catalogue number.
<i>Minklersia biflora</i> Hemsley.....	Mar., 1898	2896
<i>Oxalis</i> sp.....	Feb., 1898	1598
<i>Tradescantia</i> sp. nov.....	June 15, 1898	2761
<i>Portulaca stelliformis</i> DC.....	June 28, 1898	1848
<i>Zephyranthes</i> sp. nov.....	July, Aug. 15, 1898	1494
<i>Treleasea tumida</i> (Lindl.) Rose.....	July 13, 1898	
<i>Iris</i> sp. nov.....	July, 1898	2139
<i>Cuphea llavea</i> Lex.....	Aug., 1898	3767
<i>Hymenocallis</i> sp.....	Aug., 1898	3768
<i>Manfreda</i> sp.....	Aug., 1898	3765
<i>Bidens palmeri</i> Watson.....	Oct., 1898	3066

In the preparation of this paper I am especially indebted to Dr. B. L. Robinson, curator of the Gray Herbarium, for the loan of the specimens of *Nissolia*, *Waltheria*, and of miscellaneous specimens in his charge; to Mr. J. M. Greenman, of the Gray Herbarium, for various critical notes and comparison of specimens; to Mr. John Donnell Smith, of Baltimore, for the loan of his specimens of *Waltheria* and *Nissolia*; to Mr. E. G. Baker, of the British Museum, who has verified most of my identifications in the Malvaceae and has assisted in the preparation of some of the notes and technical descriptions. Besides this assistance, Mr. George E. Davenport, of Medford, Mass., has kindly determined my collection of ferns. Mr. William R. Smith, superintendent of the Botanic Garden at Washington, has courteously placed at my disposal the valuable facilities of that institution.

FERNS COLLECTED IN MEXICO BY J. N. ROSE DURING THE MONTHS OF AUGUST AND SEPTEMBER, 1897.

By GEORGE E. DAVENPORT.¹

ACROSTICHUM.

Acrostichum conforme Sw. Syn. Fil. 10, 192, t. 1, fig. 1. 1806.

Santa Teresa, Territory of Tepic, August 12 (No. 2215).

A small plant with ovate-elliptical fronds, apparently identical with *A. obtusifolium* Brack. Heller's No. 2808 in the Gray Herbarium at Cambridge, Liebmann's No. 7, and Pringle's No. 4916, referred to this species, have a more delicate, slender rootstock, and may be different.

The species is an extremely variable one, and some of the smaller forms are difficult to place without the aid of a good series of specimens.

Acrostichum pilosum H. B. K.; Willd. Sp. Pl. 5: 103. 1810.

Sierra de los Morones, near Plateado, State of Zacatecas, September 1, 1897 (No. 2728); also Santa Teresa, August 12, 1897 (No. 2210).

The latter consists of smaller plants, quite different in appearance, but apparently the same as No. 2728; the scales of the rootstock, stipes, and costæ are identical, as is the form of the lamina. The two are not safely separable.

Acrostichum spathulatum Bory, Voy. Mers d'Afrique. 1: 363, t. 20, fig. 1. 1804.

Santa Teresa, Territory of Tepic, August 12, 1897 (No. 2202).

Specimens all sterile and not as fibrillose as Pringle's No. 4964 from San Felipe, Oaxaca, 1894, or No. 2606 from near Guadalajara, 1889, but not safely placed elsewhere. The specimens closely resemble Bourgeau's No. 3072 from Orizaba, 1886, in the Gray Herbarium (Ex. Paris Mus.), labeled *A. jamesoni* Hook., but Hemsley² refers that to *A. spathulatum*, while Moore places it under *A. piloselloides* Presl, which Baker and Hemsley both give as a synonym for *spathulatum*. Fournier³ and Fée⁴, however, retain Hooker's *jamesoni*, and the former cites Bourgeau's No. 3072. The whole group which is composed of these small *Acrostichum*s seems to have been much confused or misunderstood, as is evidenced by the long list of synonyms in Moore's Index Filicum, 363, 364, under *Elaphoglossum*.

¹The bibliography of this paper has been modified so as to conform to the usage of this publication. Mr. Davenport has kindly consented, for the sake of uniformity, to the use of the name *Dryopteris*, although he himself still uses the name *Aspidium*.

²Biol. Centr. Am. 3: 689.

³Mex. Crypt. 68.

⁴Acros. t. 14, fig. 1.

ADIANTUM.

Adiantum patens Willd. Sp. Pl. 5: 439. 1810.

Foothills, Sierra Madre, near Colomas, State of Sinaloa, July 16 (No. 3250).

Specimens somewhat lax, but with the characteristic reddish, pubescent stipes and rachises.

Adiantum thalictroides Willd.; Fée, 9^e Mém. Foug. 6. 1857.

Sierra Madre, near Santa Teresa, August 12 (No. 2204.)

From the frequency with which this lovely Adiantum is turning up in collections it must be quite plentiful. It is certainly a very beautiful fern, and in some early stages of its development its very symmetrical involucres are made more attractive by a pinkish coloring of the center.

The species resembles somewhat the more branching forms of *A. capillus-veneris*, but may readily be distinguished by the character of its sori. These are remarkably uniform in size and shape, reniform, placed within the margin of a deep, roundish sinus, the extended edges of which form a semicircle, with a small eyelet hole that gives to the whole frond, when held against the light, the appearance of being perforated all around the margins. Hemsley¹ places this under *A. aethiopicum* as a synonym, but I doubt if any well-authenticated specimens of that species have ever been found in North America.

DRYOPTERIS.

Dryopteris ampla (Mett.) Gilbert, Bull. Torr. Club, 25: 599. 1898. *Aspidium amplum* Mett. Phleg. & Asp. no. 170, excl. syn.

Pedro Paulo, Tepic, August 13 (No. 3327).

I am not sure of this. The specimens consist of two sterile fronds only, but with a portion of the caudex showing an entangled mass of long, linear-lanceolate, silky scales which envelop the base of the stipe, and which, as well as the fibrillose scales on the rachises, seem to make the determination fairly certain. They also agree with some fertile fronds of this species recently collected in the valley of Cordoba (December, 1897) by C. Gonzatti and V. Gonzalez. (No. 594.)

Dryopteris contermina (Willd.) Kuntze, Rev. Gen. Pl. 2: 812. 1891. *Aspidium conterminum* Willd. Sp. Pl. 5: 249. 1810.

Small plants from Pedro Paulo, Tepic. August 12 (No. 3330).

Dryopteris martinicensis (Spreng.) Kuntze, Rev. Gen. Pl. 2: 812. 1891. *Aspidium martinicense* Spreng. Anleit. 3: 133. 1801. *Aspidium macrophyllum* Sw. Syn. Fil. 43, 239. 1806.

Near Colomas, July 20 (No. 1778). Young plants, but with the usual character of this striking and unmistakable species.

Swartz cites Sprengel's name as a synonym and Dr. Kuntze takes it up under *Dryopteris*. Beyond this I find no evidence to show that the plants are identical.

Dryopteris parasitica (L.) Kuntze, Rev. Gen. Pl. 2: 811. 1891. *Polypodium parasiticum* L. Sp. Pl. 2: 1090. 1753. *Polypodium molle* Jacq. Icon. Rar. t. 640. 1781. *Aspidium molle* Sw. Syn. Fil. 49. 1806. *Aspidium parasiticum* Sw. l. c. *Nephrodium molle* Desv. Mem. Soc. Linn. 6: 258.

Pedro Paulo, August 3 (Nos. 3325 and 3326). Specimens unusually fresh, bright green, and perfect in every way.

Linnaeus appears to have founded his species on the figure and description of Rheede,² but neither his own description, nor that of Rheede, nor the figure, makes it clear to me that *P. parasiticum* L. and *A. molle* Sw. are identical. Rheede's figure and description point to a very much larger plant in every way than our *molle*, and in view of the uncertainty surrounding Linnaeus's species I think it would be better

¹ Biol. Centr. Am. 3: 607.

² Hortus Indicus Malabaricus, 35, t. 17. 1703.

to retain the name *molle*, which has not only been established for more than a century, but which has the added merit of admirably expressing the special character of this fern.

Dryopteris patula (Sw.) Underw. Our Native Ferns, ed. 4, 117. 1893. *Aspidium patulum* Sw. Vet. Akad. Handl. 1817: 74.

Near Santa Teresa, August 12 (No. 2203); also same locality, August 10 (No. 3415), small form; and variety *chaerophylloides* (Moritz) Baker from road between Colotlan and Bolaños, Jalisco, September 7 to 9 (No. 2837).

ASPLENIUM.

Asplenium monanthemum Willd. Sp. Pl. 5: 322. 1810.

Near Santa Teresa, August 12 (No. 2209); also on the Sierra de los Morones, near Plateado, Zacatecas, September 1 (No. 2726). Specimens monosporous.

Asplenium parvulum Mart. & Gal. Mem. Acad. Brux. 15: 60, t. 15, f. 3. 1842.

Near Santa Teresa, August 12 (No. 2201). Plants small but characteristic. Fournier refers this to *A. resiliens* Kuntze, and Baker, in the Synopsis Filicum, placed it under *A. trilobum* Cav., while Hemsley¹ gives it as a synonym for *A. trichomanes* L. Its affinity, however, is more nearly to *A. ebeneum* Ait. under which Hooker placed it as a variety (var. *minor*), but it has so many distinctive characters that I think Professor Eaton was right in maintaining Martens and Galeotti's name, a position which Mr. Baker himself has more recently taken in his "Summary of New Ferns," *Annals of Botany*, vol. 6.

CHEILANTHES.

Cheilanthes aurantiaca Moore, Synopsis, 38; Index Fil. 235. *C. ochracea* Hook. Sp. Fil. 2: 114. 1858.

Near Santa Teresa, August 7 (No. 3427). Not seen in collections very often and apparently not a very common fern. Fournier places it in Fée's *Aleuritopteris* as *A. lutea*; *Pteris lutea* Cav.; *Pteris aurantiaca* Cav. Praelect. 266. 1801.

Cheilanthes lendigera Sw. Syn. Fil. 128. 1806.

Mountains west of Bolaños, September 16 (No. 3717).

CYSTOPTERIS.

Cystopteris fragilis (L.) Bernh. Schrad. Nenes Journ. Bot. 1. pt. 2: 26, t. 2, fig. 9 (or 7?). 1806. *Polypodium fragile* L. Sp. Pl. 2: 1091. 1753.

Santa Teresa, August 12 (Nos. 2206, 2207); well-developed plants of the common form.

NOTHOLAENA.

Notholaena ferruginea Desv. Journ. Bot. Appl. 1: 92. 1813.

Near Plateado, Zacatecas, September 4 (No. 2747); specimens unusually fine.

Notholaena nivea Desv. Journ. Bot. Appl. 1: 93. 1813.

Sierra Madre west of Bolaños, Jalisco, September 16 (No. 3715); specimens large and fine. Near Plateado, Zacatecas, September 4 (No. 3740); smaller plants near variety *dealbata* Davenport.

Notholaena schaffneri mexicana Davenport, Gard. and For. 4: 519. 1891.

Near Monte Escobedo, Zacatecas, August 17 (No. 2262); also Bolaños, Jalisco, September 10 to 19 (No. 2910).

The species was originally described by Fournier,² from specimens collected in the mountains of San Miguel, September, 1876, by Schaffner. In June, 1890, Mr. G. C. Nealley collected in western Texas a few specimens of a fern which Mr. Henry E.

¹ Biol. Centr. Am. 3: 610.

² Bull. Bot. Soc. de France, 27: 328.

Seaton published and described in Contributions from the United States National Herbarium as *Notholaena nealleyi*, and in February, 1891, I published in the Botanical Gazette some observations on the same in comparison with Pringle's No. 1864, from near Guadalajara, Mexico, 1888, in which I referred the latter to *N. nealleyi* as variety *mexicana*. Subsequently Dr. Underwood established the identity of Nealley's plant with Schaffner's, and the above result was published in my notes on Pringle's ferns in Garden and Forest.² I am not sure now that it is best to maintain the variety, although the characters which I pointed out in the Botanical Gazette seemingly continue to hold good, and the specimens which Dr. Rose has collected are fine examples of the form.

Notholaena sinuata Kaulf. Enum. 135. 1824.

On the road between Colotlan and Bolaños, Jalisco, September 7 to 9 (No. 2824).

PELLAEA.

Pellaea angustifolia (H. B. K.) Baker, Syn. Fil. 150. 1868. *Allosorus angustifolius* Presl, Tent. Pterid. 152. 1836. *Cheilanthes angustifolia* H. B. K. Nov. Gen. et Sp. 1: 21. 1815.

Near Santa Teresa, August 12 (No. 3416); Dolores, August 6 (No. 3366). Bits in envelope are part this, and part No. 1808 (*P. rigida*). Above Colomas, foothills of Sierra Madre, State of Sinaloa, July 19, form approaching variety *cuneata* Baker (*Cheilanthes cuneata* Link) (No. 1809, a and b). Also Santa Teresa, August 12 (No. 2211 in part, and in part specimens by me marked a, b, and c), the form *P. marginata pyramidalis* Baker.

The series shows much variation and is an unusually interesting one.

Pellaea cordata (Cav.) J. Smith, Cat. Kew Ferns, 4. 1845. *Pteris cordata* Cav. Prael. 1801: No. 662. 1801. *Allosorus cordatus* Presl, Tent. Pterid. 153. 1836.

Near Plateado, Zacatecas, September 4 (No. 2795).

The specimens show considerable variation in the shape of the pinnules, some of the younger ones being distinctly cordate, and older ones more like variety *sagittata*.

Pellaea marginata Baker, Syn. Fil. 151. 1868.

Santa Teresa, August 12 (No. 2208). Frouds somewhat deltoid in outline, and near normal forms of the species. Also between Dolores and Santa Gertrudis, Tepic, August 7 (No. 3373). Plants very tall, approaching and perhaps best called variety *pyramidalis* (*Cheilanthes pyramidalis* Fée), but not pendent as is usual in that form. The specimens are elegant and so different in appearance from usual forms as almost to suggest a new species.

Pellaea rigida (Sw.) Hook. Sp. Fil. 2: 144. 1858. *Pteris rigida* Sw. Syn. Fil. 104. 1806.

Foothills, Sierra Madre, above Colomas, Sinaloa, July 19 (No. 1808). Small plants and very pubescent. A part of this in envelope with No. 3416.

Pellaea seemanni Hook. Sp. Fil. 2: 141, t. 117 B. 1858.

Between San Blasito and Aguacata, Tepic, August 5 (No. 3346). Dr. Rose's specimens are characteristic of this very distinct species (so admirably represented by Hooker's figure) and strengthen a suspicion which I have long held, that two distinct species have been referred to this name in our herbaria.

Pellaea ternifolia (Cav.) Fée, Gen. Fil. 129. 1850-52. *Pteris ternifolia* Cav. Praelect. 1801: No. 657. 1801.

Near Plateado, September 4 (No. 2792); also near Santa Teresa, August 10 (No. 3403). Specimens all good, but the latter especially fine.

¹ Vol. 1, p. 61.

² Vol. 4, p. 519.

PHEGOPTERIS.

Phegopteris rudis Mett. Fil. Hort. Lips. 83. 1856.
Near Santa Teresa, August 12 (No. 2213).

POLYPODIUM.

Polypodium angustifolium Sw. Fl. Ind. Oce. 3: 1627. 1806.

Foothills Sierra Madre, Sinaloa, near Colomas, July 16 (No. 1691); also between Dolores and Santa Gertrudis. Tepic, August 7 (No. 2059). Sori irregularly uniserial, but lamina broad enough ($\frac{1}{4}$ to $\frac{5}{8}$ inch) for type.

Polypodium aureum L. Sp. Pl. 2: 1087. 1753.

Sierra Madre, west of Bolaños, Jalisco, September 15 to 17 (No. 2968). Small plants, scarcely, or very slightly, glaucous beneath, one young state three-lobed and fertile. Probably Fée's *Chrysopteris trilobata* mentioned¹ as a dwarf form with three lobes was founded on some such specimen. The specimens show free veinlets within the areolæ and must be considered as young plants of the species. With this is another sheet, not numbered (stamped) and without special data, but ticketed "No. 5c from Guanauato, A. Dugès." It contains a single frond about 10 inches tall with a terminal lobe and five pairs of lateral ones, glaucous beneath and without free veinlets. The specimen, therefore, is the variety *areolatum* (H. B. K.) Baker. But a variety based on such unsubstantial differences is scarcely worth maintaining.

Polypodium furfuraceum Schlecht. Linnaea, 5: 607. 1830.

Between Rosario and Colomas, July 13 (No. 1642).

This is one of the most interesting *Polypodiums* that I know of, on account of the singularly beautiful and varied scales with which the fronds are everywhere clothed. *P. skinneri* Hook. resembles it very much, but is less densely clothed with scales, and has a system of free veinlets, while those of the present species are forked.

Polypodium lanceolatum L. Sp. Pl. 2: 1082. 1753.

Near Colotlan, August 29 (No. 3609). Weather-beaten, shrunken, small fronds, but characteristic of this species. Also west of Bolaños, September 16 (No. 3716), small plants, some fronds lobing slightly.

Polypodium pectinatum L. Sp. Pl. 2: 1085. 1753. Non herb., nec auct.

Foothills Sierra Madre, near Colomas, Sinaloa, July 18 (No. 3201).

I place the specimens here on account of the villous stipe and rachises, but the plants are small and might pass for *P. elasticum* Rich., a species doubtfully distinct. Both have forked venation, with the lower pinnae reduced, the other characters being equally variable in both species, which appear to differ only in size.

Polypodium subpetiolatum Hook. in Benth. Pl. Hartw. 54. 1840.

Near Santa Teresa, August 12 (No. 2205).

Polypodium thysanolepis A. Br.; Klotzsch, Linnaea, 20: 392. 1847.

West of Bolaños, September 16 (No. 3710); Sierra Madre, Zacatecas, August 18 (No. 2399)—all very small, young plants. Also near Plateado, September 4 (No. 2797), plants more mature.

PTERIS.

Pteris aquilina lanuginosa (Bory) Hook. Sp. Fil. 2: 196. 1858. *Pteris lanuginosa* Bory; Willd. Sp. Pl. 5: 403. 1810.

Near Santa Teresa, August 12 (No. 2212).

WOODSIA.

Woodsia mexicana Fée, 7^e Mem. 66, t. 26, figs. 3-5. 1851-1857.

West of Bolaños, September 16 (No. 3719); specimens narrow and slender. Also a larger form from near Plateado, Zacatecas, September 4 (No. 2796).

¹ Baker, Syn. Fil. 317.

Fournier cites Robert Brown¹ for this species and gives it as a synonym for *W. mollis* J. Smith, as does Hemsley² also; but the very marked difference in the structure of the involucre is of itself a sufficiently good character to separate the two—*W. mexicana* and *W. mollis*—absolutely.

WOODWARDIA.

Woodwardia radicans J. E. Smith, Mem. Acad. Tor. 5: 412. 1793.

Near Santa Teresa, August 12 (No. 2214). The American forms of this species have been considered as distinct species, or at least as varietal, but there appears to be no really good reason for separating them from the European.

A PROPOSED REARRANGEMENT OF THE SUBORDER AGAVEAE.

The accepted distinctions separating Agave and its allies are not altogether satisfactory.

I am led to propose the following arrangement after a study extending over several years. Besides the National Herbarium, I have had almost daily access to the rich collections of the Washington Botanical Garden, as well as four months' study in Mexico, where I had an opportunity of seeing thousands of these plants growing under their natural conditions. In this connection I ought to state that I brought back 98 specimens for the herbarium and 40 living plants, more than half of the species represented by the latter being new to cultivation. In Mexico I had great difficulty in determining the genus to which a number of my plants of this group belonged. For instance, I found that *Polianthes* was said to have a "lax simple spike," *Prochnyanthes* a "lax raceme," and *Bravoa* an "inflorescence laxly spicate or racemose." *Prochnyanthes* was found, however, with nearly sessile flowers, while *Polianthes* has often shortly pediceled flowers or even a paniculate inflorescence. In fact, there is no difference in the inflorescence of these three genera; the roots, stems, leaves, are also all on the same plan, and the habit and habitat are similar. The only grounds for generic separation lie in the perianth, and I have sometimes felt that these were not sufficient. Indeed, any such distinction seems to break down between the first and last. The close relationship of these three genera has been observed by others. Mr. Baker arranged them one after the other, although he has not brought out clearly the real difference that exists between them, and places *Prochnyanthes* between *Polianthes* and *Bravoa*. It must be remembered, however, that most of the species have heretofore been known only from single specimens. The point at which my results seem to differ most from those of others is in the placing of the herbaceous species of Agave nearer the above than to Agave proper. It is remarkable that the herbaceous Agaves have not been united into an independent genus before.

It is true that single species, four in all, have been made the types of as many distinct genera, but the peculiar and uniform group composed of some 15 species has not been segregated. The relationships

¹ In Wall. Pl. Asiat. Rar. 1: 42.

² Biol. Cent. Am. 3: 595.

of these species, however, have not been unobserved.¹ Some Manfredas (at least one) have been described as Polianthes, and two Agaves (§ Manfreda) have been called *A. polianthoides*. Baker has also called attention to their close relationship with Polianthes and Bravoa. I find that, except in the flowers, these herbaceous Agaves have all their relationships with Polianthes and its allies, which they resemble, namely, in their herbaceous habit, their bulbous base appearing annually from thickened rootstocks, their short-lived leaves, and their inflorescence. They differ from Polianthes in having their flowers solitary instead of in twos, but in this respect they agree with one or two reputed species of Bravoa (*B. singuliflora* and *B. densiflora*). I have studied seedlings of only one species, but have no doubt that the development of all is similar. In the species studied a true bulb was formed the first year. In the case of several species which I collected in Mexico I found that the flowering stalks came from bulbs crowning short rootstocks. In the case of Agave a true caudex is developed the first year, which persists throughout the life of the plant.

Unfortunately little attention has been paid by collectors to those parts of the plant which grow beneath the surface of the ground, and as a result many erroneous statements have crept into print. For instance, in the original description of Prochnyanthes it is stated that it has a "short, thick, erect bract-covered caudex," and in another part of the same description it is said to have a "short caudex covered with broad clasping leaves," while Bravoa is said to have the "rootstock tuberous" and some species to have the "tubers oblong, with tunics slitting into fine fibers at the top," etc.

In Mexico, where I examined many specimens, I found practically the same structure in the ground parts of Bravoa, Prochnyanthes, Polianthes, and Agave § Manfreda. A description of Prochnyanthes is a description of all the others except in some minor details. In this genus I found:

(1) That the rootstock is small and covered with small bracts. (In some species of Agave this rootstock becomes of great size, and it is that which furnishes much of the *amole* of the Mexicans.)

(2) That from the rootstock descend a number of spindle-shaped fleshy roots.

(3) That the rootstock is crowned by a well-developed tuber with regularly concentric layers, and the top of the tuber crowned with a cluster of fibers, which are the remains of the old leaves.

¹ Hartweg (Trans. Hort. Soc. 3: 117, 1848) speaks of one of these plants as follows: "The soap plant, *Agave saponaria*, was found throwing up its flower stem like a tuberosity, to which, in fact, it bears much resemblance."

The following table shows the more recent treatments of this subfamily:

Various arrangements of Agaveae.

Bentham and Hooker, 1883.	Pax in Engler and Prantl, 1887.	Baker, 1888.	Proposed arrangement, 1899.
Polianthes. Bravoa.	Bravoa. Polianthes.	Polianthes. Prochnyanthes (1887).... Bravoa.	Prochnyanthes. { Polianthes. Bravoa.
Beschorneria.....	Beschorneria.....	Beschorneria. Doryanthes.	Pseudobravoa (below). { Manfreda (1866). Alibertia (1882). Leichtlinia (1893). Delphinoa (1897).
Agave.....	Agave.....	{ Agave..... Manfreda.	Agave.
Furcraea.....	Furcraea.....	Furcraea.....	Furcraea. Beschorneria.
Doryanthes.....	Doryanthes.....	Doryanthes.

In the accompanying key *Furcraea*, *Beschorneria*, and *Doryanthes* are omitted, as it is my desire here to bring out the difference between *Manfreda* and its allies.

KEY TO MANFREDA AND RELATED GENERA.

- A. *Plantlets forming the first year true bulbs; plants appearing annually from bulbs which crown more or less thickened rootstocks; dying down annually; leaves comparatively thin, neither spine-edged nor spine-pointed; inflorescence a simple lax raceme or spike; flowering annually.*
- B. *Flowers normally in pairs; perianth always curved; filaments equal, not folded in the bud; anthers included.*
- C. *Perianth not abruptly curved or dilated at the middle; stamens inserted far above the curve in the perianth tube (with some exceptions); filaments mostly very short; ovary usually free at the apex.*

Polianthes L. BRAVOA Llav. & Lex.

CC. *Perianth abruptly dilated and curved at the middle; stamens inserted below the curve in the perianth tube; filaments longer than in the last.*

Prochnyanthes Wats.

. *Hardly to be distinguished from Polianthes except in the perianth.*

BB. *Flowers (normal) always solitary; stamens folded in the bud.*

D. *Stamens included; inflorescence dense.*

Pseudobravoa (Bravoa in small part).

DD. *Stamens exerted; inflorescence open.*

Manfreda Salisb. emended (Agave § Manfreda).

a. *Perianth straight.*

Subgenus EUMANFREDA.

b. *Perianth strongly curved.*

Subgenus PSEUDOMANFREDA.

AA. Plantlets forming the first year a distinct caudex; plants persisting from year to year and having a more or less distinct stem; leaves persisting for several, often many, years, usually thick, fleshy, spiny-edged, the spines pointed; inflorescence either a dense cylindrical spike with flowers normally in twos or a large panicle with candelabra-like branches; flowering usually after a long interval of growth, sometimes but once, in other species occasionally, in one annually; perianth tube straight; stamens folded in bud.

Agave (for the most part).

The genera as here received may be noted as follows:

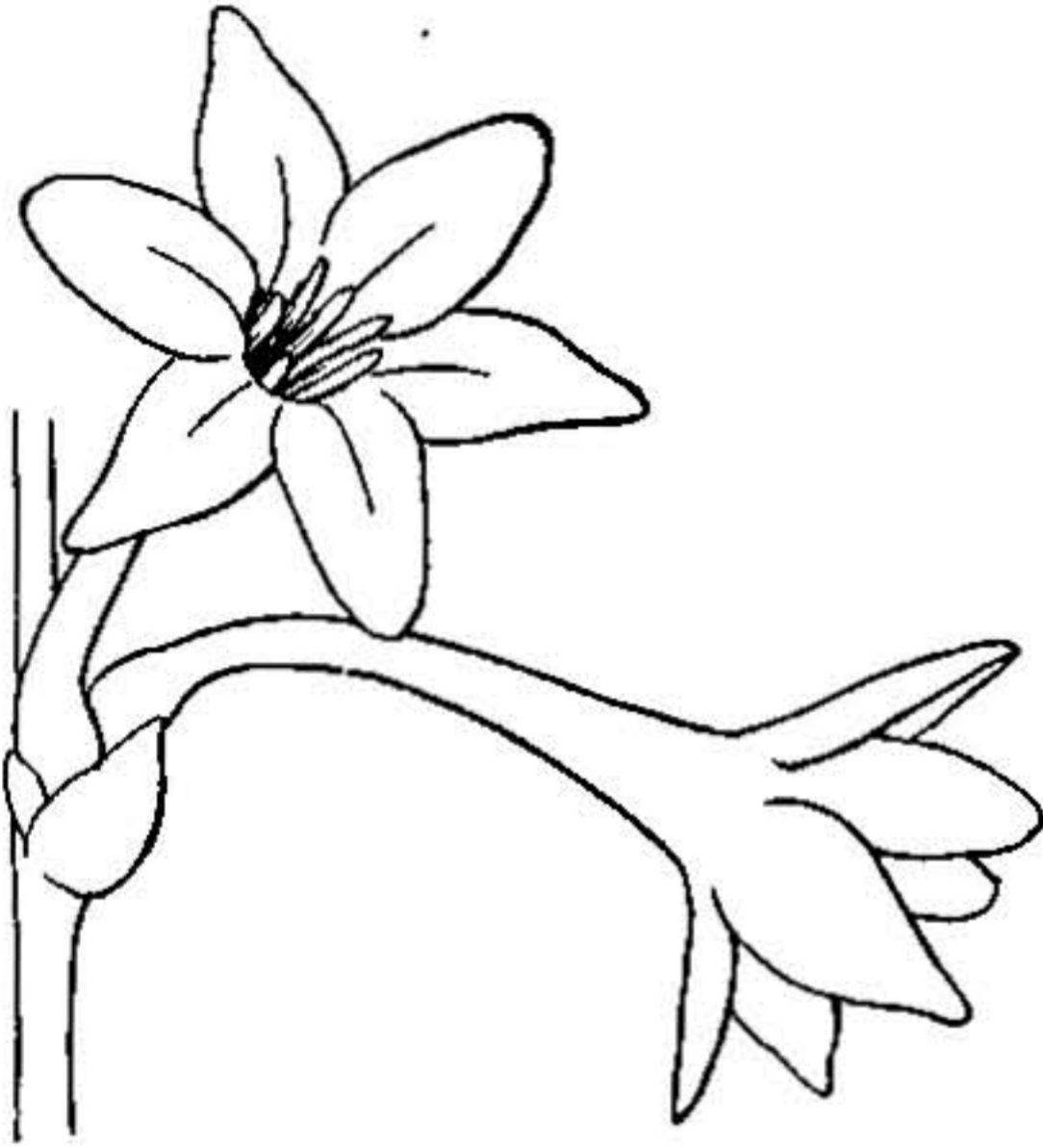


FIG. 7.—Flowers of *Polianthes tuberosa*, natural size.

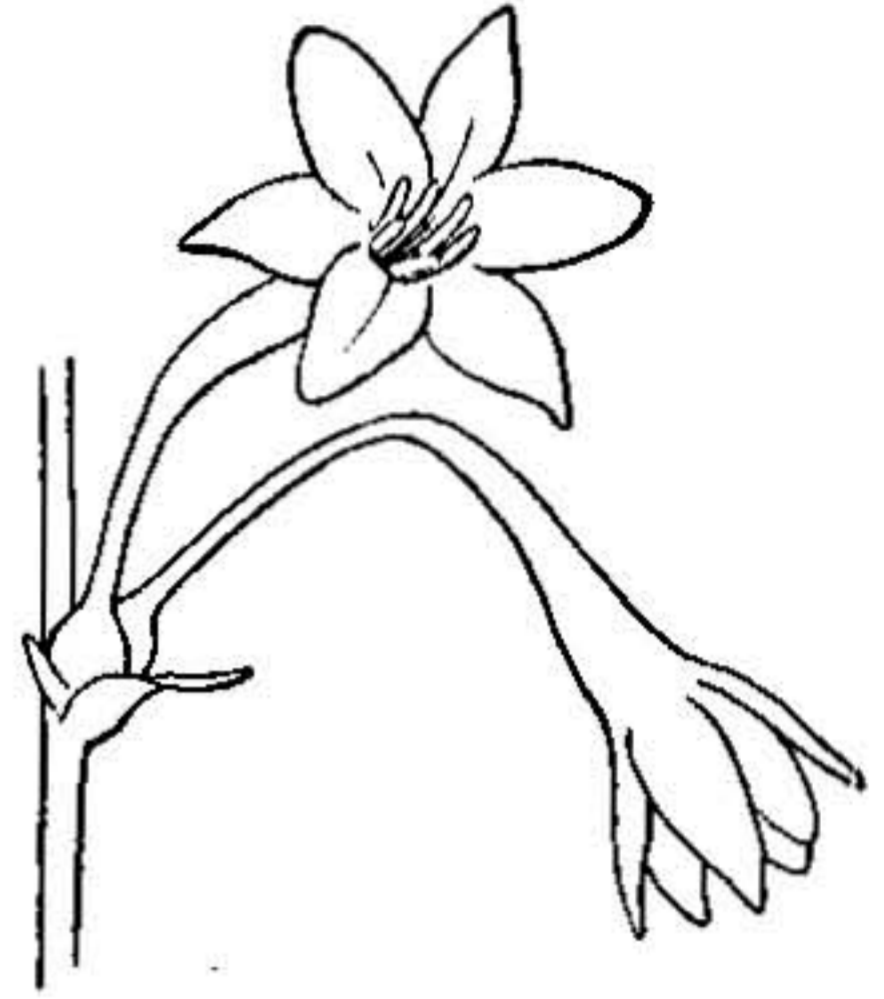


FIG. 8.—Flowers of *Polianthes* sp., natural size.

Polianthes L. Sp. Pl. 1: 316. 1753.

Type, *P. tuberosa* L.

P. tuberosa has been cultivated for four hundred years, and the real home of the species is unknown. It has been assigned both to Asia and America. Linnaeus says, in *Species Plantarum*, "Habitat in India." Its allies are mostly Mexican, although it does not seem to have had its origin in any of the wild species known to me. It has also been reported from the higher Andes of South America. To *Polianthes* I would refer

BRAVOA Llav. & Lex. (for most part) Nov. Veg. Desc. fasc. 1: 6. 1824.

FIGURE 10.

Type of the genus, *Bravoa geminiflora* Lex. in Llav. & Lex., l. c.

Bravoa geminiflora is quite unlike *P. tuberosa* in its short, red, cylindrical perianth tube, and were these species the only representatives of these genera the two might be kept distinct. Taking into consideration other species, however, I can not find any character or group of characters by

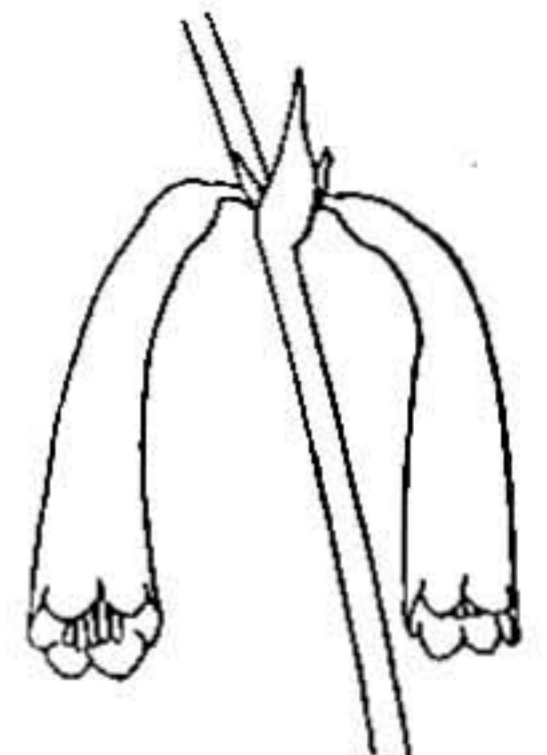


FIG. 10.—Flowers of *Bravoa geminiflora*, natural size.

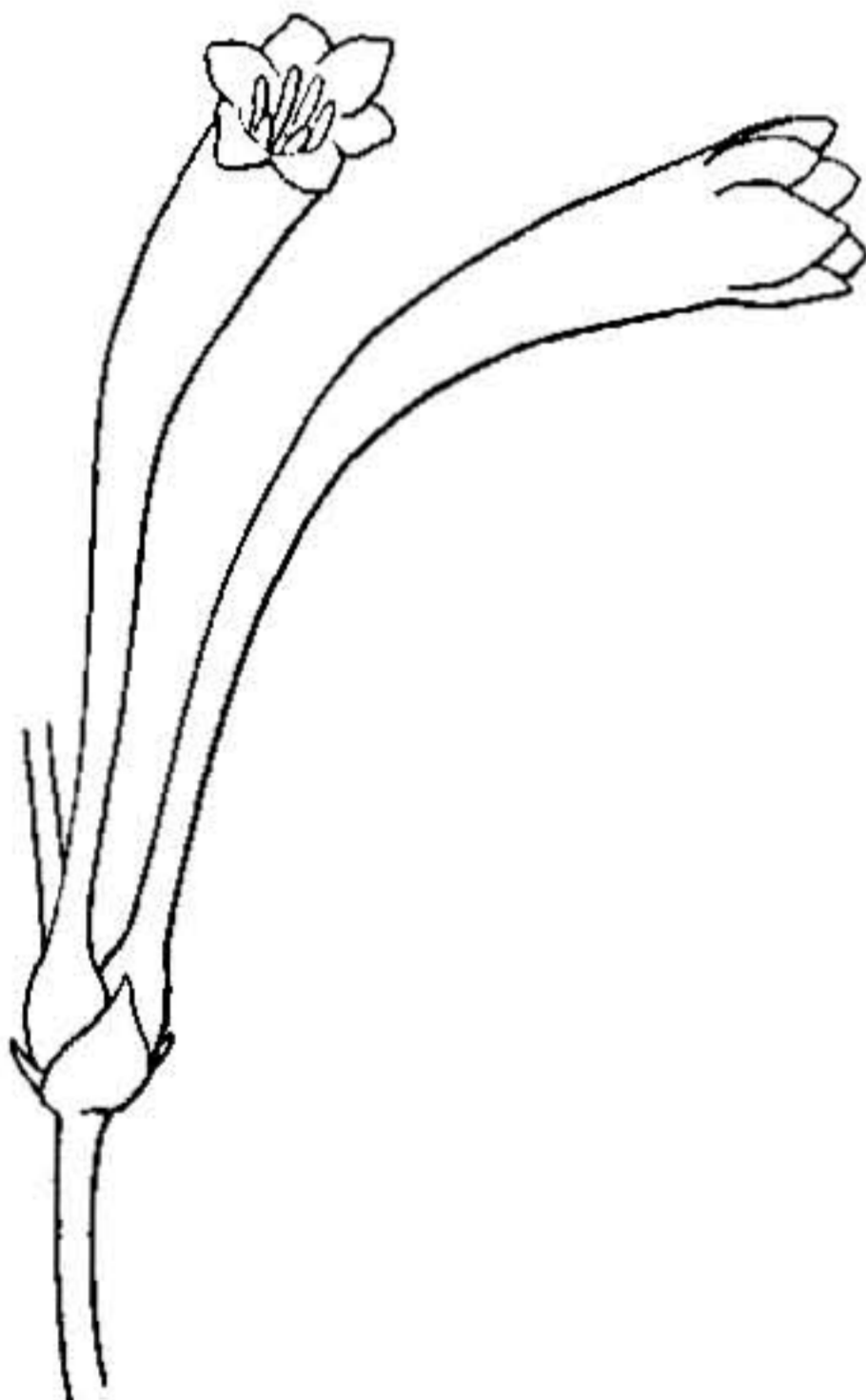


FIG. 9.—Flowers of *Polianthes* sp., natural size.

which they can be distinguished. The best character which I find to separate the several species of this group is the degree of elongation and the manner of the bend-



PSEUDOBRYONIA DENSIFLORA (Robinson & Fernald) Rose

ing of the tube, but this throws *P. tuberosa* and *B. geminiflora* into the same subgroup. As I understand the genus, it is composed of 9 or 10 species.

Prochnyanthes Wats. Proc. Am. Acad. 22: 457. 1887.

FIGURE 11.

Type of genus, *P. viridescens* Wats., l. c.

This genus was established by Dr. Sereno Watson in 1887 upon plants brought back by Dr. Edward Palmer from near Guadalajara. The species has been sup-

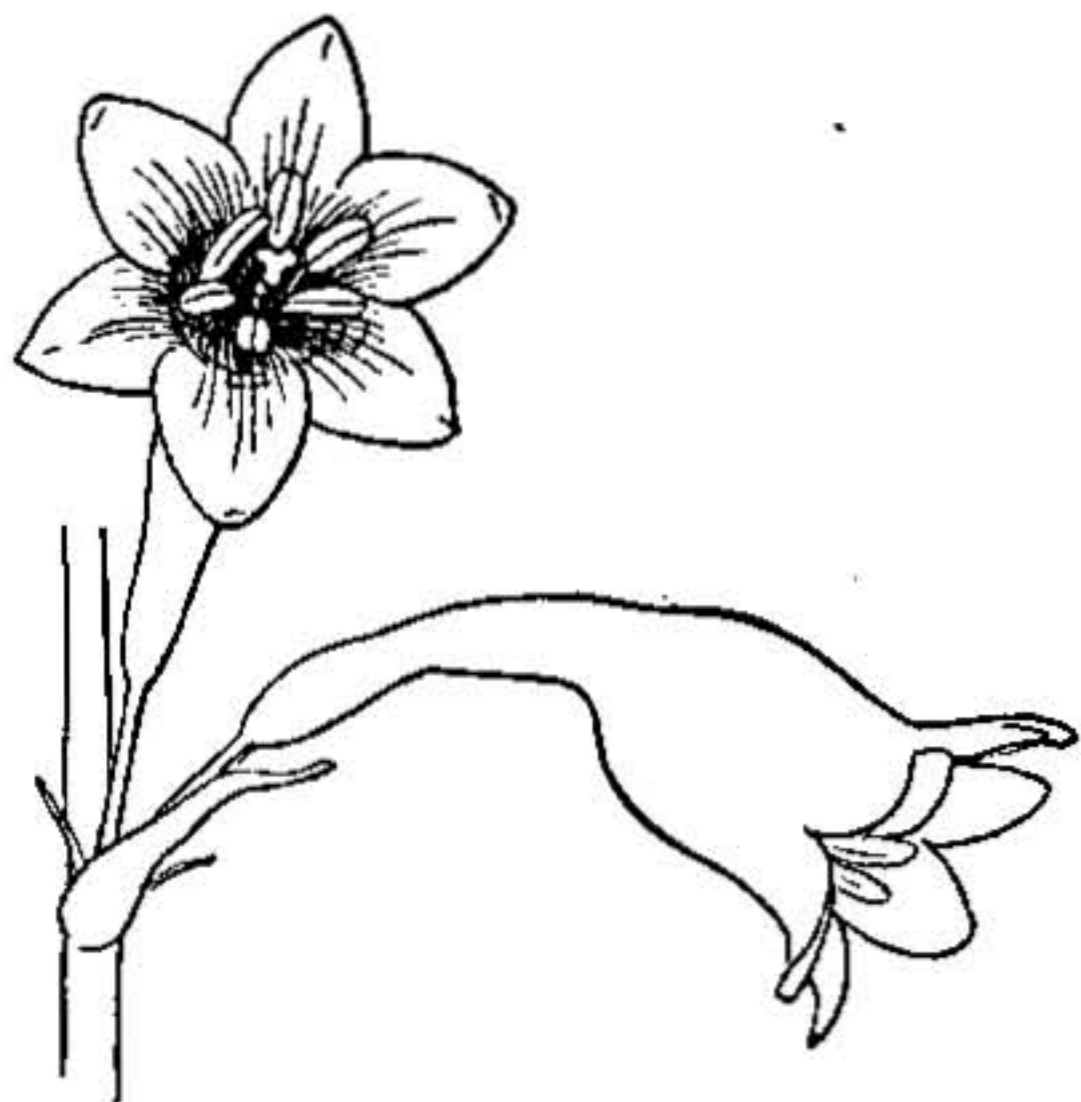


FIG. 11.—Flowers of *Prochnyanthes viridescens*, natural size.

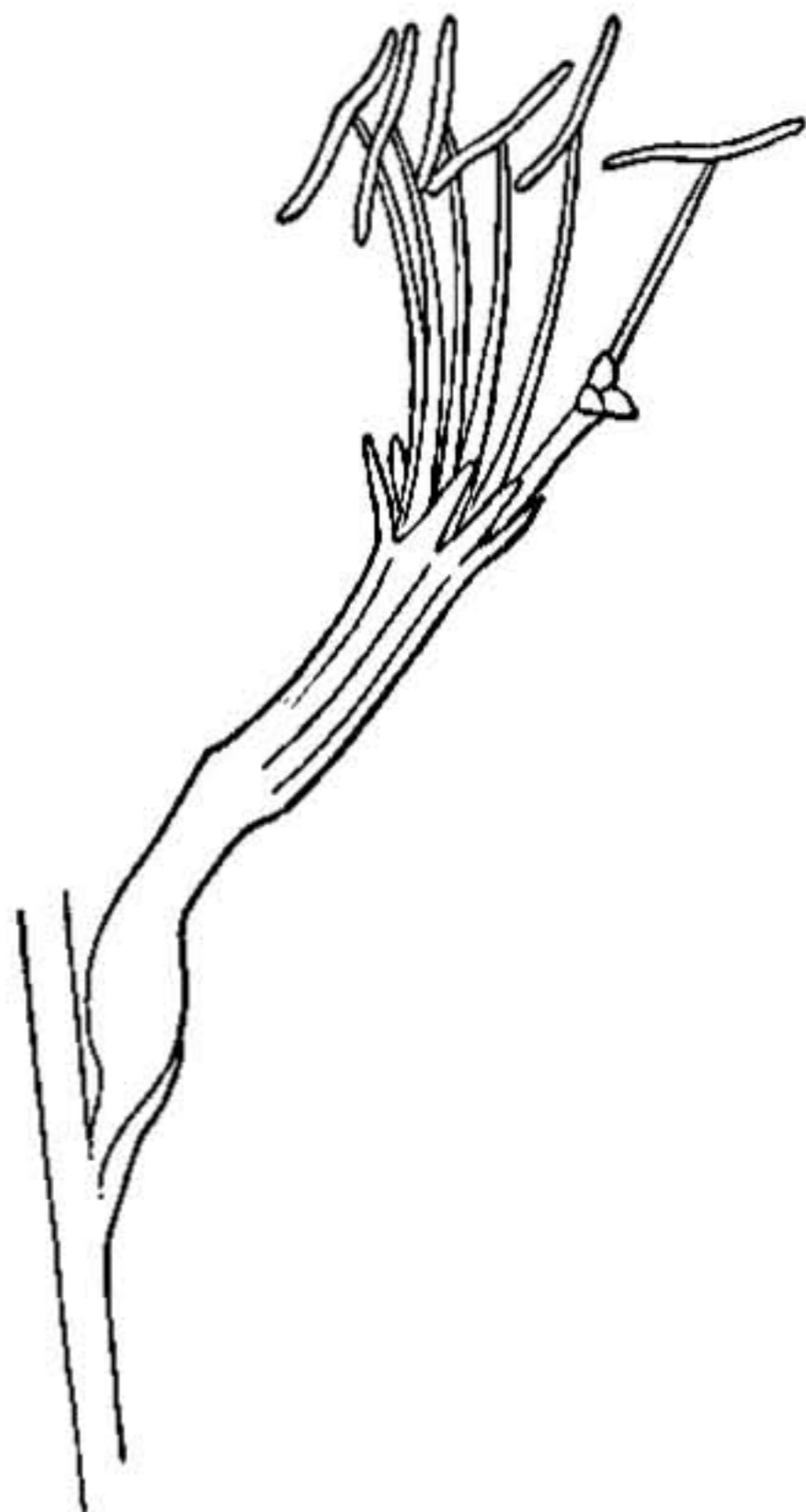


FIG. 12.—Flower of *Manfreda virginica*.

posed to be known only from this region. I found it to be very common, however, in the Sierra

Madre, and specimens were brought back from the Territorio de Tepic and the States of Durango, Zacatecas, and

Jalisco. These specimens show considerable departures from the type, but I have been compelled to consider them all as forms of a widely varying species.

Living specimens were brought home, and these are the first which have been reported in cultivation.

Pseudobravoia Rose, gen. nov.

PLATE XVIII.

Type, *Bravoia densiflora* Robinson & Fernald, Proc. Am. Acad. 30: 122. 1894.

The genus differs from *Bravoia* and *Polianthes* in its short, dense spike of flowers, which are solitary in the axils of long-attenuate bracts. The flowers are yellow, very long funnel form, at first erect, becoming somewhat curved, but never abruptly bent or abruptly dilated. Stamens inserted high up in the tube; anthers included. Low, nearly acaulescent plants with loosely coated bulbs, the rootstocks very small or wanting. The only species is *Pseudobravoia densiflora* (Robinson & Fernald).

Manfreda Salisb. Gen. Pl. Fragm. 78. 1866.

FIGURES 12 TO 14.



FIG. 13.—*Manfreda* seedling, natural size.

Type of the genus, *Manfreda virginica* (L.) Salisb. l. c. *Agave virginica* L. Sp. Pl. 1: 323. 1753.

This genus was established by Salisbury in 1866, but has never come into use. There has been, however, a quite general agreement that these species form a very unique section of *Agave*. Baker says, in speaking of *Manfreda*: "These form a very distinct group, worthy, I think, of separation

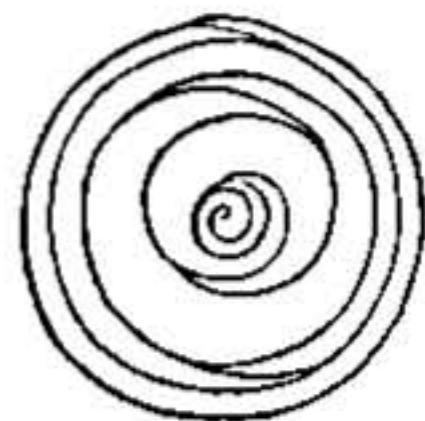


FIG. 14.—*Manfreda* bulb, cross-section—scale of 3.

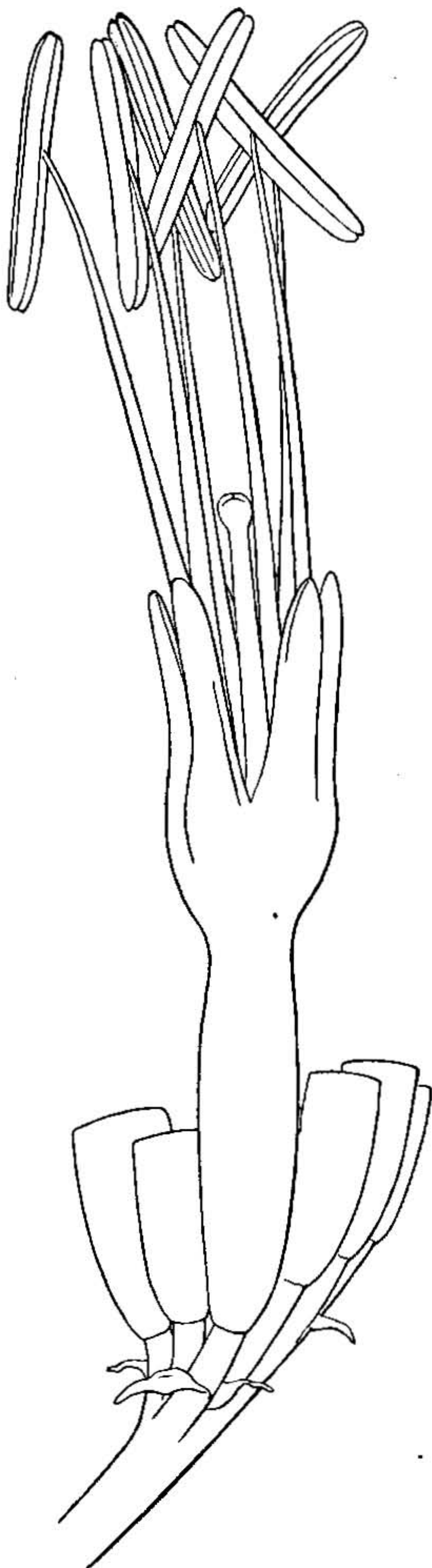


FIG. 15.—Flower of *Agave americana*, natural size.

into a subgenus, in which habit and leaf characters and short life duration run parallel with a well-marked distinctive type of inflorescence." It may be questioned whether these characters may not properly be considered generic. There are certainly no equally good grounds for keeping *Bravoa* or *Prochnyanthes* from *Polianthes*. Added to these characters are the peculiar rootstock and bulb of *Polianthes* and its allies.

Baker recognizes 12 species in *Agave* & *Manfreda*, but this number will be doubled when Mexico has been better explored.

Agave L. Sp. Pl. 1:323. 1753.

FIGURES 15, 16.

Type, *A. americana* L., l. c.

Linnaeus gave four species of *Agave* in the first edition of the *Species Plantarum*, of which two are here of interest, viz, *A. americana* and *A. virginica*. The former is to be taken as the type of the genus. Linnaeus says: "Habitat America calidior." "

Known species more than 100.

The following other genera have been taken out of *Agave*, but appear to be identical with *Manfreda*:

ALIBERTIA Marion, Rev. Hort. Bouch. Rhône, November, 1882.

Type, *A. intermedia* Marion, l. c.

This is also *Agave aliberti* Baker, Gard. Chron. N. S. 19:176. 1883.

LEICHTLINIA Ross, Delect. Sem. Panorm. 48. 1893.

Type, *Agave protuberans* Engelm. in Baker, Handbook Amaryll. 197. 1888.

We have a duplicate in the National Herbarium. This form, of course, should come out of *Agave*; but I should not separate it from *Manfreda*, for I do not consider the slight projection of the ovary into the perianth tube of sufficient importance to base a genus upon. This character is of no value in *Polianthes*.

Other species of *Manfreda* probably possess the same character. The fruit of *Agave maculosa* has a slender beak, but I am not sure whether or not it is free from the perianth.

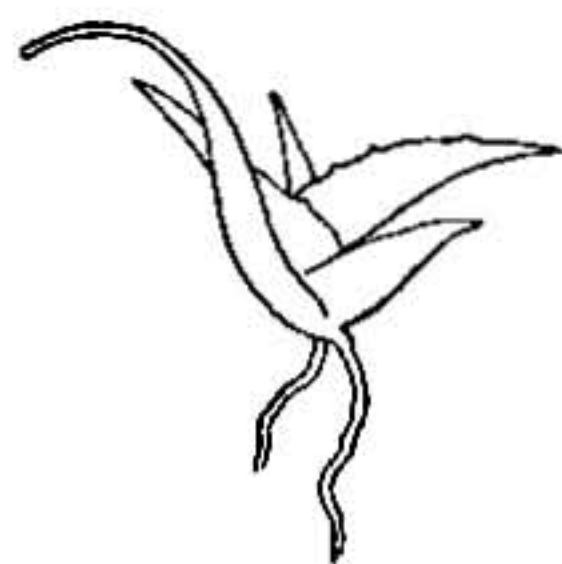


FIG. 16.—*Agave* seedling, natural size.

DELPHINOA Ross, Boll. R. Orto Bot. Palermo. 1:117. 1897.

Type, *D. gracillima* Ross, l. c.

This is also *Agave potosina* Robinson & Greenman, Proc. Am. Acad. 29:393. 1894.

The above genus was described as having the lower flowers in pairs while the upper ones are solitary.

SYNOPSIS OF THE NORTH AMERICAN SPECIES OF NISSOLIA.

The genus *Nissolia* was established by Jacquin in 1760 (Enum. Pl. Carib. 7).

In 1825 A. De Candolle (Prodr. 2:257 to 259) monographed the genus, describing seventeen species. Of these, however, only three belonged to the genus *Nissolia* proper, viz, *N. fruticosa*, *N. hirsuta*, and *N. racemosa*, the latter two being there described for the first time.

In 1859 G. Bentham (in Mart. Fl. Bras. 15, pt. 1, pp. 76, 77) reduced these three to Jacquin's original *N. fruticosa*, and in addition described the species *N. platycarpa*.

Previously to Bentham, Dr. Gray (in 1852) and Dr. Torrey (in 1859) had each described a species under *Chaetocalyx*.

In 1861 (Journ. Linn. Soc. 5:25, 26) Dr. Gray transferred these two species to *Nissolia*, recognizing four in all, viz, *N. fruticosa*, *N. platycarpa*, *N. wislizeni*, and *N. schottii*.

In the *Biologia Centrali-Americana* Mr. Hemsley lists five species, one being without specific name, and the specific name *hirsuta* being twice used on different authority. On the same page *N. schottii* and *N. wislizeni* are retained in *Chaetocalyx*.

Later, Watson described two additional species from Mexico, viz, *N. platycalyx* and *N. confertiflora*. All the above species except *N. racemosa* have been reported from Mexico. *N. hirsuta*, which was suppressed by both Bentham and Gray, appears to be distinct from *N. fruticosa*, to which they referred it. The type came from Guanajuato, Mexico, and I have recently had specimens from the type locality. *N. confertiflora*, it seems, should be referred to this species. *N. setosa* Brandegee¹ and *N. confertiflora laxior* Robinson are other names which have recently been published. The species are difficult to recognize, but the following key seems to separate them fairly well:

EXPLANATION OF FIGURES.

In all the following figures (Nos. 17 to 27) the same letter applies to the same part. Thus, fig. *a* is always the legume; fig. *b*, the flower; fig. *c*, the banner; fig. *d*, the wing; fig. *e*, the keel; fig. *f*, the stamens; fig. *g*, the ovary. The fruit is natural size; the flowers and flower parts are enlarged twice. Fig. 17, *N. wislizeni*, is made from a specimen collected by C. G. Pringle near Chihuahua in 1885 (No. 618). Fig. 18, *N. schottii*, is made from a specimen collected by C. G. Pringle near Altar, Sonora, in August, 1894. Fig. 19, *N. platycalyx*, is made from a duplicate type. Fig. 20, *N. pringlei*, is made from the type specimen. Fig. 21, *N. diversifolia*, is made from the type specimen. Fig. 22, *N. hirsuta*, is made from specimens collected by Mr. C. G. Pringle near Cuernavaca in 1886 (No. 6395). Fig. 23, *N. dodgei*, is made from speci-

¹Proc. Cal. Acad. ser. 2, 3:127. 1891.

mens collected by Mr. Dodge near Monterey in 1891 (No. 131). Fig. 24, *N. multiflora*, is made from the type specimen. Fig. 25, *N. laxior*, is made from duplicate type. Fig. 26, *N. nelsoni*, is made from specimens collected by Mr. C. G. Pringle in the valley of Oaxaca in 1894 (No. 4640). Fig. 27, *N. fruticosa*, is taken from Hooker's *Icones*, vol. 6, No. 599.

KEY TO NISSOLIA.

a. *Stems prostrate, creeping.*

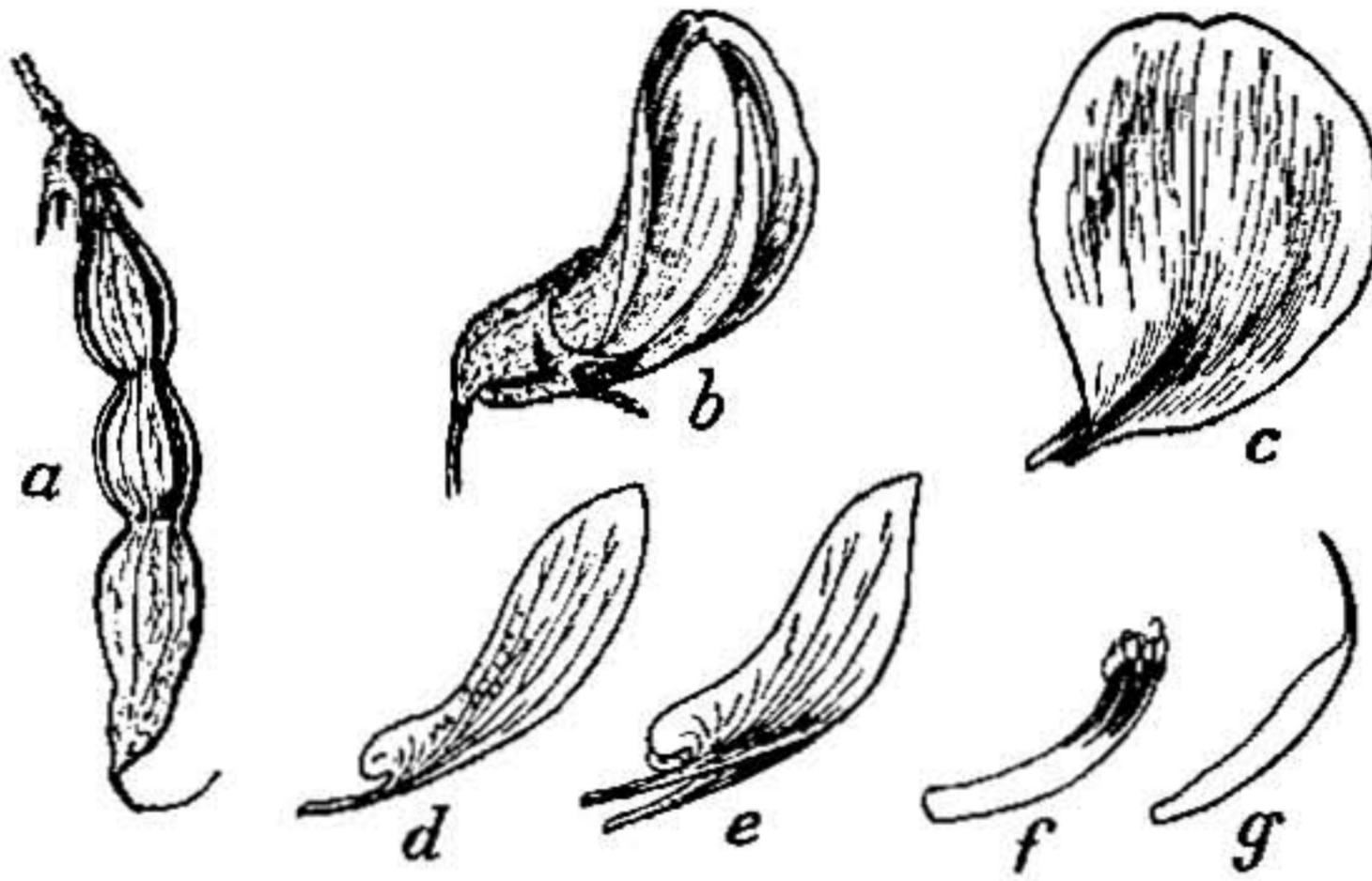
Nissolia wislizeni Gray, Journ. Linn. Soc. 5: 25. 1861. *Chaetocalyx wislizeni* Gray, Pl. Wright. 1: 51. 1852. FIGURE 17.

This species has a wide distribution, extending from Arizona and New Mexico to Central Mexico. I collected it in the States of Durango and Zacatecas in 1897, from which, so far as I can learn, this is the first time it has been reported.

Specimens examined—

United States:

Arizona, Huachuca Mountains, September, 1882, *J. G. Lemmon* (No. 2668).
New Mexico, ———, *C. Wright*, 1851 (No. 1007).

FIG. 17.—*Nissolia wislizeni*.

Mexico:

State of Chihuahua, hills and plains near Chihuahua, *C. G. Pringle*, June to August, 1885 (No. 618).

State of San Luis Potosi, chiefly in the region of San Luis Potosi, 22° north latitude, altitude 6,000 to 8,000 feet, *C. C. Parry* and *Edward Palmer*, 1878 (No. 133).

State of Durango, *J. N. Rose*, August 14 and 15, 1897 (Nos. 2278 to 2298).

State of Zacatecas, near Monte Escobedo, *J. N. Rose*, August 27, 1897 (No. 2651).

aa. *Stems climbing or twining.*

b. *Flowers all in small verticillate clusters.*

c. *Style terminal; legume with the apex of wing acute or acutish.*

d. *Calyx glabrous without, sometimes setose.*

Nissolia schottii (Torr.) Gray, Journ. Linn. Soc. 5: 26. 1861. *Chaetocalyx schottii* Torr. Bot. Mex. Bound. 56, t. 18. 1859. FIGURE 18.

The type was collected by Schott at "Sierra Verde, Arroyo de los Samotas, Sonora."

This species seems to be confined to northwestern Mexico, extending into southern Arizona. Specimens so named from farther east are to be referred elsewhere. I

have not been able to separate *Nissolia setosa* Brandegee,¹ the presence or absence of yellow setae on the calyx being very variable.

Specimens examined—

United States:

Arizona, Santa Catalina Mountains, *C. G. Pringle*, August 3, 1881.

Mexico:

State of Sonora, by streams near Altar, *C. G. Pringle*, August 26, 1881; Guaymas, *Dr. Edward Palmer*, 1887 (No. 170); Alamos, *Dr. Edward Palmer*, September 16 to 30, 1890 (No. 638).

Lower California, San Pedro, *T. S. Brandegee*, October 30, 1890 (No. 140).

State of Chihuahua, southwestern part, *Dr. Edward Palmer*, August to November, 1885 (Nos. 57 and 113).

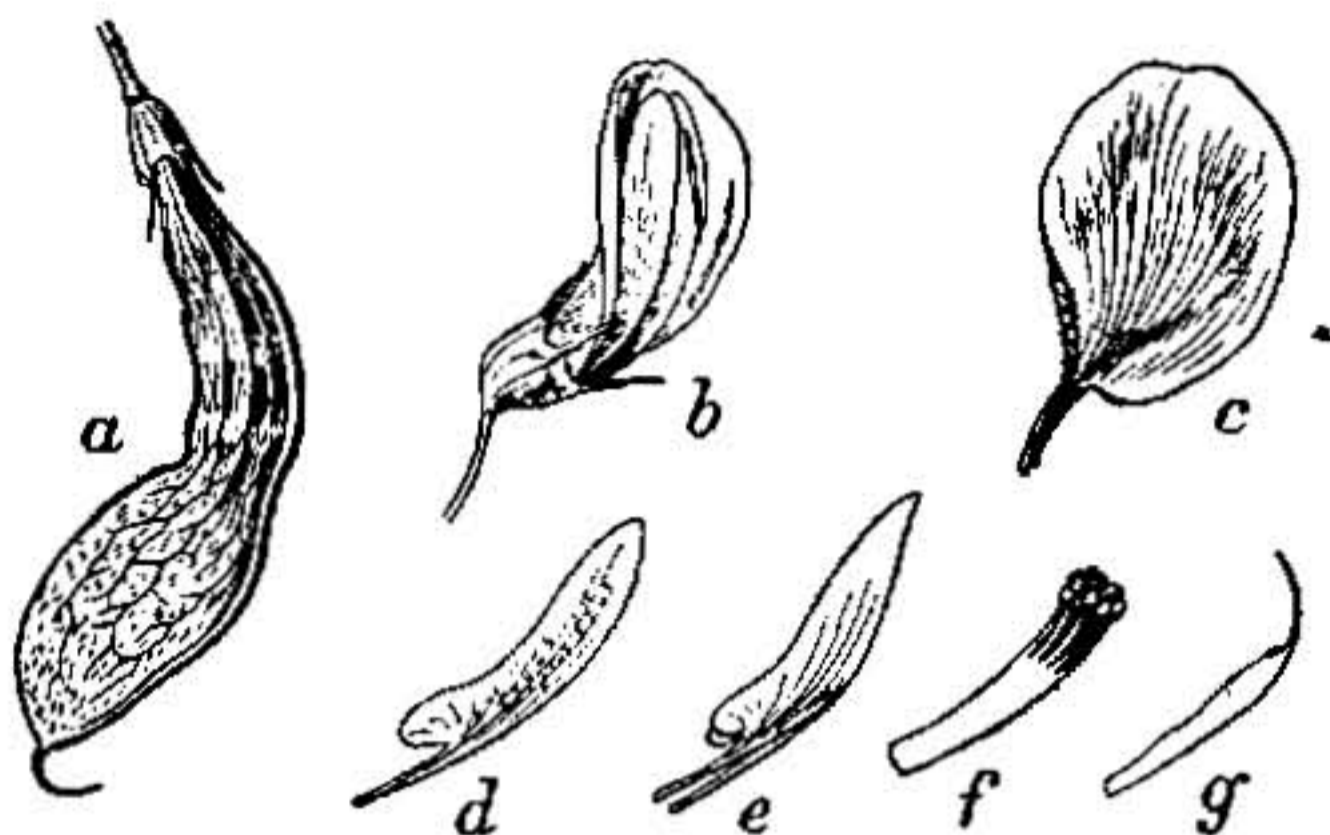


FIG. 18.—*Nissolia schottii*.

dd. Calyx softly pubescent without.

e. Calyx broadly campanulate; banner cuneate at base.

***Nissolia platycalyx* Wats. Proc. Am. Acad. 17:344. 1882.**

FIGURE 19.

This species is known only from *Dr. Edward Palmer's* type specimens collected in the mountains east of Saltillo, 1880 (No. 248 in part). With this species was collected a second one, which was distributed under the same number. This will be found referred to below under the name of *N. dodgei*. We have a duplicate type (Type No. 293) in the National Herbarium.

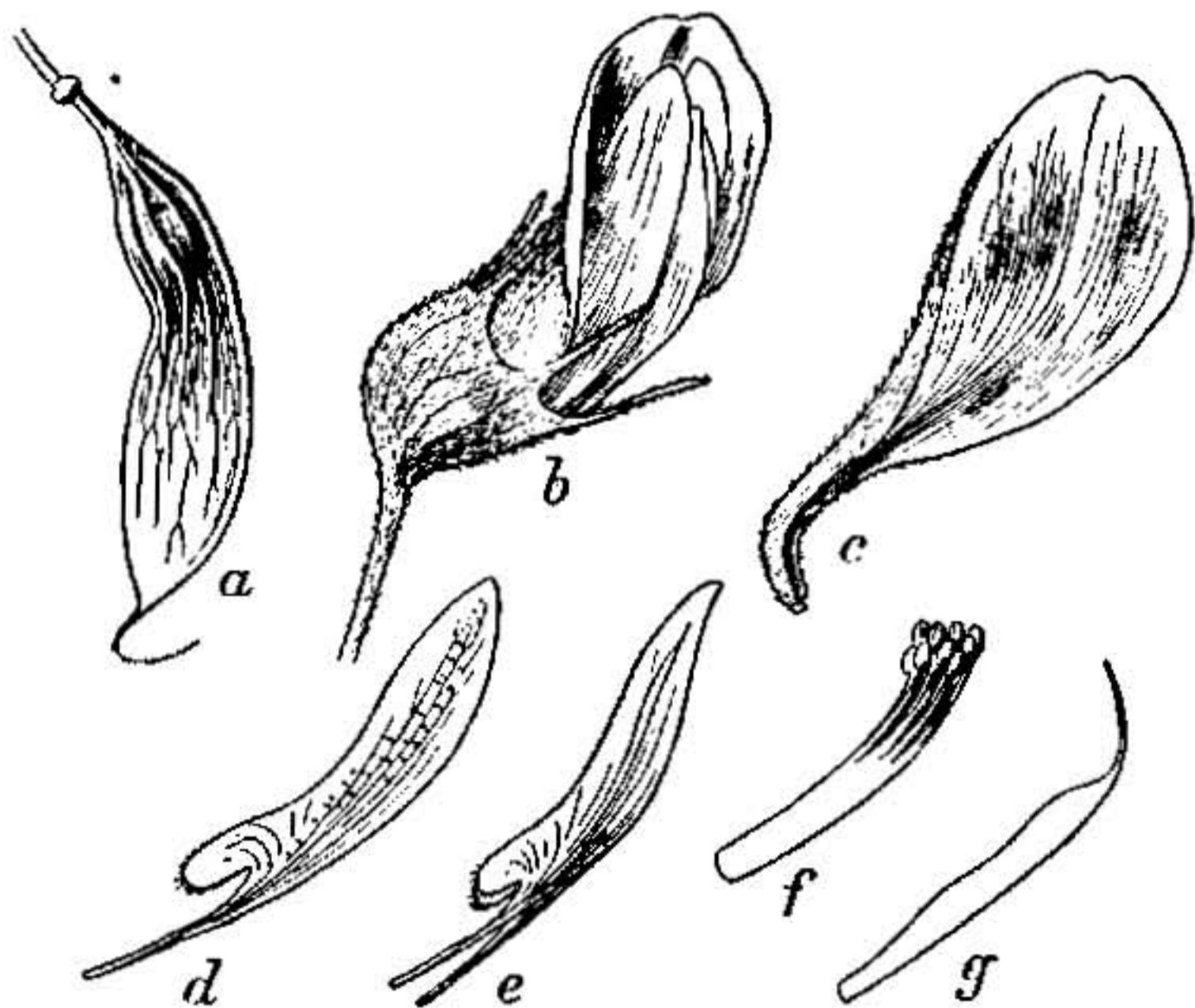


FIG. 19.—*Nissolia platycalyx*.

ee. Calyx narrower, tubular; banner rounded at base.

f. Leaves dull green, lanceolate often acutish.

***Nissolia pringlei* Rose, sp. nov. FIGURE 20.**

Probably a climbing vine; leaflets 5, lanceolate to oblong, rounded at base, acute or obtuse at apex, long-apiculate, nearly or quite glabrous, pale green, rather thin in texture, 25 mm. or less long; calyx tubular, pubes-

¹ Proc. Cal. Acad. ser. 2, 3: 127. 1891.

cent without, the tube a little over 2 mm. long, truncate between the filiform teeth; teeth shorter than the calyx tube; petals pubescent without; legume 2 or 3-jointed, pubescent, the upper or winged portion acute.

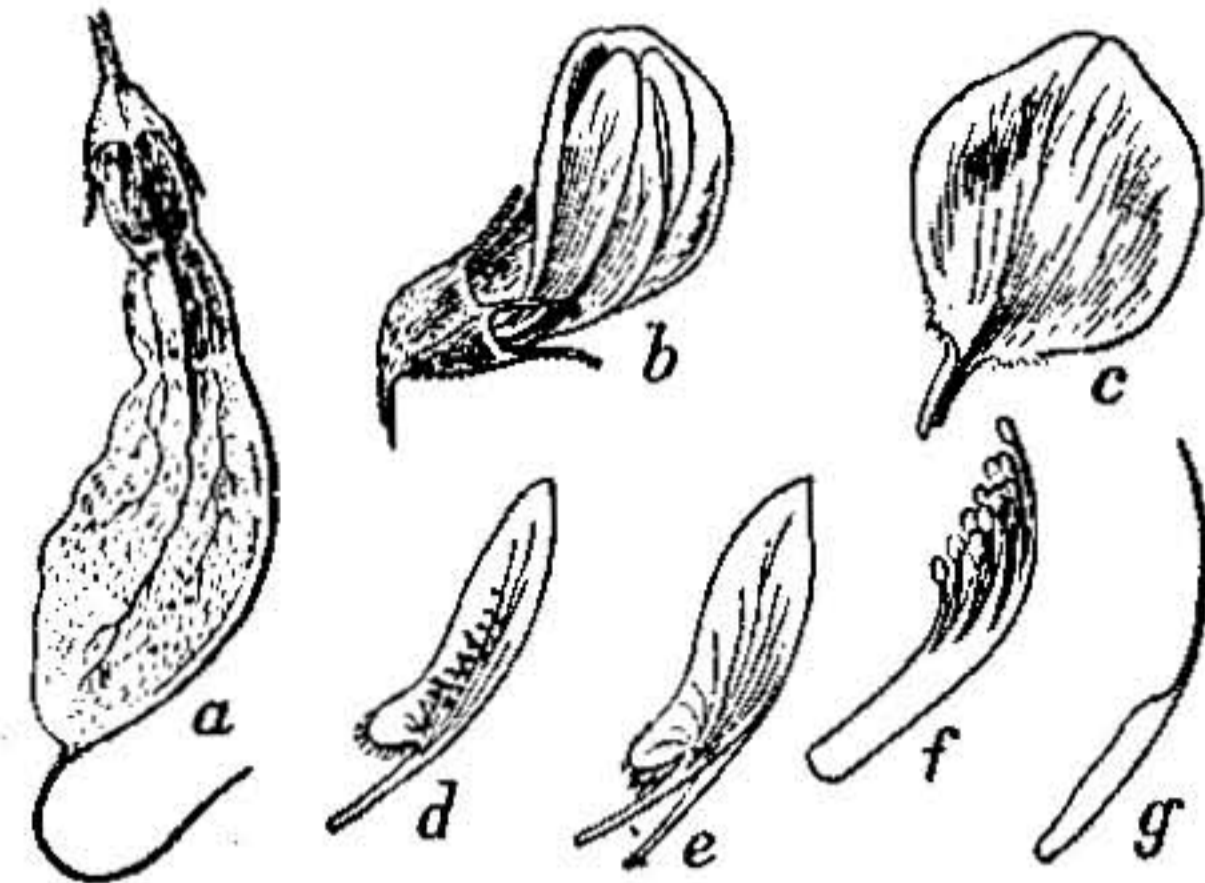


FIG. 20.—*Nissolia pringlei*.

Collected by Mr. C. G. Pringle in the Santa Eulalia Mountains, State of Chihuahua, September 15, 1885 (No. 324). This specimen was distributed as *N. schottii*, from which species it differs in its pubescent calyx, short calyx teeth, different foliage, etc.

The type is in the National Herbarium.

ff. *Leaves bright green, mostly orbicular, rounded or retuse at apex, thickened.*

***Nissolia diversifolia* Rose, sp. nov.**

FIGURE 21.

A twining shrub; leaflets 5, very variable in outline, usually shortly oblong, rounded or cordate, rarely cuneate, at base, rounded or retuse at apex, always apiculate, glabrous and shining above, nearly glabrous beneath, somewhat thickish in texture, 12 to 18 mm. long; calyx pubescent without, rarely setose, tubular, becoming somewhat campanulate in age, a little over 2 mm. long, truncate between the short (less than 2 mm. long) filiform teeth; corolla yellow tinged with red, the outer lobes pubescent; banner 8 mm. long, including the claw (2 mm. long), not auriculate at base, strongly retuse at apex; legume 2 mm. or more long, 2 or 3-jointed, the upper and winged portion acute.

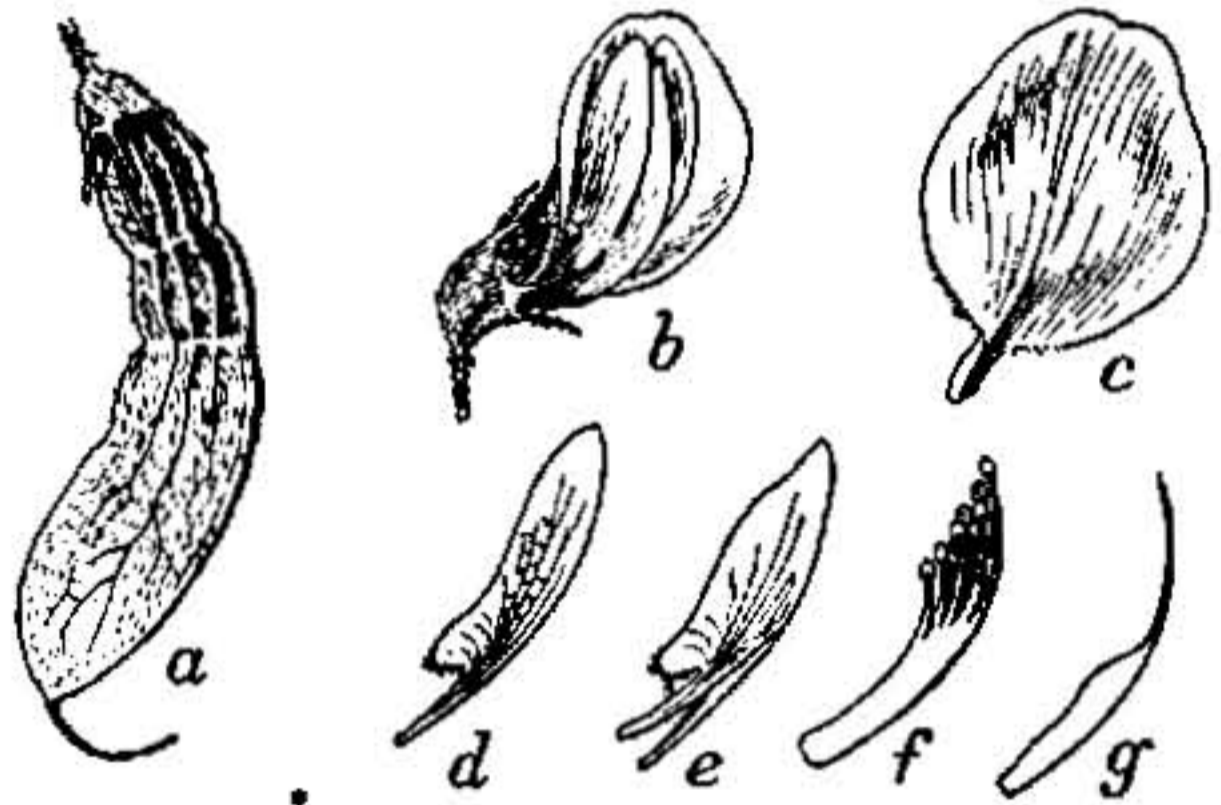


FIG. 21.—*Nissolia diversifolia*.

Collected by Mr. C. G. Pringle about Tehuacan, State of Puebla, August and September, 1897 (No. 6693), and distributed under an untenable specific name.

cc. *Style somewhat dorsal; legume with the wing obtuse or rounded at apex.*

g. *Flowers very small (calyx 1 mm. long; corolla 7 mm. long).*

***Nissolia hirsuta* DC. Prodr. 2:257. 1825. *Nissolia confertiflora* Wats. Proc. Am. Acad. 21:424. 1886.**

FIGURE 22.

Specimens examined—

Mexico:

State of Jalisco, near Colotlan, *J. N. Rose*, September 6, 1897 (No. 2813); Bolaños, *J. N. Rose*, September 9, 1897 (No. 2852); barranca, near Guadalajara, *C. G. Pringle*, July 25, 1893 (No. 5421); barranca of Tequila, *C. G. Pringle*, October, 1893 (No. 5421b); Tequila, *Dr. Edward Palmer*, August, September, 1886 (No. 338).

State of Zacatecas, San Juan Capistrano, *J. N. Rose*, August 20, 1897 (No. 3541).

State of Durango, *J. N. Rose*, August 15, 1897 (No. 2301).

State of Morelos, near Cuernavaca, altitude 5,000 feet, *C. G. Pringle*, July 24, September 15, 1896 (No. 6395).

State of Sinaloa, Culiacan, *Dr. Edward Palmer*, August 27 to September 15, 1891 (No. 1496).

State of Oaxaca, Tomellin Cañon, altitude 3,500 feet, C. G. Pringle, July 17, 1897 (No. 7467).

State of Guanajuato, Prof. A. Dugès, 1891.

State of Chihuahua, San Jose, southwestern part of State, Dr. Edward Palmer, August to November, 1885 (No. 42).

gg. Flowers larger (calyx 2 mm. or more long; corolla much larger than in the last).

h. Calyx and pod setose; pod also very pubescent.

Nissolia dodgei Rose, sp. nov.

FIGURE 23.

Stems climbing, finely canescent; leaflets elliptical, oblong, or nearly orbicular, somewhat apiculate, pubescent on both surfaces, 1 to 2 cm. long; flowers numerous on slender pedicels, yellowish, 5 to 10 mm. long; calyx sparsely setose, its teeth filiform, more than half the length of the tube; legume

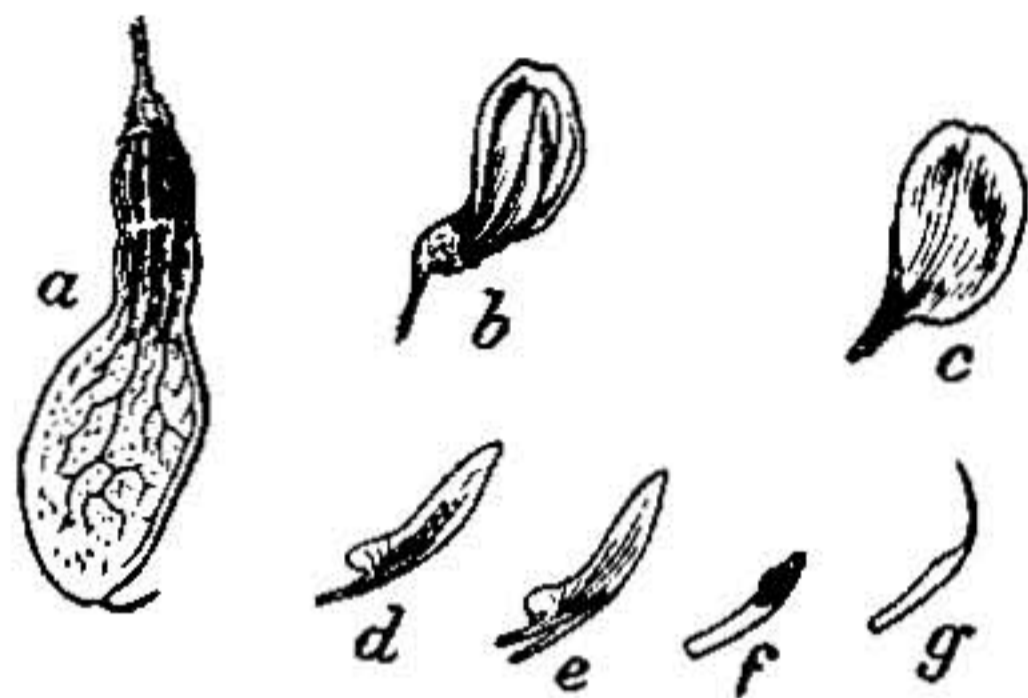


FIG. 22.—*Nissolia hirsuta*.

somewhat falcate, 2 cm. long, strongly pubescent, 2 or 3 seeded, the basal portion bearing scattered yellow setae, the broad expanded wing obtuse at apex.

Specimens examined—

Mexico:

State of Coahuila, mountains east of Saltillo, Dr. Edward Palmer, 1880 (No. 248, in part); near Monterey, Charles K. Dodge, May, 1891 (No. 131).

hh. Calyx and pods not setose.

i. Leaflets small; sepals mostly shorter than the tube.

Nissolia multiflora Rose, sp. nov.

FIGURE 24.

Stems climbing, pubescent, leaflets 5, orbicular or shortly oblong, rounded or slightly cordate at base, rounded at apex and with a slender apiculation, 10 to 18 mm. long, somewhat pubescent; flowers numerous in the axils of the leaves, yellow or purplish; calyx nearly glabrous, 3 mm. long, not setose, truncate between the lobes; calyx teeth filiform nearly equal to the length of the calyx tube; outer petals pubescent and ciliate on the margins, rose-colored; ovary pubescent, 2 or 3 ovuled; legume 2.5 mm. long including the broad obtuse wing.

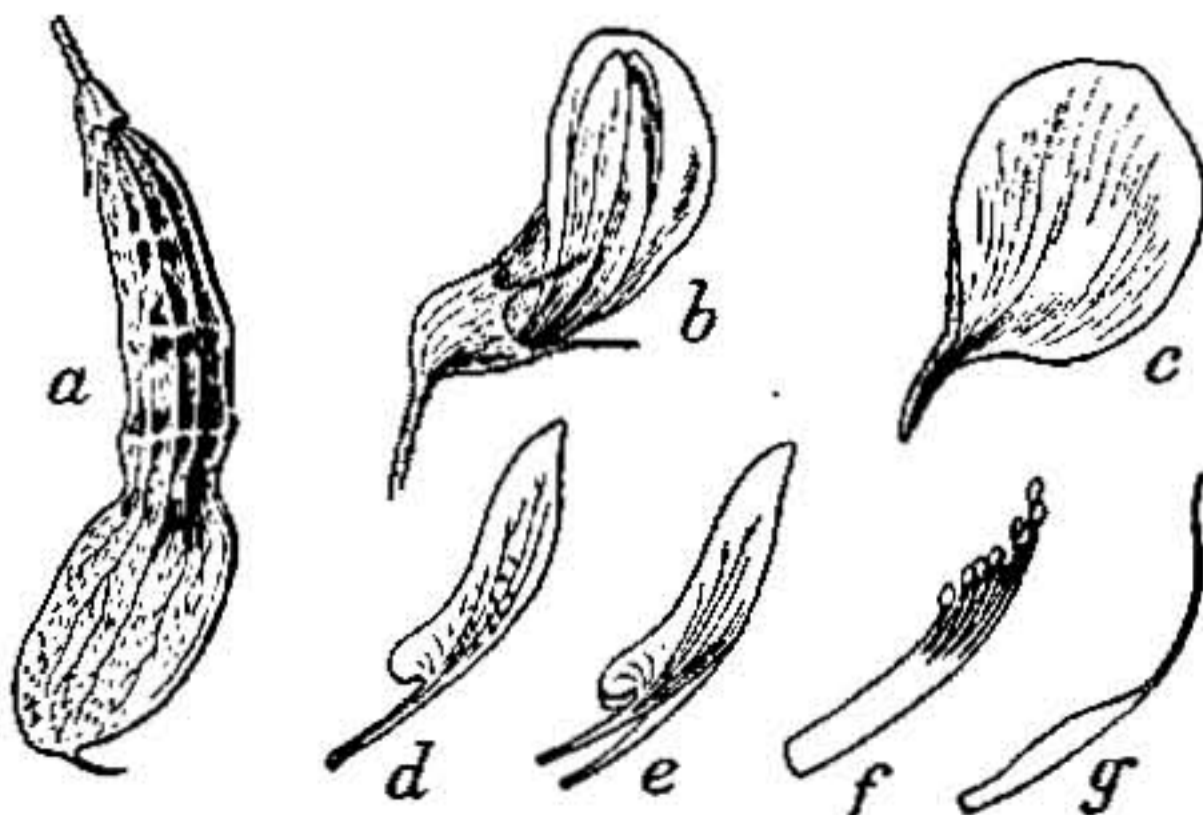


FIG. 24.—*Nissolia multiflora*.

Collected by C. G. Pringle (No. 6064) on Mount Alban, near Oaxaca, altitude 5,800 feet, November 23, 1894.

ii. *Leaflets large; sepals longer than the tube.*

Nissolia laxior (Robinson) Rose; *Nissolia confertiflora laxior* Robinson, Proc. Am. Acad. 29:315. 1894. FIGURE 25.

Apparently a good species. It is only known from the type collection and the fruit is still unknown.

Collected by Mr. C. G. Pringle in a barranca near Beltram, State of Jalisco, June 5, 1893 (No. 4379).

bb. *Flowers usually (or always) in naked racemes; calyx teeth very small.*

k. *Calyx truncate with small linear teeth.*

Nissolia guatemalensis Rose, sp. nov.

Probably a shrubby vine; the younger parts somewhat pubescent; leaflets lanceolate, rounded at base, slightly tapering but obtuse at apex, mucronate, glabrous above (at least in age), puberulent beneath; flowers in racemes; calyx small, 2 to 2.5 mm. long, truncate with small linear teeth much shorter than the tube, becoming nearly glabrous; pods on slender stipes twice as long as the calyx, 35 mm. long, the terminal wing acute.

Collected in Guatemala by Sutton Hayes, near Esquintla, November, 1860 (specimen in Herb. Gray), and by Heyde & Lux. near Cuajiniquilapa, in 1893, and distributed by John Donnell Smith as No. 6112.

kk. *Calyx not truncate; teeth triangular.*

1. *The terminal wing of fruit obtuse. Mexican species.*

Nissolia nelsoni Rose, sp. nov. FIGURE 26.

Shrubby vine climbing 36 to 45 dm. high, glabrous or younger parts pubescent; leaves large; leaflets 5, nearly glabrous in age, oval to obovate, rounded or acute at apex, broadly cuneate or rounded at base, 2.5 to 7.5 cm. long, 16 to 36 mm. broad; flowers in terminal or axillary racemes, 15 to 25 cm. long in fruit; calyx cup-shaped, 1 mm. long, puberulent, the minute teeth triangular; corolla 6 mm. long, pale yellow; banner orbicular, horizontal, retuse; ovary pubescent; fruit 2 or 3 jointed, the upper joint broadly winged, obtuse, 18 to 25 mm. long, 8 to 10 cm. broad.

Collected by Mr. E. W. Nelson from the Valley of Oaxaca, September 20, 1894 (No. 1266); by Mr. C. G. Pringle, May 19 and August 17, 1894 (No. 4640); and by Mr. E. W. Nelson near Tuxtla, State of Chiapas, September 1 to 8, 1895 (No. 3086). It is probably, also, Bourgeau's No. 1477, collected in the valley of Cordova.

Flowering specimens collected by Rev. Lucius C. Smith at Colderon, San Juan del Estado, June, 1894, and by Mr. Henry E. Seaton near Cordoba, August, 1891, have somewhat different leaves and suggest *N. fruticosa*. Better material may show that they belong elsewhere.

This species differs from *N. fruticosa* in the shape of the leaflets, and in the calyx and fruit.

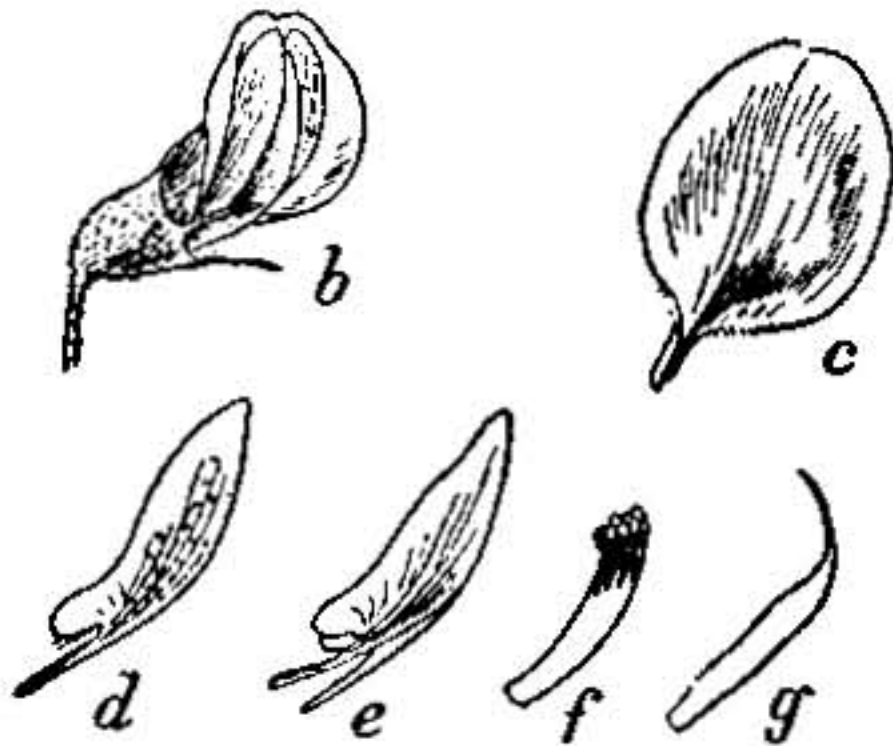


FIG. 25.—*Nissolia laxior*.

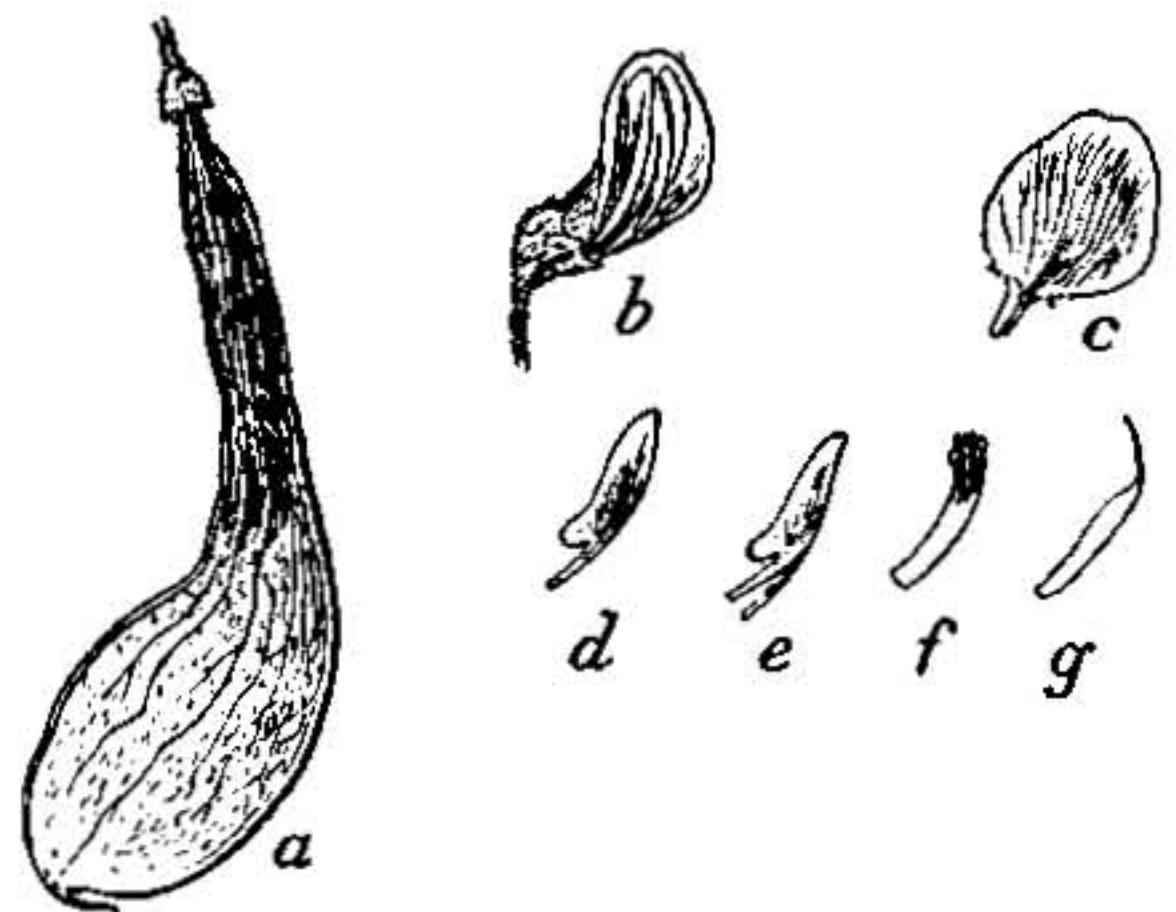


FIG. 26.—*Nissolia nelsoni*.

11. *Terminal wing of fruit acute; South American species.*

Nissolia fruticosa Jacq. Enum. Pl. Carib. 27. 1760. *Nissolia racemosa* DC. Prodr. 2:257. 1825. (Fide Benth.) FIGURE 27.

I have seen no authentically named specimens of this species, but if the illustration in Hooker's *Icones* (which in part is here reproduced) and the one in *Flora Brasiliensis* are correct all our Mexican material is to be excluded. *N. hirsutiflora* DC., usually referred as a synonym of this species, is to be restored to specific rank. Fruiting specimens collected by Fendler in Venezuela in 1854 and 1855 (No. 194) and now in Herb. Gray answer this species better than anything else which I have seen.

UNCERTAIN SPECIES.

Nissolia platycarpa Benth. in Mart. Fl. Bras. 15, pt. 1:77. 1859.

I have not been able to place this Mexican species, owing to the very meager description. Dr. Gray thought it was the same as *N. wislizeni*, and in the *Biologia* it is stated to be the same as *N. schottii*. Mr. Hemsley suggests that it is the same as Palmer's No. 248, in part, for which I have proposed the name *N. dodgei*.

The type of the species is Coulter's plant from Zimapan, State of Hidalgo, and hence widely separated from Palmer's locality in Coahuila. *N. platycarpa* is described as having the fruit one-nerved, and in this respect differs from all the species which I have seen.

Nissolia (?) sp.

Palmer's No. 7, from Acapulco, has much the appearance of this genus, although the specimens do not conform to any of the above descriptions.

NOTES ON RUTACEAE.

To the notes on this order published earlier in this volume¹ the following are to be added:

ZANTHOXYLUM.

*Zanthoxylum insulare*² Rose, North Am. Fauna, No. 14:79. 1899.

Tree 6 to 20 meters high, thornless; leaves oddly pinnate; leaflets 6 or 7 pairs, opposite, sessile, obovate to spatulate, obtuse or retuse, 2 to 3.5 cm. long, crenate, with large pellucid dots between the teeth and small scattered dots over the surface, glabrous; flowers unknown; fruit small, in a rather compact panicle; pedicels very short; stipe short or thick.

Collected by E. W. Nelson on Maria Madre Island. May 3 to 25, 1897 (No. 4278).

Zanthoxylum longipes Rose, sp. nov.

Probably a tree; branches with a few small, scattered, hooked spines; young branches green, somewhat angular, glabrous or slightly puberulent (likewise the leaflets); leaves small on short petioles; leaflets always 3, quite variable in outline, some orbicular to oblong, others obovate to lanceolate, 1 to 3 cm. long, shining above, with many pellucid dots, the margin undulate, sessile or subsessile, rounded

¹ No. 3, pp. 110 to 113.

² The original description is here reproduced.

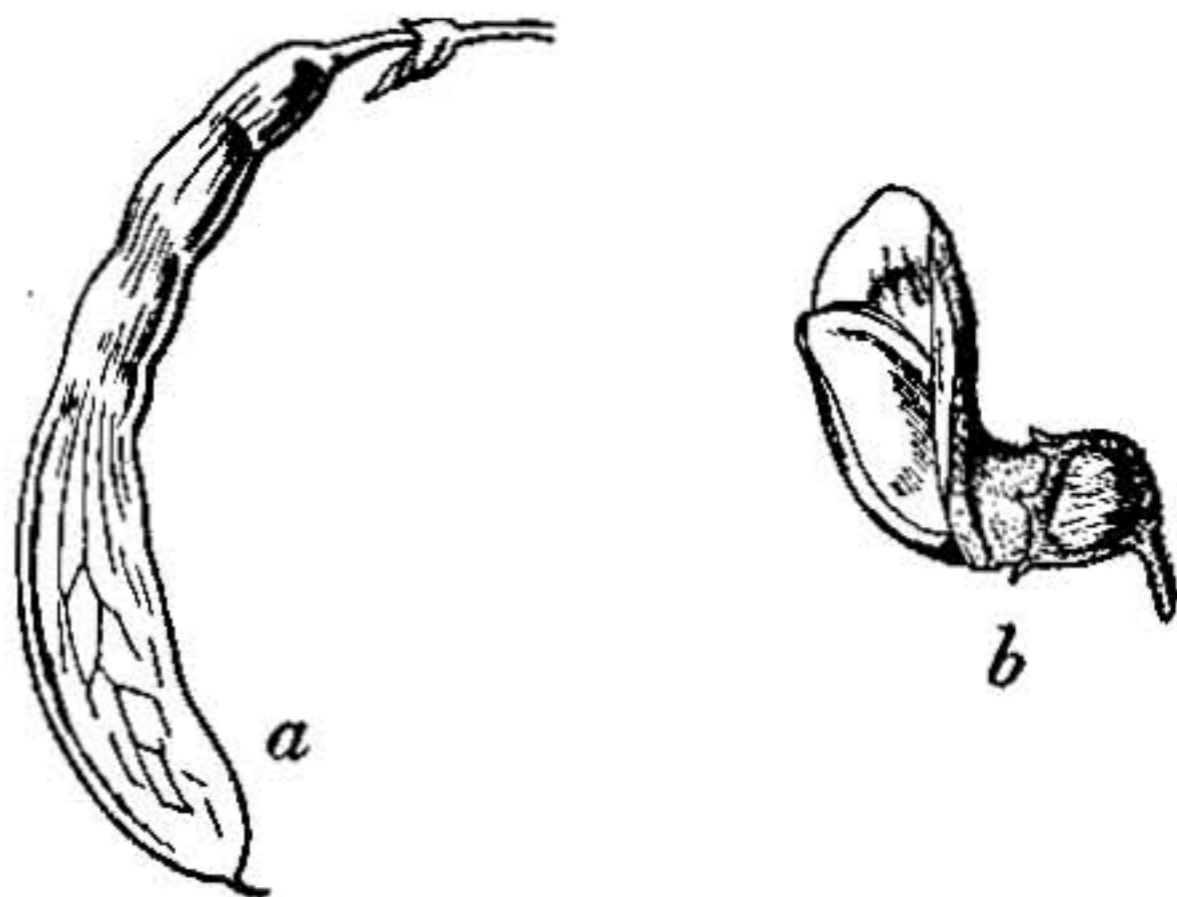


FIG. 27.—*Nissolia fruticosa*.

and retuse at apex, cuneate or rounded at base and bearing on each side a glandular callosity; inflorescence compact, the cluster 1 to 3 cm. long; cocci 1 or 2, 3 mm. in diameter, borne on a slender stipe 2 mm. long; seed glabrous.

Collected by Mr. C. G. Pringle on limestone hills near Tehuacan, altitude 5,000 feet, August 28, 1897 (No. 6691).

Zanthoxylum nelsoni Rose, North Am. Fauna, No. 14:79. 1899.

Tree 7.5 to 20 meters high, thornless (?); leaves oddly pinnate; leaflets about 6 pairs, distant, opposite, shortly petioled, 5 to 11 cm. (2 to 4½ inches) long, rounded at base, long-acuminate, crenate, glabrous on both sides, thickly set with pellucid dots; inflorescence in small compact panicles; perianth complete; petals 4 (?); fruit large, in dense headlike clusters, not stipitate.

A very peculiar species, unlike any Mexican one known to me. Collected by E. W. Nelson on the Maria Madre Island, May 3 to 25, 1897 (No. 4279).

Zanthoxylum occidentale Rose, sp. nov.

A large tree 7.5 meters high, with large rounded top; branches with short straight thorns, glabrous throughout; leaves 10 to 15 cm. long; leaflets 5 to 9, petiolulate, cuneate at base, obtusely acuminate, 3 to 5 cm. long, glabrous on both sides, the surface sprinkled with small pellucid dots, the margin undulate or crenate, the teeth separated by large pellucid dots; inflorescence a short dense panicle.

Apparently a common tree along the coast; seen both at Acaponeta and Rosario.

Collected by J. N. Rose near Acaponeta, July 2 and 3, 1897 (No. 1519), and at Rosario, July 22 (No. 1820).

Zanthoxylum pterota (L.) H. B. K. Nov. Gen. et Sp. 6:3. 1826. *Fagara pterota* L. Syst. ed. 10, 897. 1759.

A large bushy shrub, 30 dm. high, with long, drooping branches.

Collected by J. N. Rose at Acaponeta, June 23, 1897 (No. 1442), and near Rosario, July 10 (No. 1586).

The following artificial key will serve to hold these Mexican and Central American species together until those that are little known have been re-collected and studied.

KEY TO THE SPECIES OF ZANTHOXYLUM.

a. *Leaves simple.*

b. *Plants thorny.*

Z. pentanome DC. Prodr. 1: 725. 1824.

bb. *Plants thornless.*

Z. ghisbreghtii Turcz. Bull. Soc. Nat. Mosc. 32, 1: 274. 1859.

aa. *Leaves pinnate.*

c. *Rachis winged.*

Z. pterota (L.) H. B. K. Nov. Gen. et Sp. 6:3. 1823. *Fagara pterota* L. Syst. ed. 10, 897. 1759.

cc. *Rachis not winged.*

d. *Leaflets 1 to 3 pairs (rarely 4 pairs).*

Z. limoncello Planch. & Oerst; Triana & Planch. Ann. Sci. Nat. ser. 5, 14: 312. 1872.

Z. melanostictum Schlecht. & Cham. Linnaea, 5: 231. 1830.

Z. arborescens Rose, Contr. Nat. Herb. 5: 112. 1897.

Z. longipes Rose, supra.

Z. foetidum Rose, Contr. Nat. Herb. 5: 112. 1897.

Z. occidentale Rose, supra.

dd. *Leaflets many pairs, always more than 3.*

- Z. affine* H. B. K. Nov. Gen. et Sp. 6: 3. 1823.
Z. rigidum H. B. K.; Willd. Sp. Pl. 4: 756. 1805.
Z. nelsoni Rose, North Am. Fauna, No. 14: 79. 1899.
Z. insulare Rose, loc. cit.
Z. foliolosum Donnell Smith, Bot. Gaz. 18: 1. 1893.
Z. pringlei Wats. Proc. Am. Acad. 26: 134. 1891.

MISCELLANEOUS SPECIES.

Casimiroa edulis Llav. & Lex. Nov. Veg. Desc. fasc. 2: 2. 1825.

Collected by J. N. Rose at Mazatlan, June 17 to 19, 1897 (No. 3105); at Acaponeta, July 1 to 3, 1897 (No. 3119), and near Colotlan, August 28 (No. 2678). My specimens differ somewhat from our only two herbarium specimens in having normally 5 leaflets instead of 3, and these duller, more pubescent, and more tapering at apex.

The inflorescence of this genus is described by Bentham and Hooker as a few-flowered axillary panicle. My specimens show both axillary and terminal, many-flowered panicles, 5 to 10 cm. long.

This plant produces the zapote blanco of the Mexicans.

Citrus medica L. Sp. Pl. 2: 782. 1753.

A small tree in the foothills, growing as an escape.

Collected by J. N. Rose near Colomas, July 18, 1897 (No. 1740).

Ptelea trifoliata mollis Torr. & Gr. Fl. 1: 680. 1840.

Leaflets large. Common on the table-land.

Collected by J. N. Rose on the road between Huejuquilla and Mesquitec, August 25, 1897 (No. 2580).

NOTES ON TURNERACEAE.

Three genera of this order are found in Mexico, viz, *Piriqueta*, *Esblichia*, and *Turnera*. *Piriqueta cistoides*, the only known Mexican species of the genus, has not been collected in Mexico in recent years. Relating to the other two genera I have the following matter:

ESBLICHIA.

Esblichia odorata Seem. Bot. Herald, 130. 1857.

Collected by Mr. E. W. Nelson near Chicharras, in the State of Chiapas, February 12 to 15, 1896 (No. 3803).

A tree 40 to 50 feet high.

This plant has not before been reported from Mexico, having been known only from Panama and there but once collected.

This species is figured in Botany of the Herald as t. 27. Mr. Urban refers this genus to a section *Piriqueta*, from which, however, it appears to be quite distinct.

TURNERA.

The following species, sent for identification or otherwise contributed, have been recently added to the National Herbarium:

Turnera palmeri Wats. Proc. Am. Acad. 22: 413. 1886.

Collected by J. N. Rose near Huejuquilla, Jalisco, August 24, 1897 (No. 3562).

This plant was frequently seen on the table-lands. It has heretofore been reported only from near Guadalajara, Jalisco, the type having been collected by Dr. E. Palmer in 1885 and since obtained by Mr. Pringle and P. L. Jouy. In the original description the leaves are said to be glandular, but this is a mistake.

This species must be near *T. callosa*.

Turnera pringlei Rose, sp. nov.

Low, bushy shrub, 15 to 50 cm. high; young branches, leaves, calyx, etc., densely and softly silky pubescent; leaves oblong to obovate, 12 to 40 mm. long, obtuse, tapering at base into a short petiole, serrate, more or less rugose; flowers solitary in the axils, sessile; bracts 2, linear, pubescent, 4 mm. long, not glandular; calyx 6 mm. long, the lobes twice as long as the tube, ovate, acuminate, pubescent without; petals yellow, obovate, 6 mm. long; filaments free to the base, glabrous; styles 2, glabrous; capsule 3 mm. long, somewhat hairy; seeds obovate, twice as long as broad, less than 2 mm. long.

Collected by Mr. C. G. Pringle near Tehuacan, in eastern Puebla, 1897 (No. 6692). Perhaps here may be referred specimens collected by Mr. E. W. Nelson near San Geronimo and La Venta, State of Oaxaca, altitude 200 feet, July 13, 1895 (No. 2780), and by J. N. Rose near San Juan Capistrano, August 18, 1897 (No. 3536).

Turnera ulmifolia L. Sp. Pl. 1: 271. 1753.

Collected by Mr. C. G. Pringle on sand dunes, Tampico, State of Tamaulipas, 1898 (No. 6821).

Turnera ulmifolia alba (Liebm.) Rose. *Turnera alba* Liebm. Ann. Sci. Nat. ser. 3, 9: 318. 1848. *Turnera ulmifolia velutina* subvar. 2, Urb. Jahrb. des Kgl. Bot. Gart. Mus. Berl. 2: 141. 1883.

Stems 3 to 6 dm. high. Collected by Mr. C. G. Pringle in Tomellin Canyon, State of Oaxaca, 1897 (No. 6719); by Mr. E. W. Nelson between Niltepec and Zacatepec, State of Oaxaca, altitude 400 feet, July 15, 1895 (Nos. 2816, 2807); also vicinity of Cuicatlan, State of Oaxaca, altitude 1,800 to 2,500 feet, October 8 to 16, 1894 (No. 1659), and vicinity of San Juan Guichicovi, State of Oaxaca, altitude 450 to 1,500 feet, June 21 to 24, 1895 (No. 2714).

I have followed Mr. Urban in keeping this white-flowered *Turnera* under the species *ulmifolia*. It does not belong, however, with his variety *velutina*. The latter is certainly a good species, and I have so considered it in my treatment below.

The type locality is stated to be "ad ripas Rio de las Vueltas," which is probably near Mr. Pringle's locality.

Turnera ulmifolia surinamensis Urb. Jahrb. des Kgl. Bot. Gart. Mus. Berl. 2: 143. 1883.

Collected by Mr. E. W. Nelson in Santa Efigenia, State of Oaxaca, Mexico, altitude 500 feet, July 18, 1895 (No. 2849a); also between Niltepec and Zacatepec, State of Oaxaca, Mexico, altitude 400 feet, July 15, 1895 (No. 2816).

It is questionable whether our Mexican form should not be separated specifically from *T. ulmifolia*.

Turnera ulmifolia caerulea (DC.) Urb. Jahrb. des Kgl. Bot. Gart. Mus. Berl. 2: 144. 1883. *Turnera caerulea* DC. Prodr. 3: 346. 1828.

Collected by J. N. Rose near Colomas, July 16, 1897 (No. 1692), and between Aguacota and Dolores, Tepic, August 6, 1897 (No. 3357).

Turnera humifusa (Presl) Endl. in Walp. Rep. 2: 230. 1843. *Bohadschia humifusa* Presl, Reliq. Haenk. 2: 98. 1830. *T. aphrodisiaca* Ward, Virg. Med. Month. April, 1876: 49. 1876. *T. diffusa aphrodisiaca* Urb. Jahrb. des Kgl. Bot. Gart. Mus. Berl. 2: 127. 1883.

Collected by Dr. E. Palmer, near Acapulco, October, 1894, to March, 1895 (No. 133), and J. N. Rose, between Rosario and Colomas, Sinaloa, July 12, 1897 (No. 1612).

This must be the *Bohadschia humifusa* of Presl, which was originally collected at Acapulco. Dr. Palmer's plant agrees exactly with the description, except that the flowers are said to be rose-colored.

I am inclined to think that this Mexican form, which Dr. Urban considered as a variety of *T. diffusa*, deserves specific rank. It differs from the West Indies specimens in its pubescence and in its larger, thinner, and more glabrous leaves. Before

the question can be definitely settled more material should be collected in the West Indies showing the variations of the typical form. The name *humifusa* is much older than any other, and in case the species should be reduced to varietal rank that name should be used in preference to *aphrodisiaca*.

An exhaustive monograph of this genus was published by Dr. I. Urban in 1883.¹ Fifty-four species are enumerated. The genus *Turnera* is strictly an American one, Brazil being the center of distribution; forty of the species are found in that country. Urban refers three species to Mexico, only one (*T. callosa*) being endemic; two to Central America, one (*T. panamensis*) being endemic; or four species to the two countries.

Three years before this Mr. Hemsley, in the *Biologia Centrali-Americana*, enumerated fourteen species for these countries, three being given without specific names. The names there used were so widely at variance with Urban's monograph, that Mr. Hemsley published a re-arrangement of the species in the supplement to the *Biologia Centrali-Americana*. For the benefit of those who may be working in this group, I have thought best to publish these lists in parallel columns along with a third, which shows my own treatment of the genus.

Three treatments of the species of Turnera.

Species listed by Hemsley.	Species recognized by Urban.	Species and varieties now recognized.
1. <i>T. alba</i> Liebm.	1. <i>T. ulmifolia velutina</i> (Presl)	1. <i>T. ulmifolia alba</i> Rose.
2. <i>T. aphrodisiaca</i> L. F. Ward.	Urb. subvariety 2.	2. <i>T. humifusa</i> (Presl) Endl.
3. <i>T. caerulea</i> DC.	2. <i>T. diffusa aphrodisiaca</i> (Ward)	3. <i>T. ulmifolia caerulea</i> (DC.) Urb.
4. <i>T. cistoides</i> L.	Urb.	4. Not of this genus.
5. <i>T. hindsiana</i> Benth.	3. <i>T. ulmifolia caerulea</i> (DC.) Urb.	5. Not Mexican.
6. <i>T. humifusa</i> (Presl) Endl.	4. <i>Piriqueta cistoides</i> Griseb.	6. <i>T. humifusa</i> (Presl) Endl.
7. <i>T. mollis</i> H. B. K.	5. <i>T. panamensis</i> Urb.	7. Not Mexican.
8. <i>T. pumilea</i> L.	6. <i>T. diffusa</i> Willd.	8. <i>T. pumilea</i> .
9. <i>T. trioniflora</i> Sims.	7. <i>T. ulmifolia elegans</i> (H. B. K.)	9. <i>T. ulmifolia elegans</i> Urb.
10. <i>T. ulmifolia</i> L.	Urb. subvariety 2.	10. <i>T. ulmifolia</i> L.
11. <i>T. velutina</i> Presl.	8. Not credited to Mexico.	<i>T. ulmifolia acuta</i> Urb.
12. <i>Turnera</i> sp.	9. <i>T. ulmifolia elegans</i> (H. B. K.)	<i>T. ulmifolia surinamensis</i> (Miq.)
13. <i>Turnera</i> sp.	Urb.	Urb.
14. <i>Turnera</i> sp.	10. <i>T. ulmifolia</i> L.	11. <i>T. velutina</i> Presl.
	11. <i>T. ulmifolia velutina</i> (Presl) Urb.	12. Not Mexican.
	12.	13. Not Mexican.
	13. <i>T. panamensis</i> Urb.	14.
	14.	15. <i>T. callosa</i> Urb.
	15. <i>T. callosa</i> Urb.	16. <i>T. palmeri</i> Watson.
		17. <i>T. pringlei</i> Rose.

¹ *Jahrbuch des Kgl. Bot. Gart. und Mus. Berlin*, 2: 1 to 152.

KEY TO THE MEXICAN SPECIES OF TURNERA.

a. *Leaves biglandular at base.*

b. *Stems herbaceous, rather low, sometimes caespitose; glands borne on the blade; seeds few (25 or less).*

T. palmeri Watson.

T. callosa Urb.

bb. *Stems somewhat woody; glands borne on the petiole; seeds 50 or more.*

c. *Leaves densely clothed with a yellow, velvety pubescence, and very prominently veined.*

T. velutina Presl.

cc. *Leaves not velvety-pubescent, thin, not strongly veined.*

d. *Flowers blue.*

e. *Leaves linear.*

T. ulmifolia surinamensis (Miq.) Urb.

e. *Leaves broader (not linear).*

T. ulmifolia caerulea (DC.) Urb.

dd. *Flowers yellow or white.*

T. ulmifolia L.

T. ulmifolia acuta Urb.

T. ulmifolia alba Rose.

aa. *Leaves not biglandular at base.*

e. *Annuals; seeds tuberculate.*

T. pumilea L.

ee. *Perennials; seeds reticulated.*

T. humifusa (Presl) Endl.

T. pringlei Rose.

NOTES ON THE MEXICAN SPECIES OF CLITORIA.

The genus was monographed by Bentham in the Journal of the Linnean Society, 1858, pp. 33-44.

I have here brought together the Mexican and Central American species practically in the order treated by Bentham, adding in their proper place the species which have since been discovered. I am strongly inclined to think, although Mr. Bentham reached a different conclusion, that *C. mexicana* is quite distinct from *C. mariana*; but the subject really requires further investigation. I have never seen *mariana* from Mexico, but there are specimens in the National Herbarium from southern Arizona, and it will naturally be looked for across the border. *C. mexicana* is restricted to south Mexico and Central America.

KEY TO THE SPECIES.

a. *Leaflets more than 3; bractlets broad.*

Clitoria ternatea L. Sp. Pl. 2: 753. 1753.

This beautiful little vine was found in cultivation at Rosario, Sinaloa, July 11, 1897, by J. N. Rose (No. 1598).

aa. *Leaflets 1 to 3; bractlets linear.*

b. *Stems climbing.*

Clitoria (?) multiflora Mart. & Gall. Bull. Acad. Brux. 10, pt. 2: 188. 1843.

This species is based on specimens collected by Galeotti at "Mirador," State of Vera Cruz, and near "Comaltepeque."

I do not know this species. I have seen a specimen of *Clitoria* from Mirador, but it does not agree with the description of the above.

Clitoria glycinoides DC. Prodr. 2: 234. 1825.

This species is reported from Panama. I have seen specimens only from Jamaica.

Clitoria mexicana Link, Enum. 2: 235. 1822.

Stems climbing, more or less pilose; leaflets 3, ovate to lanceolate, acute to shortly acuminate, rounded at base, glabrous above, pale and slightly pilose beneath, 2.5 to 5 cm. long; petioles 10 to 35 mm. long; stipules and bractlets similar, but the latter narrower; peduncles short, 2 or 3 flowered; calyx tube purplish, 10 mm. long; the teeth ovate, acute; flowers purplish (♀); pods stipitate, flattened, 4 to 5 cm. long, constricted between the seeds.

Collected by Mr. E. W. Nelson, near Totontepec, July 21 to 27, 1894, and by Mr. C. G. Pringle, near Las Sedas, September 24, 1894 (No. 5846), both places in the State of Oaxaca; by E. W. D. Holway, near Jalapa, State of Vera Cruz, October 3, 1898 (No. 3088); by Dr. C. Sartorius, Mirador, State of Vera Cruz; by Heyde & Lux, in Guatemala, November, 1892 (No. 4114).

This is apparently the *C. mexicana* of Link, which Mr. Bentham has referred to *C. mariana*, from which, however, it seems clearly distinct. *C. mariana* has the stipules narrower, the leaves broader, obtuse, with the under surface perhaps not so pale, the pods more shiny and less constricted between the seeds, the calyx not purplish, and the flowers considerably larger.

Clitoria javitensis (H. B. K.) Benth. Journ. Linn. Soc. 2: 42. 1858. *Neurocarpum javitense* H. B. K. Nov. Gen. et Sp. 6: 409. 1823.

I have seen no Mexican specimens. The type comes from South America.

aa. *Stems erect.*

Clitoria polystachya Benth. Pl. Hartw. 60. 1840.

The type of this species was collected by T. Hartweg at Talea, State of Oaxaca.

I have referred here Mr. Nelson's No. 819 from near Choapam, State of Oaxaca, July 28, 29, 1894.

Clitoria triflora Wats. Proc. Am. Acad. 22: 407. 1887.

Collected by J. N. Rose on the west side of the east range of the Sierra Madre in the State of Durango, August 16, 1897 (No. 3519.)

This species has heretofore been found only in the State of Jalisco.

Clitoria humilis Rose, sp. nov.

Stems low, erect, 10 to 12 cm. high, puberulent; leaflets 3, oblong, 3 to 6 cm. long, rounded at base, rounded or retuse at apex, glabrous above, pale, reticulated, and becoming glabrate beneath; peduncle nearly wanting, 2-flowered; bractlets narrow, acute; calyx 10 mm. long, not purplish; the two upper teeth united to near the middle, all acute; banner 36 mm. long, yellowish.

Collected by J. N. Rose on the east side of the west range of the Sierra Madre, in the State of Durango, August 13, 1897 (No. 2251).

Clitoria subsessilis Rose, sp. nov.

Stems herbaceous, erect, 1 to 2 dm. high, somewhat pilose; leaflets 1 or 3, oblong, rounded at apex, sometimes retuse, mucronate, rounded at base, glabrous above, paler and at first somewhat pilose, but becoming glabrate beneath, distinctly reticulate, especially above, 5 to 10 cm. long, 2 cm. or less wide; petioles very short or wanting; stipules ovate, acute, nerved; peduncles short, 2-flowered; the subtend-

ing bractlets of the shape and size of the stipules; calyx 16 to 18 mm. long, pilose; sepals 5, the 2 upper ones united to the middle, all acuminate; banner 4 cm. long, glabrous, purplish. Pods not seen.

Collected by Mr. E. W. Nelson in the State of Oaxaca between Guichocovi and Lagunas, June 27, 1895 (No. 2748), and near Santa Efigenia, July 18, 1895 (No. 2845).

SPECIES DOUBTFUL OR TO BE EXCLUDED FROM CLITORIA, OR FROM THE MEXICAN FLORA.

Clitoria (?) *sericea* Wats. Proc. Am. Acad. 22:407, 1887; 29:315, 1894, is not of this genus, but may be a *Cracca* (*Tephrosia*).

Clitoria mariana L. Sp. Pl. 2:753. 1753.

The only species found in the United States, where it is common. It has been reported from Mexico, but the determinations thus far have proved incorrect.

Clitoria grandiflora Mart. et Gal. Bull. Acad. Brux. 10, pt. 2:189. 1843.

The type of this species was collected by Galeotti at Mirador and Zacuapan. It is probably to be referred to *Centrosema*.

Clitoria schiedeana Schlecht. Linnaea, 12:284. 1838.

This species was based on specimens collected at Jalapa and Hacienda de la Laguna. It is described as having a broad, campanulate calyx with 4 teeth. It suggests a *Centrosema*.

Clitoria speciosa Cav. Desc. 182. 1802.

I do not know this species.

Clitoria portobellensis Beurling, Vetensk. Akad. Handl. Stockh. 1854:119. 1856.

Unknown to me.

NOTES ON MALVACEAE AND BOMBACEAE.

ABUTILON.

Abutilon crispum Medic. Malven-fam. 29. 1787.

Common under bushes, etc. Collected by J. N. Rose at Altata, Sinaloa, June 15, 1897 (No. 1336), and at Guaymas, June 5 to 11 (No. 1236).

Abutilon goldmani Baker, f. & Rose, sp. nov.

Shrub 18 to 30 dm. high; young branches covered with reddish stellate hairs; petioles 10 to 15 cm. long; blade nearly orbicular, acuminate, cordate at base, 12 to 18 cm. broad; 7-nerved at base, pale and densely stellate beneath, green and somewhat stellate, becoming glabrate above; peduncles 5 to 10 cm. long; calyx 2½ cm. high, deeply lobed, covered with a dense mass of reddish stellate hairs; sepals obtuse, strongly 3-ribbed on the back; petals large, 5 cm. long, yellow; stamen tube slender and long (2½ cm.), glabrous; capsule 2 cm. high, flat-topped, glabrate except for some tufts of stellate hairs at the top and on the angles; carpels numerous, each crowned with a very prominent crest.

Collected by E. A. Goldman, Papantla, State of Vera Cruz, March 14, 1898 (No. 86). Mr. E. G. Baker says of this species, "Allied to *A. sylvaticum* Schumann, but quite distinct."

Abutilon incanum (Link) Sweet, Hort. Brit. 53. 1827. *Sida incana* Link, Enum. Hort. Berol. 2:204. 1822.

A very common plant. Collected by J. N. Rose at Guaymas, June 8, 1897 (No. 1254), and at San Juan Capistrano, August 20 (No. 2449).

Abutilon jaquini Don, Hist. Diehl. Pl. 1:503. 1831.

Collected by J. N. Rose, at San Juan Capistrano, August 19, 1897 (No. 2425), and at Bolaños, September 10 (No. 2886).

The type of this species comes from Jamaica, but I have as yet seen no specimens from outside of Mexico.

Abutilon reticulatum Rose, sp. nov.

A shrub 3 to 4.5 meters high; young branches densely white-velvety; leaves very variable, often very large; petioles often 15 cm. long, the blade nearly orbicular, sometimes 15 to 25 cm. in diameter, acuminate, occasionally faintly 3-lobed, with a deep sinus at base, denticulate, densely velvety on both sides, greener and becoming nearly glabrous above, white and permanently pubescent beneath, there also somewhat prominently reticulated; stipules large, ovate, acute, somewhat cordate at base, deciduous; inflorescence somewhat variable, terminating stem or branches, sometimes appearing as a simple raceme, at other times as a long open panicle, 6 dm. long; calyx deeply 5-parted; lobes broadly ovate, acute, 5 to 6 mm. long, villous on both sides; petals yellow, 12 mm. long; base of stamen tube swollen, densely stellate; carpels 9, long-pilose, acute at tip, 3-seeded.

Collected by Mr. C. G. Pringle (No. 6062) in the State of Oaxaca; by Rev. Lucius C. Smith (No. 322) on Monte Alban, near the city of Oaxaca, altitude 5,800 feet, November 23 and 24, 1894; and by Mr. E. W. Nelson between Copala and Juchitango, altitude 200 to 600 feet, February 9, 1895 (No. 2296). The species has been in cultivation for several years in the botanical greenhouses at Washington (J. N. Rose, No. 1122).

This species has been distributed in Mr. Pringle's sets as *A. reverentum*, with which it is closely allied, but from which it differs in having more reticulate leaves, different calyx, etc. This may be the little-known *A. andrcuxii*, but the latter is described as an herb, the inflorescence as a broad cymose panicle, etc.

Mr. E. G. Baker points out that this species is allied to *A. elatum* Griseb., but has different pubescence on the carpels. The most striking difference is in the velvety branches (not at all pilose) and in the large more or less imbricating stipules, which almost hide the stem in its upper parts.

Mr. Greenman has also more lately compared my species with *A. elatum*, and under date of October 28, 1898, writes as follows:

"I have compared your *Abutilon* with *A. elatum* Griseb., and it is *not* the same. Grisebach's species is represented here by a specimen collected in Jamaica by Wilson and labeled in Grisebach's handwriting. In *A. elatum* the stem and petioles are velvety-tomentose, but the pubescence is decidedly longer and of a more villous nature than in your plant. Moreover, in *A. elatum* the nerves on the under surface of the leaves are covered with short stellate hairs, but having long spreading villous hairs intermixed."

Abutilon reverentum Wats. Proc. Am. Acad. 21: 418. 1886.

Collected by J. N. Rose at San Juan Capistrano, August 22, 1897 (No. 2463), and at Bolaños, September 10 to 19 (No. 2905).

This species, based upon Dr. Palmer's South Chihuahuan species, has since been found only along our southern border. It may be expected in the tropical valleys north from the State of Jalisco.

Abutilon venosum Walp. Ann. 2: 158. 1851.

A shrub.

Collected by E. A. Goldman at Huanchinango, State of Puebla, altitude 5,000 feet, January 8, 1898 (No. 14).

This species had not been reported from Mexico. It corresponds exactly with specimens from Central America.

Abutilon sp.

Leaves and fruit of an *Abutilon* were collected by J. N. Rose at Mazatlan in June, 1897, which Mr. Baker says is near *A. permollis* Sweet. This species, however, has not heretofore been reported from Mexico.

ANODA.

Anoda caudatifolia Robinson & Greenman, in lit. *Sida caudatifolia* Robinson & Greenman, Proc. Am. Acad. 29:382. 1894.

This species proves to be a good *Anoda* near *A. pentaschista* and *A. abutiloides*.

Anoda crenatiflora Ortega, Nov. aut. Rar. Pl. Dec. 8:96. 1798. *Anoda parvifolia* Cav. Icones, 5:19, t. 431. 1799.

It seems best to consider, as has usually been done, that these two names probably apply to the same species. Cavanilles referred *A. crenatiflora* without question to his *A. parvifolia*. Both names are common on herbarium specimens, but there is no question as to which is the older. There is considerable variation in the leaf characters. The species, as I now understand it, has a rather wide distribution. The following specimens seem to belong to the typical form:

Mexico:

State of Hidalgo, on hills near Tula, C. G. Pringle, October 5, 1896 (No. 6541).

State of Chihuahua, near Chihuahua City, C. G. Pringle, September 30, 1896 (No. 1073).

Lower California, near Comondú, T. S. Brandegee, March 4, 1889, and at San Jose del Cabo, October 4, 1892.

United States:

Texas, in Viejo Mountains, J. Harvard, October 5, 1883 (No. 6).

The following form, here described as a variety, may yet prove to be a good species:

Anoda crenatiflora glabrata var. nov.

Leaves glabrous on both sides, or with a few simple or stellate hairs on the veins; sepals usually more acuminate than in the type, otherwise very similar.

Collected by J. N. Rose in fields near San Juan Capistrano, State of Zacatecas, August 20, 1897 (No. 2444), and on the side of the mountain at Bolaños, September 10 to 19 (No. 2917). Here also belongs Dr. Palmer's No. 128 (1885) from southwestern Chihuahua.

Anoda cristata (L.) Schlecht. Linnaea, 11:210. 1837. *Sida cristata* L. Sp. Pl. 2:684. 1753. *Anoda hastata*, most authors, not Cav. Monadelph. Diss. 1:38, t. 10, f. 3. 1785.

A variable and widely distributed species. Collected by J. N. Rose near Huejuquilla, Jalisco, August 24, 1897 (No. 2523); Mesquitec, Zacatecas, August 26 (No. 3579); near Plateado, Zacatecas, September 2 (Nos. 2709 and 3632); at Bolaños, Jalisco, September 10 to 19 (No. 2909), and in the City of Mexico, September 27 (No. 3071).

Anoda hastata Cav. Monadelph. Diss. 1:38, t. 10, f. 3. 1785. *Anoda acerifolia* DC. Prodr. 1:459. 1824. Same of most authors.

FIGURE 28.

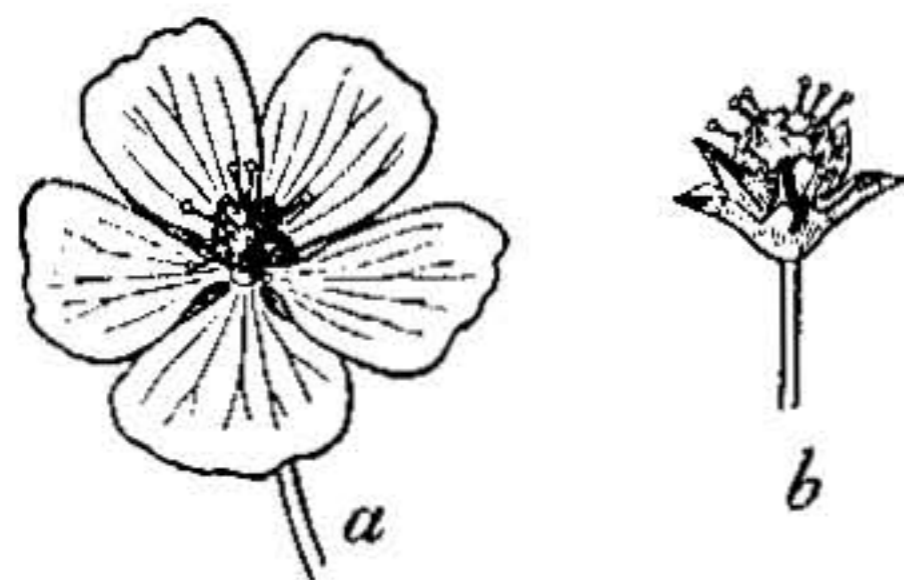


FIG. 28.—*Anoda hastata*. a, Flower; b, same with petals removed—both natural size.

This species, while much resembling *A. cristata*, seems to be perfectly distinct. I have grown it for several years and find that the fruit characters are constant. The lateral walls of the carpels are not entirely absorbed, as in *A. cristata*, but are

simply perforated, the seed remaining within the carpel and dropping with it. The habit of this species is more procumbent. Cultivated specimens have many spreading branches, often 12 to 18 dm. long.

Anoda pentaschista Gray, Pl. Wright. 2:22. 1853.

Found in old field growing with *A. crenatiflora* var. about San Juan Capistrano, Zacatecas, August 20, 1897 (No. 3762).

PERIPTERA.

The genus *Periptera*¹ has recently been treated by both Schumann and E. G. Baker, our best authorities on this order, as only of subgeneric importance. The discovery of a second species showing even more marked difference from *Anoda* than the first strengthens the reasons for considering *Periptera* as distinct from *Anoda*.

The flowers are of the *Malvaviscus* and *Hibiscus* type, and in this respect it differs more from *Anoda* than *Anoda* does from *Sida*.

Bentham and Hooker, who merely list the genus among the doubtful ones of the order, state that it is very similar to species of *Abutilon*.

The previous history of the genus is that of the one known species. It has been referred to three different genera and published under six combinations.

The history, in detail, is as follows: In 1813 it was named *Sida rubra* by Tenore, but not described; in 1814 it was figured and described by Sims as *Sida periptera*; in 1816 it was named *Anoda punicea* by Lagasca, and in 1821, by Kunth, *A. incarnata*. In 1824, De Candolle identified the first three names, constructing for them the genus *Periptera* and using the combination *P. punicea*; but De Candolle also continued Kunth's name under *Anoda*. This dual course was followed by Don (in 1831) and Hemsley (in 1879).

Dr. K. Schumann, in the *Flora Brasiliana* (fasc. 109, p. 357), made *Periptera* a section of *Anoda*, and has been followed by Mr. E. G.

Baker (1892) and others. As I have stated above, it appears to me that it deserves to be restored to generic rank.

Mr. Baker has seen my specimens, and in the light of better material agrees with me in the advisability of restoring *Periptera*. He says: "I followed K. Schumann in reducing it to a section of *Anoda*. Of course there are very obvious differential characters, the most noticeable being the exserted staminal column."

The two species, then, are as follows:

Periptera periptera (Sims) Rose. *Sida rubra* Tenore, Cat. Ort. Nap. 96. 1813. Name only. *Sida periptera* Sims, Bot. Mag. 40: t. 1644. 1814. *Anoda punicea* Lag. Nov. Gen. 21. 1816. *Anoda incarnata* H. B. K. Nov. Gen. et Sp. 5: 266. 1821. *Periptera punicea* DC. Prodr. 459. 1824. *Sida malvaviscus* DC. Prodr. 1: 459. 1824. FIGURE 29.

Collected by J. N. Rose in the mountains west of Bolaños, Jalisco, September 15 to 17, 1897 (No. 2945), and between Bolaños and Guadalajara, September 21, 1897 (No. 3046).

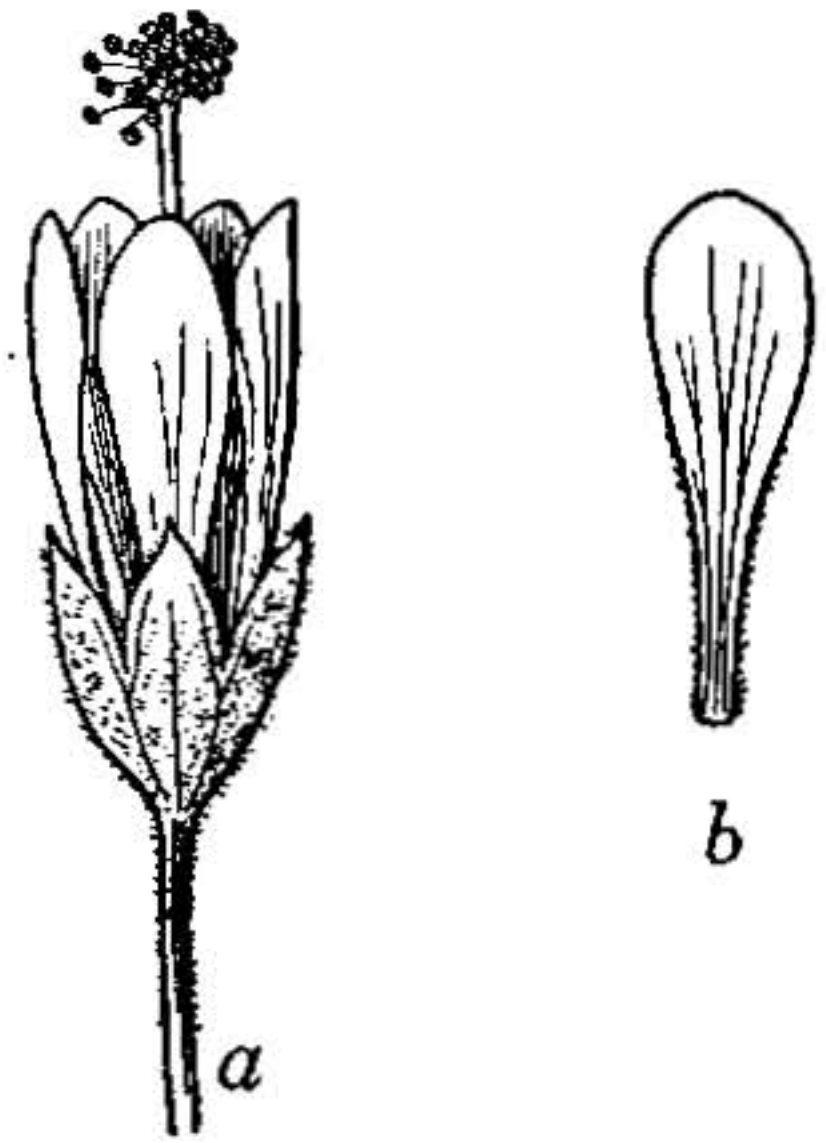


FIG. 29.—*Periptera periptera*. a, Flower; b, single petal—both natural size.

¹ DC. Prodr. 1: 449. 1824.

Periptera macrostelis Rose, sp. nov.

PLATE XIX.

"A vine-like shrub," 24 to 45 dm. high; young branches clothed with a short, stiff pubescence, older branches somewhat glaucous; leaves cordate at base, somewhat 3-lobed, the two lateral lobes short and obtuse, the central one elongated, acuminate, crenate, nearly glabrous above, slightly stellate beneath; inflorescence a terminal somewhat leafy panicle; pedicels 20 mm. long or less; involueral bracts none; calyx cup-shaped, the tube 4 mm. long, lobes ovate, 2 mm. long, densely stellate and more or less villous, not angled; corolla erect, "orange red;" petals more or less convolute when in flower, wedge-shaped, somewhat one-sided, somewhat pubescent without, slightly ciliate on the margin, 10 mm. long, 8 mm. broad at widest point; stamen tube slender, much elongated, 25 mm. broad at widest point, slightly cleft at the tip; styles 6, slightly capitate; cells of ovary one-ovuled, the ovules pendulous; carpels small, somewhat 3-toothed at apex, the sides reticulated, the walls disappearing between the reticulations.

Collected by Mr. E. W. Nelson near San Sebastian, State of Jalisco, altitude, 3,800 to 5,000 feet, March 16, 1897 (No. 4086).

EXPLANATION OF PLATE.—Fig. 1, a flowering branch; fig. 2, a leaf; fig. 3, a petal; fig. 4, a carpel; figs. 1 and 2, natural size; figs. 3 and 4, scale 5.

HIBISCUS.

Hibiscus biseptus Wats. Proc. Am. Acad. 21:418. 1886.

The lower leaves are ovate, not at all lobed; upper leaves 3-lobed.

Collected by J. N. Rose on the road between San Juan Capistrano and Huejuquilla, Jalisco, August 23, 1897 (No. 2504), and at Bolaños, September 10 to 19 (No. 2906). Our only other specimens are the type specimens collected by Dr. E. Palmer in the State of Chihuahua. The species is a tropical one and may be expected in many of the hot interior valleys.

Hibiscus coulteri Harvey; Gray, Pl. Wright. 1:23. 1852.

Collected by J. N. Rose near Guaymas, Sonora, June 8, 1897 (No. 1255); also a very large-flowered form by Dr. E. Palmer at Topolobampo, State of Sinaloa, September 15 to 25, 1897 (No. 192).

Hibiscus manihot L. Sp. Pl. 2:696. 1753.

I saw only one plant of this very showy Hibiscus. It was growing in the plaza of Acaponeta, Topic, July 31, 1897 (No. 1911). The leaves are 3 to 5 parted (nearly to the base); the segments are linear and sometimes 9 inches long. The flowers were lemon-colored and nearly 6 inches broad. The species has heretofore been unrepresented in the National Herbarium.

The following note from the pen of W. Watson, of Kew, which appeared in the Garden and Forest for 1897, will be of interest:

"When treated as a greenhouse plant this old annual species of Hibiscus grows to about a yard in height, and is pyramidal in shape, clothed with palmately lobed, dark green, smooth leaves, about 6 inches long, and produces in autumn handsome cup-shaped flowers, 5 inches in diameter, colored golden-yellow with purple center. It is a native of China, but has long been naturalized in Bengal, and is commonly cultivated in tropical countries. It was introduced into English gardens nearly two hundred years ago, and has been tried as a summer bedding plant. Recently it has attracted attention through some plants that were sent to a meeting of the Royal Horticultural Society by Mr. Lambert, of Cookham, who sowed the seeds in heat in February and grew the plants outside in summer. They were shown in August and received an award of merit."

Peter Henderson & Co. in this country have been cataloguing this species for the last three years as "Japanese manihot."



PERIPTERA MACROSTELIS Rose.

Hibiscus schizopetalus (Masters) Hook. Bot. Mag. t. 6524. 1880. *Hibiscus rosasinensis schizopetalus* Masters, Gard. Chron. 12: 272. 1879.

I was surprised to find this very showy Hibiscus growing in a garden at La Paz, June 14, 1897 (No. 1325). The very peculiar lacerated petals are unlike anything in this genus I have ever seen. A good account of the species, with colored illustration, appears in the Botanical Magazine for 1880.

Hibiscus sp.

Collected by J. N. Rose near Rosario, State of Sinaloa, July 7, 1897 (No. 1540).

MALVAVISCUS.

Malvaviscus lanceolata Rose, sp. nov.

A shrub, 5 to 12 feet high, nearly glabrous throughout; branches bright green, shining; leaves alternate; stipules linear 5 to 7 lines long, glabrous, caducous; petioles $1\frac{1}{2}$ inches long to nearly wanting; glabrous, except a line of pubescence on the upper side; blade 6 inches long or more, the upper leaves smaller, lanceolate, rarely lobed, 3-nerved at base, long-acuminate, serrate, glabrous; flowers solitary, axillary, on peduncles 2 inches or less long; involucre of 6 (rarely 7) linear, erect bracts longer than the calyx; calyx tubular, 6 lines long; lobes ovate, acute, pubescent on the margin; corolla convolute, pale red, $1\frac{1}{2}$ inches long; stamens much exerted; style branches, 8 or 9; fruit red, fleshy, 5 lines in diameter.

Collected by Mr. E. W. Nelson, near Chicharras, State of Chiapas, altitude 6,000 feet, February 12 to 15, 1896 (No. 3807), and since cultivated in the greenhouse of the Department of Agriculture, where it flowered in January, 1898 (J. N. Rose, No. 4027). It is a very pretty flowering shrub and worthy of a place among plants of this class.

Malvaviscus palmeri Baker f. Contr. Nat. Herb. 3: 313. 1895.

Collected by Mr. E. W. Nelson on roadside between Mascota and San Sebastian, Jalisco, March 14, 1897 (No. 4061).

This species has only once before been collected.

Malvaviscus pringlei Baker f. Am. Journ. Sci. 50: 175. 1895.

A shrub fully 6 meters high; with leaves 15 to 18 cm. long; flowers very large and showy; petals 7.5 cm. long, white; stamen tubes nearly 15 cm. long, extending fully 7.5 cm. beyond the petals.

Collected along a garden fence in a little village between Monte Escobedo, Zacatecas, and Colotlan, Jalisco, August 28, 1897 (No. 2670).

This very showy plant has only once before been collected, and then from the state of Michoacan. I saw only a single plant, and supposed at the time it had been planted, as it was growing on the edge of a garden.

I have partly characterized the plants as above in order to bring out certain unpublished characters, as well as to show that the size of the flowers and leaves is even greater than was at first supposed. This is by far the most showy plant of the genus which I have yet seen from Mexico.

SIDA.

Sida alamosana Wats. Proc. Am. Acad. 26: 133. 1891.

Collected by J. N. Rose at San Juan Capistrano, Zacatecas, August 23, 1897 (No. 3553).

Sida anomala St. Hil. Fl. Bras. Merid. 1: 177, t. 33. 1825.

Collected by J. N. Rose between Concepcion and Acaponeta, July 23, 1897 (No. 1892); on the road between Huejuquilla and Mesquitec, August 25, 1897 (No. 2581); and near Bolaños, September 10 to 19 (No. 3696).

Sida acuta carpinifolia (L. f.) Schum. in Mart. Fl. Bras. 12, pt. 3: 326. 1891. *Sida carpinifolia* L. f. Suppl. 307. 1781.

Collected by J. N. Rose, at Mazatlan, June 17 to 19, 1897 (Nos. 1377 and 3102); at Acaponeta, Tepic, June 28 (No. 1491), July 30 (Nos. 3290 to 3292); at Rosario, Sinaloa, July 6 to 10 (No. 3160); and near Colomas, July 18 (No. 3198). At Rosario I saw this plant made into rude brooms.

Besides the above I collected, near Dolores, Tepic, August 7, 1897 (No. 424), specimens which, since the fruit is not mature, it seems best for the present to refer as a form to this species, though they do not agree with it in all respects. They may be described as follows: Low shrubs; young branches covered with large stellate hairs; leaves oblong, rounded at base, obtuse and apiculate, pubescent above, with simple hairs, but beneath densely stellate-pubescent, 3 to 7.5 cm. long on very short petioles; stipules linear, twice as long as the petioles; flowers solitary on peduncles 2 cm. long; buds shortly oblong, pubescent, with simple hairs, long-acuminate, strongly angled at base; petals purplish at base; capsule truncate; carpels 7, faintly reticulated on the back, mucicose (?).

Sida cinerea Baker f. Contr. Nat. Herb. 3: 311. 1895.

Collected by J. N. Rose, at Acaponeta, Tepic, June 23 to 30, 1897 (No. 3131).

This species has heretofore been known only from the type specimens which came from Tepic.

Sida diffusa H. B. K. Nov. Gen. et Sp. 5: 257. 1821.

Collected by J. N. Rose, in the State of Durango, August 15, 1897 (No. 2316); at San Juan Capistrano, State of Zacatecas, August 19 (No. 2432); and at Bolaños, State of Jalisco, September 10 to 19 (No. 2904).

Sida hederacea (Dougl.) Torr.; Gray, Pl. Fendl. 23. 1849. *Malva hederacea* Dougl.; Hook. Fl. Bor. Am. 1: 107. 1830.

Common in gardens near Guaymas. Collected by J. N. Rose, June 5 to 11, 1897 (No. 1208).

Sida holwayi Baker & Rose, sp. nov.

Stems erect 6 to 8 (? dm. high, covered with coarse spreading stellate hairs and a few longer simple hairs; branches ascending, somewhat naked above; leaf blades oblong, 2.5 to 4 cm. (? long, rounded at base, rounded or obtuse at apex, crenately toothed, green and somewhat stellate above, paler and more densely stellate beneath; petioles shorter than the blades; stipules filiform, deciduous; flowers 1 to several in the lower axils, becoming more or less glomerate towards the apex of the branch, intermixed with purplish filiform bracts (stipules); fruiting pedicels 6 to 8 mm. long; calyx 6 mm. high, angled, softly pubescent, with broadly triangular and acute lobes; corolla yellow (?); capsule 6-lobed; carpels somewhat reticulated on the back, strongly reticulated on the sides, 2-awned, the body of the carpels 2 to 3 mm. long, twice as long as the retrorsely hispid awns.

Collected by E. W. D. Holway, Cuantla, Morelos, October 12, 1898 (No. 3043).

Nearest *S. salviaefolia* Presl, but of different habit and with pubescent broader leaves, the inflorescence more congested towards the tips of the branches, sepals broader, carpels larger and shorter-awned, etc.

Sida neo-mexicana Gray, Proc. Am. Acad. 22: 296. 1887. Fide Baker f.

Collected by J. N. Rose near Huejuquilla, Jalisco, August 24, 1897 (No. 2537).

Sida salviaefolia Presl, Reliq. Haenk. 2: 110. 1836.

The type of this species was collected many years ago by Haenke at Acapulco, and had not been collected again until recently, when Dr. E. Palmer (No. 1, 1895-96) obtained it from the type locality. Mr. E. G. Baker in his revision made it a variety of *S. spinosa*, but I believe he now considers it a good species. It is remarkable for the long retrorsely hispid awns of the carpels.

Sida tragiaefolia Gray, Bost. Journ. Nat. Hist. 2:164. 1850.

Low shrubs 3 to 6 dm. high; leaves stellate above; calyx 18 mm. broad; petals 18 mm. long, "orange yellow."

Collected by Dr. E. Palmer in crevices of rock on mountain side near Topolobampo, State of Sinaloa, September, 1897 (No. 199).

This is considerably out of the supposed range of *S. tragiaefolia* and differs also in having larger flowers, more shrubby stems, etc.

SPHAERALCEA.

Sphaeralcea angustifolia (Cav.) Don, Hist. Dichl. Pl. 1:465. 1831. *Malva angustifolia* Cav. Monadelph. Diss. 2:61, t. 29, f. 3. 1786.

Flowers violet. Collected by J. N. Rose along railroad in the State of San Luis Potosi, September 28, 1897 (No. 3074).

Sphaeralcea angustifolia cuspidata Gray, Proc. Am. Acad. 22:293. 1887.

Flowers orange color.

Collected by J. N. Rose at El Paso, June 1, 1897 (No. 1189). In the field these two forms appear specifically distinct, although after examining a large series of herbarium specimens I have hesitated to separate them.

If restored to specific rank *Sphaeralcea stellata* Torr. & Gr. (*Sida stellata* Torr.) would seem to be the proper designation.

Sphaeralcea arida Rose, sp. nov.

Stems 6 to 12 dm. high, much branched, the young branches densely stellate, becoming glabrate; leaves small, 15 to 35 mm. long, ovate, somewhat 3-lobed, crenate, densely stellate on both sides; petals very short (4 to 5 mm. long); flowers in more or less leafy racemes or panicles; calyx 8 mm. long, cleft below the middle, shortly acuminate, densely stellate; petals yellowish (?), drying purplish, 12 to 15 mm. long; carpels oblong, 4 to 5 mm. long, apiculate at apex, base strongly reticulated, one-seeded.

Collected by Dr. E. Palmer on the border of a garden in the arid region about Guaymas, Sonora, in 1887 (No. 90), and from the same locality by J. N. Rose in company with Dr. E. Palmer, June 5 to 11, 1897 (No. 1209). Dr. E. Palmer's plant was referred to *S. ambigua*¹ from which it is abundantly distinct. Type, J. N. Rose's No. 1209.

Sphaeralcea californica Rose, Contr. Nat. Herb. 1:66. 1890.

Stems often 15 dm. high, much branched; flowers light orange, drying yellowish. Common in waste places.

Collected by J. N. Rose at La Paz, Lower California, June 14, 1897 (No. 1305).

Sphaeralcea pedatifida (Gray) Gray, Proc. Am. Acad. 22:291. 1887. *Malvastrum pedatifidum* Gray, Bost. Journ. Nat. Hist. 2:160. 1850.

Collected by J. N. Rose at El Paso, Tex., June 1, 1897 (No. 1188).

El Paso is probably the type locality of this species.

WISSADULA.

§ **ABUTILASTRUM** Baker, Journ. Bot. 31:70. 1893.

This section as originally used contained but one species (*W. scabra*). It is well named, but should be somewhat modified and enlarged so as to include also certain species which have more strikingly the habit and flowers of Abutilon. As I understand the section, it should include the following five species:

Wissadula scabra Presl, Reliq. Haenk. 2:117, t. 69, figs. 1 to 14. 1836.

Presl gives no more definite locality for this species than "Mexico."

I have referred here the two following collections, although they both should be compared with the type specimens: Mr. Pringle's No. 1721 (1888) from the barranca near Guadalajara and J. N. Rose's No. 2928 from near Bolanos, Jalisco.

¹ Proc. Am. Acad. 24:41.

Wissadula paniculata Rose, sp. nov.

A small shrub 15 to 24 dm. high; leaves ovate, acuminate, cordate at base, 7 to 10 cm. long, short-petioled, somewhat stellate on both surfaces; flowers in dense terminal panicles; pedicels slender, 1 to 2 cm. long, jointed a short distance below the flower; calyx 6 mm. long; sepals triangular, shortly acuminate, stellate; petals yellow; carpels about 8, strongly apiculate.

Collected by Dr. E. Palmer near Ymala, Sinaloa, September 25 to October 8, 1891 (No. 1743).

This species is near *W. scabra*, but seems to differ in the rougher pubescence of the leaves and calyx, the more acuminate buds and sepals, smaller calyx, and smaller and strongly apiculate carpels.

Wissadula acuminata Rose, Contr. Nat. Herb. 5:144. 1897.

The type specimen (Type No. 1515) is in the National Herbarium.

Wissadula holosericea (Scheele) Garcke, Zeitschr. f. Naturw. 63:124. 1890;

Abutilon holosericeum Scheele, Linnaea, 21:471. 1818.

Our material under this name seems to represent 3 forms, but until a much fuller suite of specimens can be examined it seems best to leave them all undisturbed. The slender sepals appear to be associated with the blunter carpels and vice versa. *A. holosericeum* var. (Palmer's No. 112) has nothing to do with this species, but is a good *Abutilon*.

Wissadula pringlei Rose, Contr. Nat. Herb. 3:312. 1895.

The type specimen (Type No. 475) is in the National Herbarium.

Wissadula trilobata (Hemsley) Rose; *Abutilon trilobatum* Hemsley, Diag. Pl. Nov. pt. 2:24. 1879.

We have a duplicate type (Type No. 184) of this species in the National Herbarium which possesses all the peculiarities of the genus *Wissadula* as it has been so aptly described by Dr. Robinson in the Synoptical Flora. Mr. Hemsley states that the cells are often 5 or 6 ovuled, but all those which I have examined have 3 ovules, two in the upper and one in the lower section of the cell, as is always found in this genus.

Collected by Parry & Palmer, near San Luis Potosi, 1878 (No. 81), and more recently by A. Dugès, near Guanajuato, September, 1889 (No. 287).

Here may yet be referred *W. acuminata* Rose, but, as the specimens at hand show a slight difference, it seems best to keep them distinct until more material is collected of both.

In my discussion of *Wissadula hirsutiflora* and its forms, in 1895,¹ I suggested that it contained several good species, and that they seemed to indicate a good subgenus. A recent review of this material confirms the results of my previous study, and I now feel warranted in disposing of them as follows:

BASTARDIASTRUM Rose, § nov.

Carpels 3, rounded at apex; stamens cleft to the base; flowers violet.

Wissadula hirsutiflora (Presl) Rose, Contr. Nat. Herb. 1:306. 1895. *Bastardia hirsutiflora* Presl, Reliq. Haenk. 2:112. 1836.

Collected by Dr. E. Palmer at Colima, Colima, February 27 and 28, 1891. These specimens have been identified by Mr. E. G. Baker of the British Museum. The type is reported from Acapulco, but both Palmer and Nelson have recently visited this port without being able to find the species.

Wissadula cincta (Brandege) Rose; *Abutilon cinctum* Brandege, Zoc. 3:318. 1893.

The type collected by Mr. T. S. Brandege in 1892 comes from Las Durasnellas, State of Sonora. A fragment (Type No. 194) is in the National Herbarium. The plant had been previously collected by Dr. E. Palmer (in 1890) near Alamos, same State (No. 381), and has since been collected by E. A. Goldman at Alamos (January 29, 1899;

¹ Contr. Nat. Herb. 1:306.

No. 306). The following note, taken from a letter of Mr. Brandegee, shows that his specimens possess the characters of the genus as well as of this section:

"In *Abutilon cinctum* there is no antheriferous column proper; each one of the carpels is transversely septate, the upper part bearing two collateral seeds and the lower cell one. Very little of it was collected, and I can give you only the fragments inclosed in this letter."

Wissadula tricarpellata Robinson & Greenman, sp. nov.

Stems terete, lignescent below, finely tomentose-pubescent, with short simple (viscidulous?) hairs and somewhat scabrous; the surface in age slit with numerous fine longitudinal linear depressions, apparently the result of the spreading of the cortical fibers; leaves ovate, gradually narrowed to a caudate acumination, serrate-dentate, green and finely stellate-pubescent on both surfaces, slightly paler beneath, usually marked above with a small dark-purple spot at the origin of the (5 to 7) nerves, cordate at the base, 6 to 10 cm. long, 3.5 to 5 cm. broad; petioles 3 to 7 cm. long, tomentose; stipules and bracts filiform, pubescent, caducous; flowers numerous, borne in a large, loose, racemose panicle; pedicels 0.6 to 2 cm. long; calyx campanulate, stellate-tomentose upon the outer surface; segments ovate-lanceolate, attenuate, 4 to 5 mm. long, somewhat exceeding the tube; petals obovate, cuneate, essentially entire, 7 mm. long, densely stellate-pubescent near the base upon the outer surface and margins, in dried specimens bluish; staminal tube 1.7 mm. long; style deeply 3-parted; divisions pubescent below; ovary and capsule tomentose; ovules 3 in each cell; seeds dark brown, 2 mm. in length, inconspicuously verrucose.—Collected by C. G. Pringle on a moist hillside at Tequila, Jalisco, October 17, 1893, No. 4578 (type number), and September 30, No. 4610 in part. Both numbers were distributed with Mr. Pringle's sets of 1893. Unfortunately, the material under No. 4610 seems to have been confused and to consist in some sets of a *Sida* near to if not identical with *S. alamosana* Wats. This material may be distinguished from the *Wissadula*, here described, not only by the well-known carpellary difference between the genera *Sida* and *Wissadula*, but by the pubescence of the leaves, which is longer and chiefly simple.

Wissadula wissaduloides (Baker f.) Rose; *Abutilon wissaduloides* Baker f. Contr. Nat. Herb. 3: 312. 1895.

The type of this species is in the National Herbarium (type No. 482). The species is only known from Dr. Palmer's specimens from Ymala, State of Sinaloa, 1891 (No. 1720).

MISCELLANEOUS SPECIES.

Bombax palmeri Wats. Proc. Am. Acad. 22: 399. 1887.

A tree 4.5 meters or more high, with a large spreading top; bark very scaly, but finally falling, leaving a smooth, reddish trunk; leaflets mostly 5, clothed when young with a dense stellate tomentum on both sides, becoming nearly glabrate above in age; petals 5, 10 cm. or more long, thickish, densely stellate; stamens numerous, united at base into a tube 2 cm. long.

This species has heretofore been known only from Palmer's and Pringle's collections about Guadalajara. It proves to be one of the commonest trees in the tropical district from Rosario to Acaponeta and Tepic, eastward to the mountains, and in the tropical valleys of the interior. The trees are usually found on rocky hillsides at from 200 feet to 3,600 feet altitude. It flowers some time during the dry season (October to June), fruiting just before the beginning of the rainy season. Flowers heretofore have not been collected, and mine are poor, consisting only of old and withered ones.

Specimens were collected near Acaponeta, Tepic, June 23, 1897 (No. 1451), and near Colomas, Sinaloa, July 21 (No. 3215). Trees were noted on the east side of the west range of the Sierra Madre at an altitude of 3,600 feet.

Ceiba casearia Medic. Malvenfam. 16. 1787.

A few large trees, 20 meters high with a trunk 15 dm. in diameter, were seen near Concepcion, Tepic, July 29, 1897; J. N. Rose (No. 1887). The trees are said to flower in the dry season.

This is one of the tree-cottons of which the Mexicans use the fiber in pillows, etc.

Ceiba grandiflora Rose, Contr. Nat. Herb. 1:308. 1895.

This *Ceiba* is a common tree throughout tropical western Mexico. It does not flower during the rainy season, or only sporadically, and my specimens therefore chiefly show foliage. The leaves being taken at various times throughout the rainy season show great variation in texture, pubescence, etc. My specimens may all belong to one species, although I have referred them to two. Full material of all the Mexican species should be collected so as to enable someone to redescribe them.

Collected by J. N. Rose near Rosario, July 6 to 10, 1897 (No. 3161); near Colomas, Sinaloa, July 16 (No. 1705), and between San Juan Capistrano, Zacatecas, and Huejuquilla, Jalisco, August 23 (No. 2494).

Ceiba tomentosa (Robinson) Britten & Baker, Journ. Bot. 34:175. 1896. *Eriodendron tomentosum* Robinson, Proc. Am. Acad. 29:314. 1894.

Collected by J. N. Rose at Bolaños, September 10 to 19, 1897 (Nos. 2934 and 3687), and between Bolaños and Guadalajara, Jalisco, September 22 (No. 3096).

I have referred these specimens here as they come from the region of the type specimens. In the field I did not distinguish this species from the preceding, but the herbarium specimens show a difference in pubescence and texture which seems to be constant.

Gossypium barbadense L. Sp. Pl. 2:697. 1753.

A shrub or large bush 5 to 8 feet high. It is cultivated in many places in Mexico for the cotton. Specimens were obtained from the following places:

La Paz, Lower California, June 14, 1897 (No. 1306); in yard at Huasemote, August 14 (No. 2285); on the road between San Juan Capistrano and Huejuquilla, Jalisco, August 23 (No. 2498), and in yard at Bolaños, Jalisco, September 10 to 19 (No. 3697).

Horsfordia newberryi (Wats.) Gray, Proc. Am. Acad. 22:296. 1887. *Abutilon newberryi* Wats. Proc. Amer. Acad. 11:125. 1876.

This is a common shrub on the low hills about Guaymas.

Collected by J. N. Rose, June 5 to 11, 1897 (No. 1262).

Kosteletzkya paniculata Benth. Pl. Hartw. 285. 1848.

The type was collected at Bolaños, Jalisco, by Hartweg. I did not see the plant at this place, but collected specimens between Bolaños and Guadalajara, September 22, 1897 (No. 3064).

Malva parviflora L. Amoen. Acad. 3:416. 1756.

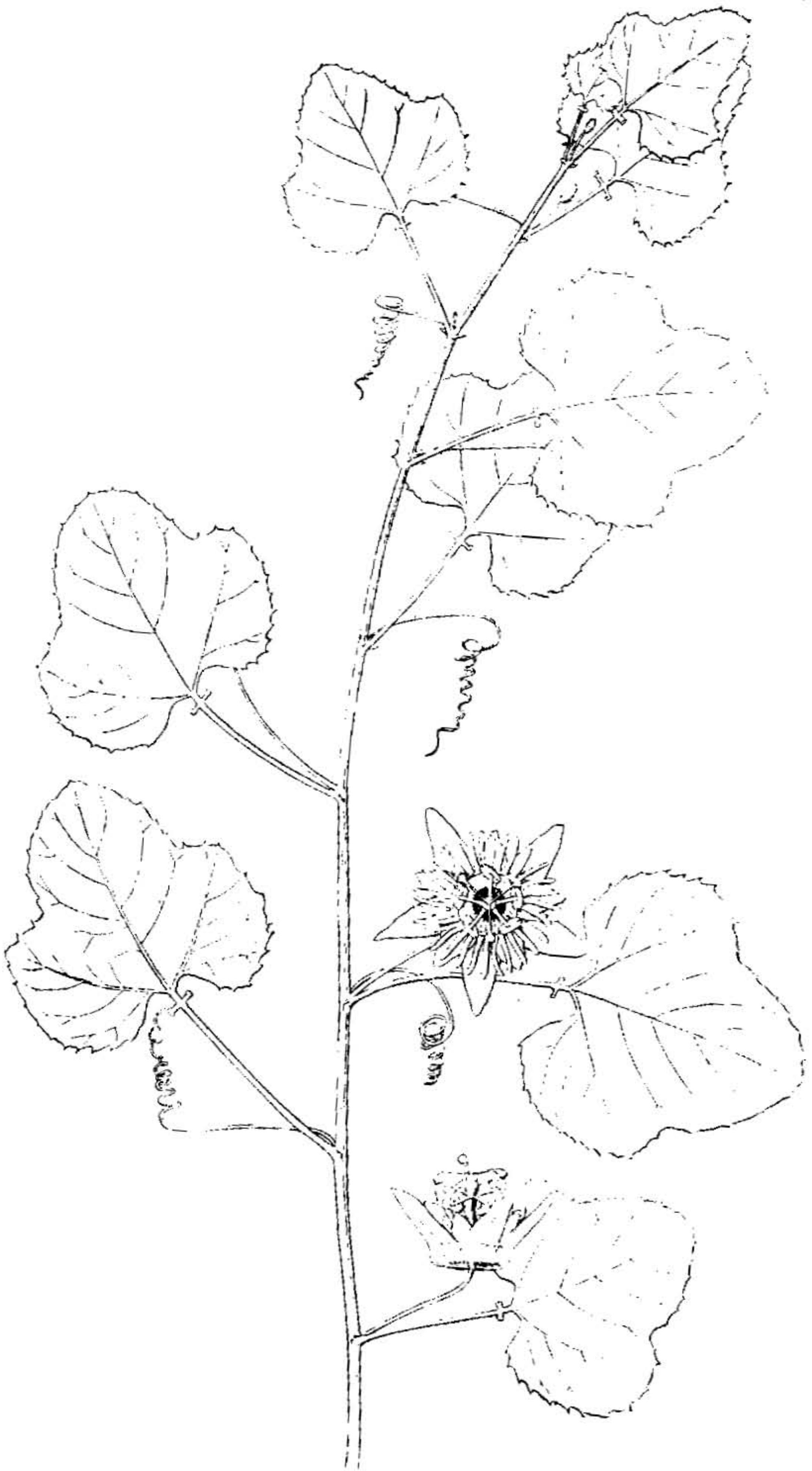
Collected by J. N. Rose at Colomas, July 16, 1897 (No. 1723), and between Concepcion and Acaponeta, July 30 (No. 1905).

This is called by the Mexicans "malva castilla."

Malvastrum greenmanianum Rose, sp. nov.

Stems 5 to 8 feet high, sparingly branched; plant more or less stellate-pubescent throughout; leaves ovate to orbicular in outline, cordate at base, 3-lobed, with the lobes acute, somewhat unequally crenate, the larger ones 5 to 6 inches long (on petioles 4 to 6 inches long), becoming much smaller above; flowers in dense axillary clusters or short spikes, or sometimes in a terminal interrupted spike, either naked or leafy; bractlets 3, filiform; calyx 3 lines broad, becoming larger in fruit; lobes ovate, acute, 1 line long; petals white, small (1½ lines long), nearly orbicular, rounded at apex, somewhat cuneate at base; carpels usually 9; 1 line in diameter, smooth except a small tuft of hairs near the tip. Collected by Mr. C. G. Pringle in the pedregal of the Valley of Mexico, October 19, 1896 (No. 6582).

This species is very near *M. schaffneri* Wats., but differs somewhat in the shape



PASSIFLORA COLIMENSIS Masters & Rose.

of the leaves, in the calyx lobes being less ovate, acuminate, the calyx less densely stellate-tomentose, the fruit slightly different, etc. This species is named for Mr. J. M. Greenman, who has assisted in separating it from *M. schaffneri*.

Malvastrum tricuspdatum Gray, Pl. Wright. 1: 16. 1852.

Collected by J. N. Rose between Rosario and Concepcion, Sinaloa, July 27, 1897 (No. 3263); at Rosario, July 11 (No. 1597), and at San Juan Capistrano, Zacatecas, August 20 (No. 2446).

Melothria scabra Naud. Ann. Sci. Nat. ser. 5, 6: 10. 1866.

Collected by J. N. Rose near Acaponeta, Territorio de Tepic, June 23 to 30, 1897 (No. 3142).

A rather peculiar form, with leaves nearly orbicular in outline, either slightly or deeply 5-lobed. A somewhat similar form was collected by Dr. Palmer near Acapulco, Guerrero, in 1895.

Robinsonella discolor Rose & Baker f., sp. nov.

Tree 6 to 9 m. high, glabrous, with brownish gray cortex; leaves ovate, cuspidate, subacuminate, blunt at the apex, cordate or subcordate at base, sometimes unequal-sided, 4 to 5 cm. long, 2.5 to nearly 4 cm. broad, on petioles 1 to 1.5 cm. long, discolorous (covered with a fine but dense tomentum), green above, canescent below; sepals ovate; petals white, 7 mm. long; fruit borne on pedicels, often about 2 cm. long toward the extremities of short lateral branchlets and at the apex; pedicels articulated about the middle, solitary or in pairs; calyx about two-thirds the length of the carpels; sepals ovate, acute, puberulous; carpels about 12, stellately hairy, especially on the back, not quite 1 cm. long; seed dark brown, subtriangular, hairy in parts.

Collected by Mr. C. G. Pringle on limestone hills, Las Palmas, San Luis Potosi, altitude 90 meters, April 27, 1894 (No. 5767), and March 2, 1899 (No. 8007).

This species differs from *R. cordata* Rose & Baker f. in not having villous petioles, in the color and character of the pubescence on the leaves, etc. Subscribers to Mr. Pringle's elegant sets of Mexican plants will doubtless find it in this year's distribution. Mr. Pringle states that this species is a slender tree found on the mountains of eastern San Luis Potosi, thence to Tampico.

Adding this species to those described in Garden and Forest for June, 1897, the genus will now consist of *R. cordata* Rose & Baker f., *R. divergens* Rose & Baker f., *R. lindeniana* (Turcz.) Rose & Baker f., and *R. discolor*. The type of the last named will be found in the U. S. National Herbarium, Washington.

Fragments of still another species have recently been sent to Mr. Rose from Honduras, and while there is no question as to its generic position and its distinctness from the four other species, yet it seems best to withhold it until further material has come to light. Collectors in Central America and curators of Herbaria will confer a great favor if they can communicate any material which will help us diagnose this species fully.

NOTES ON PASSIFLORA.

Passiflora colimensis Masters & Rose, sp. nov.

PLATE XX.

Annua? debilis ramis sulcato-striatis, setulosis; petiolis ad 5 cm. gracilibus versus apicem biglandulosis, laminis circa 4 cm. long. 5 cm. lat. membranaceis pilosulis seu glabrescentibus basi cuneatis cordato-bilobis (lobis rotundatis), 3-nerviis ad medium 3-lobis lobis obtusiusculis ad margines remote dentatis; stipulis minutis deciduis; pedunculis axillaribus petiolis brevioribus bracteis parvis setaceis remotiusculis munitis; floribus circa 4 cm. diam. tubo lato glabro poculiformi; sepalis herbaceis e basi lato lanceolatis; petalis albidis sepalis dimidio brevioribus; corona fauciali filamentosa filis 1-seriatis petalis aequilongis liguliformibus basi violaceo fasciatis; corona media membranacea inflexa margine dentata; ovario

glabro elliptico, stylis liguliformibus apice stigmatoso clavatis; fructu baccato, $\frac{1}{2}$ cent. long. 3 cent. lat. glabro; seminibus complanatis foveolatis.

This species is near *P. sicyoides* and *P. bryonoides*, but specifically very different. The specimens have been carefully compared both at Kew and at Washington, but there is nothing like it in either collection.

Collected by Dr. E. Palmer in July, 1897 (No. 283), at the city of Colima, where it is said to grow in shady woods, running over low bushes or trailing over the ground. Dr. Palmer states that the flowers are white with blue markings and very showy, and that the fruit is sometimes eaten.

***Passiflora foetida* L. Sp. Pl. 2: 959. 1753.**

This is a very common species. Collected by J. N. Rose at Acaponeta, Tepic, June 25, 1897 (No. 1466); between Pedro Paulo and San Blasito, Tepic, August 4 (No. 1998); near San Juan Capistrano, Zacatecas, August 20 (No. 2143), and at Bolaños, Jalisco, September 11 (No. 2894).

***Passiflora foetida arida* Masters & Rose, var. nov.**

A very remarkable form, and perhaps distinct from *P. foetida*, but for the present it seems best to treat it as a variety.

Specimens collected by J. N. Rose at Guaymas, Sonora (No. 1206), may be described as follows: Stems covered with a soft, whitish, short pubescence; petioles very short; leaves nearly orbicular in outline, deeply 3-lobed, the lobes nearly equal, rounded at apex, very thick in texture, somewhat reticulated beneath, densely and velvety pubescent on both sides, slightly or not at all glandular; involueral bracts lanate, more or less glandular.

Here I am inclined to refer the following specimens, although they differ somewhat in the shape and cutting of the leaves:

Edward Palmer's No. 91, from Guaymas, Sonora, 1887; F. S. Maltby's No. 206, from Hermosillo, Sonora, June 10, 1897; J. N. Rose's No. 1318, from La Paz, June 11, 1897; T. S. Brandege's plant, from Comondu, Lower California, March 11, 1889, and his No. 333, from San Jose, Lower California, March to June, 1887. This form is confined to the most arid parts of western Mexico.

***Passiflora foetida hastata* (Bertol.) Masters in Mart. Fl. Bras. 13, pt. 1: 583. 1872.**

P. hastata Bertol. Fl. Guatim. 27. 1840.

Leaves soft-velvety, the central lobe much elongated.

Here I would refer specimens collected by Dr. E. Palmer at Acapulco, Mexico, in 1894 and 1895 (Nos. 306 and 315).

***Passiflora mexicana* A. Juss. Ann. Mus. Par. 6: 108, t. 38, f. 2. 1805.**

Collected by J. N. Rose in the State of Jalisco on the road between Bolaños and Guadalajara, September 19, 1897 (No. 3017).

***Passiflora serratifolia* L. Sp. Pl. 2: 955. 1753.**

Collected by Mr. E. A. Goldman in the State of Puebla, January 31, 1898 (No. 36).

This is *P. serratifolia* as understood by Masters, but the leaves are less serrate than in Linnaeus's figure.¹

***Passiflora sicyoides* Cham. Linnaea, 5: 88. 1830.**

Collected by J. N. Rose in the mountains west of Bolaños, September 15 to 17, 1897 (No. 2965).

My specimens are referred to *P. sicyoides* on the authority of Dr. Masters. They differ from the description of *P. sicyoides* in several important respects. In my specimens the leaves are equally 3-lobed, the lobes being rounded or occasionally acute, not glandular at base, etc., while *P. sicyoides* is described as having the lobes triangular and acuminate, the central one elongated and biglandular at the sinus; the petiolular glands in my plant are globular, sessile or nearly so, and not club-shaped,

¹ Amoen. Acad. 1: t. 10, fig. 1.

etc. The seeds are also very differently marked from those found on Guatemalan specimens so labeled in the National Herbarium.

The type of *P. sicyoides* was collected near Jalapa by Schiede and Deppe.

Passiflora suberosa L. Sp. Pl. 2: 958. 1753.

Collected by J. N. Rose in the State of Durango, August 15, 1897 (No. 3504), and in the Sierra Madre west of Bolaños, September 15 to 17, 1897 (No. 2946).

These two collections, although both referred to *P. suberosa*, seem to be specifically distinct.

The latter specimens have deeply 3-lobed leaves, the lobes very much elongated; the former has ovate leaves, but slightly 3-lobed, the lobes ovate. Dr. Masters thinks this is "an extreme form of *suberosa*, or perhaps distinct."

SYNOPSIS OF THE NORTH AMERICAN SPECIES OF WALTHERIA.

Until recently the National Herbarium has possessed but two species of *Waltheria*, namely, the common *W. indica* and *W. detonsa*. Recent botanical activity has brought to light all of the six species listed by Hemsley in the *Biologia Centrali-Americana*, except the little-known *W. hirsuta*, as well as three undescribed species, which are characterized below. The following key has been constructed after a careful study of the material in the Gray, Donnell Smith, and National Herbaria, and, although it seems reasonably satisfactory, a study of larger collections will doubtless suggest further modifications.

A. § STEGOWALTHERIA. *Stipules large and broad; style terminal; capsule dehiscent by a terminal lid.*

Waltheria operculata Rose, sp. nov.

Herbs, 3 to 6 dm. high, more or less branching, somewhat hairy; leaves oblong, more or less hairy on both sides, somewhat irregularly serrate, acute, 3 to 6 cm. long; petioles 12 to 25 mm. long; stipules obliquely ovate, acuminate, 4 mm. broad at base, 8 mm. long, inflorescence capitate, short-peduncled; heads bracteate; outer bracts broadly ovate, acute, inner ones narrower; calyx turbinate, 6 mm. high, 5-lobed, 10-nerved; lobes acuminate, as long as the tube, clothed with long pilose hairs; petals 5, 7 mm. long, yellow, spatulate, obtuse, slightly sagittate at base, and with slender claws; stamens 5; filaments united to the top; style slender, tapering into a long unbranched appendage; ovary 2-seeded; capsule thin below, but capped with a thick hairy operculum.

This species belongs to Professor Schumann's section *Stegowaltheria*, of which there have been hitherto only two species described, both from Brazil. It is perhaps nearest *W. bracteosa*, but it has differently shaped stipules, narrower and longer-petioled leaves, shorter peduncles, and filaments united to the top.

Collected by E. W. Nelson between Tapana, State of Oaxaca, and Tonala, State of Chiapas, altitude 200 to 500 feet, August 1 to 3, 1895 (No. 2876).

AA. § EUWALTHERIA. *Stipules filiform; style lateral; dehiscence of capsule loculicidal.*

a. *Leaves thin, acuminate, sharply serrate, soon glabrate.*

Waltheria acuminata Rose, sp. nov.

Stems shrubby; leaves broadly ovate, acuminate, cordate at base, somewhat irregularly serrate, 10 to 12.5 cm. long, including the petiole (2.5 to 3 cm. long), nearly glabrous, or the petioles more or less stellate-pubescent; flowers in small axillary or terminal clusters on short peduncles; calyx turbinate but somewhat 5-angled, strongly 10-nerved, densely stellate-pubescent; lobes 5, half as long as the tube, ovate, acute; petals 5, obtuse, wedge-shaped, tapering into a slender claw,

glabrous; stamens 5, glabrous, filaments united to above the middle; style single, glabrous, much longer than the stamens; stigma club-shaped; ovary hairy, 1-celled, 2-ovuled.

Collected by Dr. Edward Palmer near Culiacan, October 25 to November 18, 1891 (No. 1793).

aa. *Leaves not so thin, not acuminate nor sharply serrate; never glabrate.*

b. *Low, rather delicate shrubs or herbs; leaves small; flowers small.*

c. *Calyx tube twice as long as the sepals.*

Waltheria preslii Walp. *Repert.* 1:340. 1842. *Waltheria rotundifolia* Presl, *Reliq. Haenk.* 2:151. 1836. Not Schrank, 1828.

Very common on the sea beach, often covering large surfaces with its long prostrate stems; flowers yellow. Collected by Dr. E. Palmer near Acapulco, February, 1895 (No. 502).

The type of *W. rotundifolia* was collected at Acapulco by Haenke many years ago, but has not since been collected till now.

cc. *Calyx tube no longer than the sepals.*

d. *Filaments united to the top.*

Waltheria americana L. *Sp. Pl.* 2:673. 1753.

Collected by J. N. Rose at Mazatlan, June 17 to 19, 1897 (No. 1376) and at Acapulco, Tepic, June 23 to 30 (No. 3130).

A common tropical species.

Waltheria detonsa Gray, *Pl. Wright*, 2:24. 1853.

Collected by J. N. Rose near San Juan Capistrano, Zacatecas, August 22, 1897 (No. 3448).

dd. *Filaments not united at the top.*

Waltheria hirsuta Presl, *Reliq. Haenk.* 2:152. 1836.

This species was collected by Haenke somewhere in western Mexico, but the exact locality is not given. I have not been able to refer any of our Mexican material to it. The species is described as having the leaves ovate, cordate, acute, and 5-nerved, and the flowers purple.

Waltheria acapulcensis Rose, *sp. nov.*

Apparently a low shrub; branches slender, purplish, stellate-pubescent; upper leaves somewhat elliptical, obtuse, rounded at base, some of the lower ones cordate, 2.5 to 5 cm. long, stellate above, paler and more densely stellate beneath; flowers in sessile or shortly pedunculate clusters; calyx 3 mm. high; sepals equal to the tube, acute; petals yellow, oblanceolate, obtuse, tapering at base into a slender claw; stamens united below for about one-fourth their length.

Collected by Dr. E. Palmer near Acapulco, 1894-95 (No. 218).

Dr. Palmer states that the species is very common in the canyons.

bb. *Tall coarse shrubs; leaves large; flowers large.*

e. *Filaments united to the top.*

Waltheria brevipes Turcz. *Bull. Soc. Nat. Mosc.* 31, pt. 1:213. 1858.

Shrub 2.4 to 7.5 dm. high. Calyx 6 mm. long, hairy without; lobes half the length of tube; filaments united to the top; style long and hairy; capsule without operculum. Collected by E. W. Nelson in dry ground in clearings about the outskirts of Tuxtepec, Oaxaca, April 9, 1894 (No. 362).

The type locality is "San Pedro Nolasco." We have nothing like Mr. Nelson's plant in the herbarium. It very closely resembles in habit, foliage, and inflorescence Mr. Charles L. Smith's No. 1087 from isthmus of Tehuantepec, but has a different calyx and stamen tube.

Waltheria rhombifolia Donnell Smith, Bot. Gaz. 23: 3. 1897.

This species, based on a common plant of Costa Rica, seems not to be specifically different from the above.

cc. *Filaments not united to the top.*

Waltheria glomerata Presl, Reliq. Haenk. 2: 152. 1836.

Shrub 15 to 24 dm. high; calyx 6 mm. long; sepals broad, 1 mm. long; petals exserted; stamens united only at base.

NOTES ON SOME MEXICAN SPECIES OF THALICTRUM.

While attempting to revise the Mexican and Central American species of *Thalictrum* I found that there were five very distinct species with peltate leaflets. Only two species with such leaflets had heretofore been described from this region. One of these is the very recent *T. pringlei*, of which we have a duplicate type in the National Herbarium. The other is the *T. peltatum* DC., which was very briefly described in the Prodrômus and said to have come from Mexico.

Lecoyer, in his monograph of this genus, cited as belonging to this species specimens from two very widely separated localities, namely, Costa Rica and Agua Calientes. From my knowledge of the flora of these two regions I doubted these references, and the specimens seemed to confirm my suspicions. I could not, however, without knowledge of the type locality and with the very meager characterization in the Prodrômus describe definitely what was really *T. peltatum*. This led me to send specimens and a brief note to M. Casimir de Candolle, at Geneva, in whose herbarium is deposited the type of *T. peltatum*. M. de Candolle replied at some length and inclosed a tracing of the foliage and akenes. His letter is so clear and exhaustive that it seems advisable to publish the correspondence in full, as it can not fail to be of interest and of value when a more exhaustive study of this genus is made.

FEBRUARY 27, 1899.

M. CASIMIR DE CANDOLLE,

Cour de St. Pierre 3, Geneva, Switzerland.

MY DEAR SIR: I am about to trouble you once more, and this time with a *Thalictrum*. *Thalictrum peltatum* was described in the Prodrômus, volume 1, page 11, but with no more definite locality than "Mexico." Lecoyer cites two localities for this species—Costa Rica and Agua Caliente. We have a specimen in the National Herbarium, from Guatemala, which seems to answer his description, but I am not sure that this is the same plant as described in the Prodrômus. I have five specimens with peltate leaflets, and at least three of them are undescribed. It is very important to make out definitely what is the true *T. peltatum*. I inclose leaflets and fruit of all these five species, and if you can refer any one of these definitely to *T. peltatum* it will be a great help to me. I should like, indeed, to have a fragment from your specimen, but since I know how precious these plants are, I do not feel as though I ought to ask for it.

Yours, very truly,

J. N. ROSE.

3 COUR DE St. PIERRE,
Geneva, March 11, 1899.

DEAR SIR: Having examined the five specimens of *Thalictrum* recently sent by you, I arrive at the following conclusions:

1. Pringle's No. 7448 is to be referred to the *peltatum* DC. Its leaflets are of the same shape and nearly of the same size with those of that species and glabrous as they are, as you may see in the subjoined tracing of one of the leaves of the *Prodromus* type. True it is that one of the fruits accompanying that in 7448 bears a rather long style; but I must point out to you the fact that, as shown in my tracing, the fruit of the *peltatum* when young has also a very long style, which afterwards gets broken, so that only part of it remains at the top of the fruit when ripe.

2. *T. jaliscanum* (Rose No. 2840) and the *Pringlei* (Pringle No. 2478) have both much smaller leaflets than the *peltatum* DC.; but this may be due to their having been gathered higher on the plants on superior and smaller leaves, as these leaflets also are quite glabrous; and finally as the fruits of both specimens agree with those of the *peltatum*, I suggest that those species are perhaps mere varieties of the latter.

3. Your *T. cuernavacense* (Pringle's No. 7238) really seems to me to be a distinct species, on account of its smaller and pubescent leaflets, although its fruits much resemble that of *T. peltatum*.

4. The Guatemala specimen, labeled *T. peltatum* (Heyde No. 164), also looks as a distinct species, on account of its strigulose fruits and leaflets.

Availing myself of your kind permission to do so, I shall retain those five specimens, much regretting on my side not to be able to supply you with any fragment of the already too meager *Prodromus* type.

These *Thalictrums* have a very great interest for me, being to my knowledge (with *T. ichangense* Lec.) the only plants having composite leaves with peltate leaflets. I have already drawn attention to this irregularity in the last sitting of the British Association at Bristol.

I remain, yours, very truly,
 (Signed)

C. DE CANDOLLE.

KEY TO THE MEXICAN AND CENTRAL AMERICAN SPECIES OF THALICTRUM.

a. *Leaflets peltate or subpeltate.*

b. *Akenes at least twice as long as broad.*

c. *Glaucous throughout; akenes tapering at base or with a short but evident stipe, narrowly elliptical.*

d. *Leaflets large, with very broad, shallow crenations.*

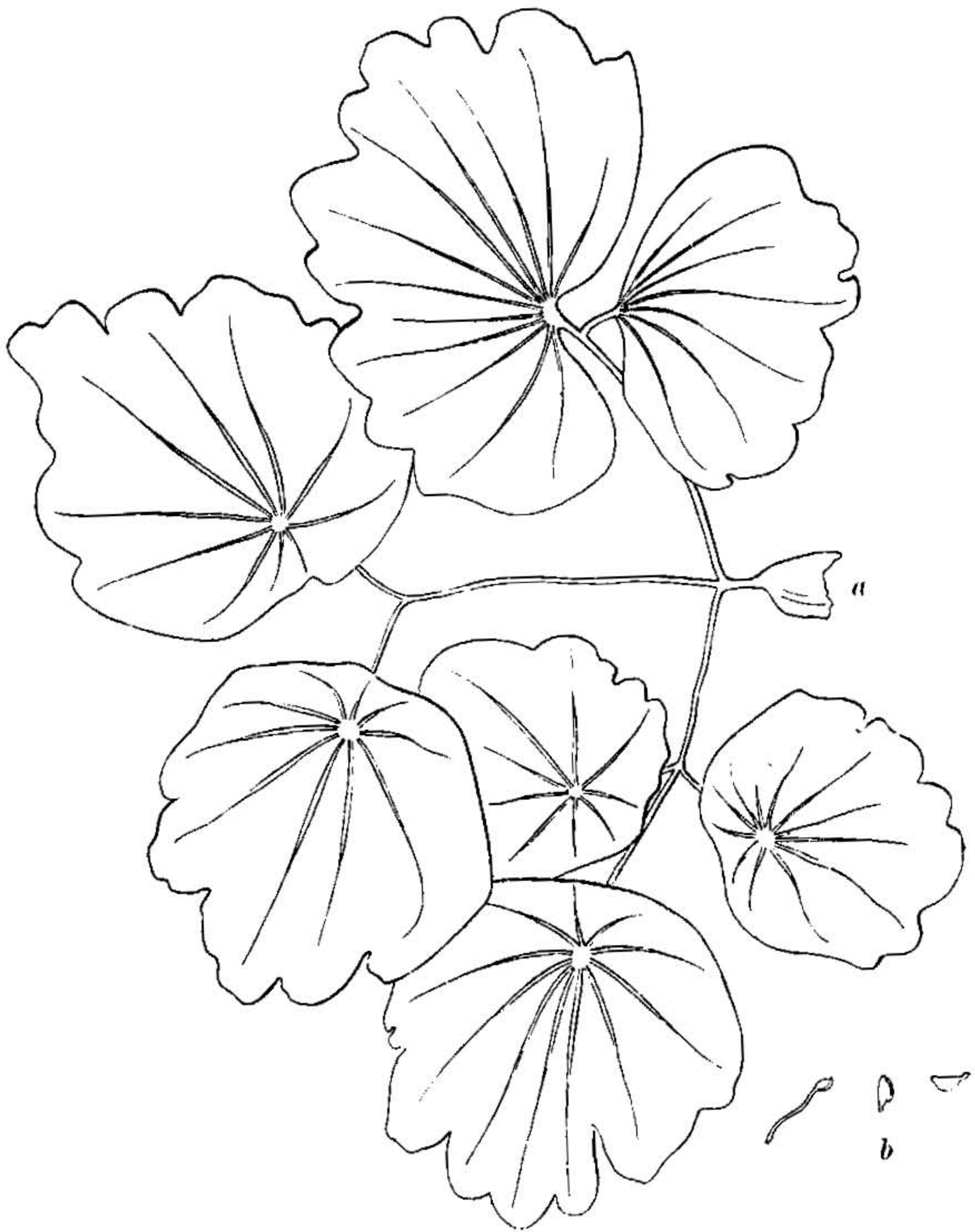
***Thalictrum peltatum* DC.** Prodr. 1:11. 1824.

PLATE XXI.

Apparently a tall, coarse plant, glabrous and very glaucous throughout; upper leaves twice ternate; leaflets very large (the upper ones 8 cm. in diameter), peltate, orbicular, with a few large crenations or lobes above, nearly entire below, rather strongly veined, pale on both sides; inflorescence an open panicle, 2 dm. long (in the only specimen seen); fruit somewhat oblong, 5 to 6 mm. long, tapering at base (almost stipitate); one edge nearly straight, the other rounded; the sides with 2 or 3 nearly parallel nerves either distinct or united by cross nerves; style very long (12 mm. or more) and somewhat persistent.

Collected by C. G. Pringle on bluff of barranca above Cuernavaca, Morelos, August 23, 1897 (No. 7448), and distributed as *T. pringlei*. It differs from *T. pringlei* in its fruit and foliage.

I have described this species from Mr. Pringle's specimens, since De Candolle's description really applies equally as well to any one of the peltate-leaved species.



THALICTRUM PELTATUM DC.

For the purpose of comparison I have inserted here A. De Candolle's original description:

"*T. PELTATUM*, floribus polygamis, filamentis filiformibus, antheris longe aristatis, carpellis sessilibus stylo longè aristatis, segmentis foliorum inferiorum peltatis."

Besides Mr. Pringle's plants, the only other specimen of this species known is the type now in the De Candolle herbarium, of which a sketch is here reproduced.

As is seen in the description above, no type locality is given, nor is any indicated on the label of the type specimens. The postscript to C. De Candolle's letter, quoted above, while not conclusive, seems to throw some light on this point, and is as follows:

"The Prodrômus type of *Thalictrum peltatum* is labeled thus: 'Mexique M'Alaman 1811.' Now, Alaman was minister of the interior of Mexico and a friend of my grandfather, to whom he has sent many other plants, but I do not know where he collected them."

From this it is seen that Alaman was stationed in the City of Mexico, and it is not improbable that Mr. Pringle's specimens may have been collected at or near the type locality. It is well known that the Cuernavaca region has long been the resort of the wealthy and influential class of the City of Mexico.

EXPLANATION OF PLATE.—a, Leaf; b, fruit with style, the latter broken off. (Tracing made from the type specimen now in the De Candolle herbarium at Geneva, Switzerland, furnished by M. Casimir De Candolle.)

dd. *Leaflets small, with small ovate teeth.*

***Thalictrum jaliscoanum* Rose, sp. nov.**

Stems tall, glabrous and glaucous; upper leaves ternate, the leaflets peltate, orbicular, 6 to 10 toothed, glabrous; inflorescence a large open panicle; carpels narrowly elliptical, somewhat cuneate at base, strongly nerved.

Collected by J. N. Rose on the table-land between Colotlan and Bolaños, State of Jalisco, September 7 to 9, 1897 (No. 2840).

cc. *Not at all glaucous; akenes sessile, one side straight.*

***Thalictrum cuernavacatum* Rose, sp. nov.**

Stems low, 6 dm. high, somewhat branching above, more or less pubescent; leaves 2-ternate; leaflets nearly orbicular, peltate, with broad, rounded, or somewhat apiculate crenations, slightly roughened above, densely puberulent beneath, pale, 45 mm. or less long; flowers in an open panicle, perfect; stamens with short apiculations; styles long; akenes with one side straight, the other curved, narrowed at base, but more strongly towards the apex, the fruit with 3 or 4 nearly parallel ribs sometimes uniting, slightly scabrous, 4 mm. long.

Collected by Mr. C. G. Pringle near Cuernavaca, State of Morelos, 1896 (No. 7238) and 1898 (No. 6878).

bb. *Akenes a little longer than broad.*

e. *Leaves 1 or 2 ternate; leaflets large, orbicular.*

***Thalictrum pringlei* Wats. Proc. Am. Acad. 25: 141. 1890.**

The type of this species comes from near Guadalajara, State of Jalisco, and was collected by Mr. C. G. Pringle, June 29, 1889 (No. 2478). We have a duplicate type (Type No. 687) in the National Herbarium. Here probably is to be referred Mr. Pringle's No. 2478, with similar data, but described as *T. pubigerum*, which it can not be. Two peculiar forms of this species were collected by me on the west range of the Sierra Madre, and are characterized below.

Thalictrum pringlei reticulatum Rose, var. nov.

Stems low, 3 to 4.5 dm. high, somewhat pubescent; leaves twice ternate; leaflets peltate, nearly orbicular, 12 to 40 mm. in diameter, entire or 3 to 5 angled, puberulent and pale beneath, dark green and glabrous above, strongly netted-veined; inflorescence a narrow terminal panicle; fruiting peduncle nodding; stamens not seen; styles long; akenes glaucous, obliquely lunate, with about 3 lateral nerves.

Collected by J. N. Rose between Pedro Paulo and San Blasito, in the foothills of the Sierra Madre, Territorio de Tepic, August 4, 1897 (No. 1985).

The second form is nearer the type than the above. In the tothing of the leaflets it is much like *T. pringlei*, but the leaflets are not always peltate, and are slightly puberulent beneath, and the anthers have longer apiculations.

Collected by J. N. Rose between Dolores and Santa Gertrudis, August 7, 1897 (No. 3372).

cc. *Leaves 4 or 5 ternate; leaflets small, ovate.*

Thalictrum guatemalense C. DC. & Rose, sp. nov.

Stems 6 to 7 dm. high, rather slender and more or less branched, more or less hispid; leaves much divided; rachis pilose; leaflets small, peltate, more or less roughened on both sides, paler and strongly veined beneath; akenes turgid, somewhat roughened, less than 4 mm. long. In the National Herbarium we have two specimens of this species, both from Guatemala and both distributed as *T. peltatum*. One of these is No. 164, Enrique Th. Heyde, collected in 1892, and the other is Capt. J. D. Smith's No. 794, collected by Rosalio Gómez.

To this species is to be referred probably Lecoyer's *T. peltatum* from Costa Rica.

aa. *Leaflets not peltate.*

This section of *Thalictrum* contains about 12 Mexican species. As several species heretofore reported from Mexico must probably be excluded from its flora, and as I am in doubt as to the best treatment of some of the older species, it seems best to defer for another paper a synopsis of these species. The following new species may be described here:

Thalictrum pachucense Rose, sp. nov.

Small delicate plants with long fibrous roots, 2 to 3 dm. high, glabrous throughout; leaves all or mostly basal, small, 1 dm. or less long including the petioles, 3-ternate; leaflets small, 5 to 7 mm. long, either broad and cordate or narrow and cuneate at base, pale beneath, glabrous on both sides; pedicels erect in flower, bent at tip in fruit; flower hermaphrodite; sepals purplish; stamens apiculate; stigmatose style long and slender; immature fruit glabrous, oblong.

Collected by Mr. C. G. Pringle in open woods of the Sierra de Pachuca, Hidalgo, altitude 2,700 meters, July 16, 1898 (No. 6880).

Thalictrum madreense Rose, sp. nov.

Glabrous, slender, 1 foot or less high from a cluster of thickened roots; leaves small, sessile, 1 or 2 ternate; leaflets mostly 3-toothed or lobed; flowers dioecious(?); fertile flowers often axillary and single; style wanting; stigma short and thickened; akenes with strong undulate ribs.

Collected by J. N. Rose near the top of the west range of the Sierra Madre east of Santa Teresa in the Territorio de Tepic, August 13, 1897 (No. 2232), and on the west side of the east range in the State of Durango, August 15 (No. 3505).

This species is a near relative of *T. pinnatum*, but differs especially in having ternate instead of pinnate leaves.

Thalictrum grandiflorum Rose, nom. nov. *T. grandifolium* Rose, Contr. Nat. Herb. 5: 143. 1897. Not Watson.

This species has been distributed as *T. grandiflorum*, which name it may now bear, since the name *T. grandifolium* is a homonym.

The type (Type No. 1513) is in the National Herbarium.

Thalictrum papillosum Rose, sp. nov.

Stems low, somewhat hairy; leaves small, 3-ternate; rachis somewhat hairy; leaflets nearly round, mostly cordate at base, somewhat 3-lobed, papillose above, strongly nerved beneath and more or less hairy; inflorescence contracted; pedicels strongly nodding in fruit; akenes 2 mm. long, hardly longer than broad, with a few irregular ribs.

Collected by J. N. Rose on the road between Huejuquilla and Mosquitec, Jalisco, August 25, 1897 (No. 2586), and near Monte Escobedo, Zacatecas, August 27, 1897 (No. 2658).

This species is near *T. lanatum*, but with much shorter fruit, etc.

CEDRELA OR SPANISH CEDAR.

There is more or less confusion in the public mind regarding the Spanish cedar. It is not a coniferous tree, as is sometimes stated, but belongs to the order Meliaceae and the genus *Cedrela*. I have had specimens of a *Cedrela* from the west coast of Mexico under consideration for seven or eight years without being able to place it satisfactorily in any described species. I saw and collected specimens myself in 1897, and after my return went over the material again, concluding that it was an undescribed species. I then sent material to M. de Candolle, who agrees with me and joins in describing as below.

Mr. E. W. Nelson, who has seen much of the Spanish cedar of western Mexico, tells me that it is a common tree on parts of the coast plains from Banderas Bay to Acaponeta, in the Territory of Tepic. It is also very common on the two larger of the Tres Marias Islands, and has long been the principal source of income for these islands, the wood having been cut and exported from them, at least since 1865. Although the readily accessible supply is now nearly exhausted, yet Mr. Nelson tells me that he saw trees 24 meters (80 feet) high and with trunks 6 to 9 dm. (2 and 3 feet) in diameter. During the dry season schooners are loaded with the wood and carry it to San Francisco, where it is manufactured into cigar boxes. On the mainland I found that the wood was used by the Mexicans also for tables, doors, store fittings, furniture, clothes chests, etc. The tree is planted in many of the towns, especially along the streets and in yards, and is frequently seen along the roadside. I have seen herbarium specimens from Tepic (Palmer, 1891, 1892); San Blas and Rosa Morada (Nelson, 1897), and Acaponeta (Rose, 1897). The species is found below 1,000 feet altitude in the arid tropical zone.

A second species is here described also, coming from north of Oaxaca City. This species has heretofore been associated with *C. montana*, from which, however, it must be quite distinct. This is a small tree and is found at an altitude of 1,860 meters.

From the east coast also a considerable quantity of "cedar" is shipped to the United States. During the fiscal year of 1897-98, about \$150,000 worth of the wood was shipped to the United States, the ports of shipment being Tampico, Tuxpan, Vera Cruz, Coatzacoalcas, and Frontera;

the most coming from Tuxpan. I have seen no specimens of this species. Mr. E. W. Nelson, who is familiar with the tree and its distribution, tells me that it comes from the humid tropics and is likely to be distinct from either of the above and from the Yucatan species (*C. odorata*). It is not unlikely that this species may be the little known *C. angustifolia* or the very doubtful *C. mexicana*. M. C. de Candolle writes me that *C. mexicana* can not be determined from the description. The type locality, however, is known, and by this the species may yet be made out.

The North American species may be noted as follows:

***Cedrela occidentalis* C. DC. & Rose, sp. nov.**

Tree 15 to 20 meters high; the trunk 6 dm. in diameter; leaves rather variable, 2 to 8 dm. long; leaflets 6 to 20 pairs, variable, oblong and obtuse to lanceolate and shortly acuminate (acumen either acute or obtuse), base unequal and acute on shorter side, rounded or subacute on the other side, 5 to 18 cm. long by 2.5 to 7 cm. broad, glabrous above, at first pubescent (as is also the rachis), beneath becoming glabrate; inflorescence a broad open panicle often 4 dm. long, glabrous; pedicels very short; calyx 2 mm. long, 5-toothed; teeth broadly ovate, subacute, as long as the tube, glabrous or nearly so; petals 6 mm. long, obtuse, whitish-pubescent without; stamens glabrous, anthers not apiculate at top; column 2 to 3 mm. long, longer than the ovary; style shorter than the (glabrous) ovary; capsule 25 to 30 mm. long.

Collected by J. N. Rose at Acaponeta, June, 1897 (No. 1438); by Dr. E. Palmer at Tepic, 1891-92 (No. 1894); and by E. W. Nelson at San Blas, 1897 (No. 4343), and Rosa Morada, 1897 (No. 4357)—all in the Territorio de Tepic.

***Cedrela oaxacensis* C. DC. & Rose, sp. nov. *Cedrela montana mexicana* C. DC. Monogr. Phan. 1: 741. 1878.**

A small tree; leaflets 6 to 7 pairs, opposite, very shortly petiolate, oblong, 5 to 12 cm. long, 3 to 4.5 cm. broad, truncate at base, shortly acuminate and obtuse, nearly glabrous above, softly pubescent beneath; inflorescence a broad terminal panicle, much longer than the leaves, glabrous; calyx glabrous, or nearly so, 5-toothed; sepals obtuse; petals 4 mm. long, reddish pubescent above, grayish below; column rather short; style short.

This species is distinct from *C. montana*, which comes from Venezuela. According to De Candolle it was collected first near Oaxaca by Andrieux, and more recently near the same locality by C. G. Pringle, August 15, 1894 (No. 4802), Lucius C. Smith, July 20, 1899 (No. 79), and J. N. Rose, June 17, 1899 (No. 4604).

The following key to the North American species may serve to distinguish the species until fuller collections may warrant a recasting of the descriptions:

KEY TO THE NORTH AMERICAN SPECIES OF CEDRELA.

a. *Leaves oddly pinnate.*

***Cedrela imparipinnata* C. DC. (Guatemalan species.)**

aa. *Leaves not oddly pinnate.*

b. *Mature leaves glabrous on both sides.*

c. *Calyx glabrous, or nearly so; sepals acute.*

d. *Style as long as the petals; acumen of the leaf elongated, acute.*

***Cedrela odorata* L. fide C. DC. (Yucatan plants.)**

dd. *Style shorter than the petals; acumen of the leaf short and obtusish.*

***Cedrela occidentalis* C. DC. & Rose. (Rose's No. 1438.)**

cc. *Calyx puberulent; sepals obtuse.*

Cedrela angustifolia DC. }
Cedrela mexicana Roem. } doubtful species.

bb. *Mature leaves pubescent beneath.*

c. *Petals grayish pubescent.*

Cedrela fissilis Vell. (Guatemalan.)

cc. *Petals reddish pubescent.*

Cedrela oaxacensis C. DC. & Rose. (*C. montana mexicana* C. DC.)

NOTES ON NEW OR RARE LEGUMINOSAE.

AESCHYNOMENE.

Specimens of several species of *Aeschynomene* have recently been added to the National Herbarium. After a most careful study of the genus I am convinced that 5 of the species are undescribed. The added material is as follows:

Aeschynomene acapulcensis sp. nov.

Prostrate herbs with long slender wiry branches, slightly pubescent but never glandular or viscid; stipules broadly ovate, acute, persistent even after the leaves have fallen; leaflets 5 to 7, glabrous, obovate to oblong, rounded at apex, 8 to 12 mm. long; calyx 2 mm. long, slightly longer than the subtending bracts; corolla yellow, 6 mm. long; stipe long (4 to 5 mm.); ovary glabrous; legume deeply notched on the back, 2-jointed (in my specimen). Collected by Dr. E. Palmer near Acapulco, Mexico, in 1891-95 (No. 126). This species much resembles *A. viscidula*, but is of very different habit and foliage.

Hemsley in the *Biologia* gives a species from Acapulco, but without specific name. This may be the plant.

Aeschynomene amorphoides (Wats.) Rose.

A shrub 12 dm. high.

Very common about Bolaños, Jalisco, September 10 to 19, 1897 (No. 2859).

Aeschynomene compacta Rose, sp. nov.

Apparently a very compact shrub 9 to 30 dm. high; old branches smooth and gray; young branches very silky; leaflets numerous (15 to 25 pairs), crowded, 3 to 4 mm. long, somewhat 3-nerved, the main nerve submarginal, acute, more or less appressed-pubescent; petiole very short; stipules linear; inflorescence compact, shorter than the leaves, few-flowered, pedicels short; bractlets 2, orbicular, obtuse, 3 to 4 mm. long, about the length of the calyx tube, silky-pubescent; calyx slightly 2-lipped, the 2 upper teeth slightly united, obtuse, the 3 lower teeth ovate, acute, the middle one longer; corolla "maroon-red," banner orbicular with short broad claw; fruit short-stipitate (3 to 4 mm. long), 2-jointed (in my specimens), deeply constricted between the joints, especially indented on the dorsal side, covered with short appressed hairs.

Collected by Mr. C. G. Pringle, in Tomellin Canyon, State of Oaxaca, October 1, 1894 (No. 5645); by E. W. Nelson between Juchitan and Chivela, Oaxaca, 1895 (No. 2630), and by Lucius C. Smith, June 1, 1895 (No. 452).

This species resembles *A. fascicularis* in foliage, but is of more compact habit, and has smaller leaflets, a different calyx and different bractlets. *A. fascicularis* has short, acute bractlets, the sepals are all acute, the corolla also larger, and its petals longer-clawed.

Aeschynomene fascicularis Schlecht. & Cham. *Linnaea*, 5:584. 1830.

Flowers yellow.

Collected by J. N. Rose near San Juan Capistrano, August 22, 1897 (No. 2482), and west of Bolaños, September 10 to 19 (No. 2937).

Aeschynomene fruticosa Rose, sp. nov.

A shrub 12 to 15 dm. high, with stiff grayish branches; young parts strigose-pubescent, becoming glabrous; leaves small; leaflets 3 or 4 pairs, oblong, 8 to 14 mm. long, rounded at base, also at apex, long-apiculate, nearly glabrous; flowers fasciated in the axils or in a short few-flowered raceme shorter than the leaves; pedicels slender, 10 to 12 mm. long; buds long-acuminate; the 2 bracts subtending the flowers small, much shorter than the calyx, 2 mm. long, ovate, acute, striate; calyx tube 2 mm. long, slightly hairy; sepals 5, the 2 upper ones 3 mm. long, acute, united to the middle; the 3 lower lobes unequal, the central one long-acuminate, 4 mm. long, the other two 2 mm. long, acute; corolla yellow, 6 mm. long, somewhat pubescent without; stamens of the genus; ovary pubescent; stipe not longer than the longest sepal, sometimes not longer than the calyx tube; legume with face nearly straight, deeply indented on the dorsal side, 1 to 3 jointed, becoming glabrate in age.

Collected by Dr. E. Palmer on stony hills near Topolobampo, State of Sinaloa, September 15 to 25, 1897 (No. 204). Near *A. palmeri*, but with smaller leaflets, very different calyx, etc.

Aeschynomene palmeri Rose, sp. nov.

A shrub with grayish bark thickly set with small lenticels; young branches slightly pubescent, soon glabrate; leaflets 4 to 7 pairs, orbicular to oblong, glabrous or nearly so, 10 to 25 mm. long, rounded at base, but usually somewhat oblique, obtuse, rounded or retuse, and apiculate at apex, dark green and shining above, paler beneath; inflorescence paniculate or simply racemose; pedicels slender; bracts 2, ovate, acute, striate; calyx small, the 4 upper lobes about equal, nearly orbicular, rounded at apex; the lower lobe longer, narrower, and acuminate, all a little hairy on the margin; corolla rose-colored (?); banner large, orbicular, strongly bent backward; wings and keel deeply auricled (on one side) and slender-clawed: keel strongly inflexed; stamens (as of the genus) in 2 clusters of 5 each; ovary glabrous, stipitate; style very long and filiform; mature joints obliquely obovate, glabrous and shining; immature pod 3-lobed.

Collected by Dr. E. Palmer near Acapulco in 1894-95 (No. 106a).

A very distinct species.

Aeschynomene paniculata Willd.; Vog. *Linnaea*, 12: 95. 1838.

Collected by Dr. E. Palmer near Acapulco in 1894-95 (No. 283).

This species has once before been reported from Mexico, but without definite locality.

Aeschynomene petraea Robinson, *Proc. Am. Acad.* 27: 166. 1892.

Collected by E. W. Nelson on mountains near Talpa, altitude 4,400 to 5,000 feet, March 7, 1897 (No. 4033); on roadside between Mascota and San Sebastian, Tepic, March 14, 1897 (No. 4058); and by Mr. E. A. Goldman near Chacala, Durango, February 23, 1899 (No. 329).

Aeschynomene simulans Rose, sp. nov.

Perennial; stems herbaceous, about 3 dm. high, branching at the base, nearly glabrous throughout; leaflets 8 to 12 pairs, oblong to oval, rounded or cordate at base, more or less oblique, rounded or retuse and shortly mucronate at apex, 8 to 18 mm. long, thickish, strongly nerved, nearly glabrous; stipules ovate, acute; flowering stems often leafless, forming a branching panicle, or the flowers borne in axillary racemes shorter than the leaves; inflorescence but slightly pubescent, never glandular; pedicels very short, of fruit sometimes 6 mm. long; bracts ovate, obtuse, 1 mm. long; calyx glabrous; 4 upper sepals obtuse; lower sepal acute; corolla yellow,

tinged with purple, 8 mm. long; legume stipitate, 3-jointed, constricted on both sides, but most on the dorsal side, nearly glabrate.

Collected at Acaponeta, June 26, 1897 (No. 1487), and between Rosario and Colomas, July 12, 1897 (No. 1616).

This species is near, perhaps too near, *A. petraea* Robinson, but differs in coming from the low, hot coastal plain of the west coast, while *A. petraea* comes from much higher elevations; it also has very different pubescence, larger leaflets, smaller bracts and flowers, glabrous calyx, etc.

CALLIANDRA.

Mexico and Central America contain about 35 species of *Calliandra*, all but 5 of which are represented in the National Herbarium. Bentham, in his monograph of the genus, enumerates just 100 species, of which he assigns 25 to North America. Mr. Hemsley, in the *Biologia Centrali-Americana*, lists 23 species.

I have decided to publish the four following species only after a very careful study of all the Mexican members of the genus. It was my intention to publish here a synopsis of all our Mexican species, but owing to the difficulty in deciding the identity of 2 or 3 of them, I have postponed this revision to a future paper.

Series LAETEVIRENTES.

Calliandra oaxacana Rose, sp. nov.

Nine to 15 dm. high; branches slender and glabrous; pinnae 1 to 2 pairs; stipules 2 mm. long, obtuse; petiole without glands, 2.5 to 3.5 cm. long, slender; leaflets 14 to 18 pairs, oblong, acute, 5 to 6 mm. long, glabrous except a few hairs along the margin (and also on the secondary rachis); heads 1 to 3 in the axils of the leaves; peduncles slender, 5 to 7 cm. long, longer than the leaves; stamens 18 to 20 mm. long, reddish; pods unknown.

Collected by Mr. C. G. Pringle, July 10, 1897, on granite ledges, Tomellin Canyon, Oaxaca, altitude 1,050 meters (No. 6734).

Calliandra penduliflora Rose, sp. nov.

A shrub, 3 meters or so high, with light gray bark; young branches covered with short spreading pubescence; leaves large; pinnae 1 or 2 pairs; leaflets 4 to 6 pairs, unequal, the largest ones 4 to 5 cm. long, oblong, rounded at apex, very oblique at base, 3 to 5 nerved at base, pubescent on both sides; stipules variable, 6 to 10 mm. long, striate; inflorescence axillary or more or less naked and paniculate above; peduncles often 2 to 4 in the axils, long and slender, sometimes 1 dm. long; heads large and densely flowered; calyx and corolla glabrous; stamens long and pendent; fruit not seen.

Collected by J. N. Rose in southern Durango, August 16, 1897 (No. 2332), and at Bolaños, September 14 (No. 2924). The latter collection is the type of the species.

This is a very beautiful plant, and not closely related to any other of the Mexican species.

Calliandra unijuga Rose, sp. nov.

Shrub 12 to 24 dm. high, with many short stiff grayish branches; leaves small; petioles 2 to 4 mm. long; pinnae 1 pair; leaflets 2 to 4 pairs, leaflets oblong, 2 to 4 mm. long, nearly glabrous, obtuse, sometimes apiculate; peduncles axillary, 15 to 20 mm. long; stamens long, white with pink tips; legume 3.5 cm. long, glabrous.

Collected by Lucius C. Smith at Cuicatlan, State of Oaxaca, altitude 1,800 feet, September 24, 1894 (No. 203), and by Mr. E. W. Nelson at the same locality, October 8 to 24, 1894 (No. 1648).

Series MACROPHYLLAE.

Calliandra laevis Rose, sp. nov.

A tree, 7.5 meters or more high, glabrous throughout; pinnae 1 pair; leaflets 1 pair, 5 to 10 cm. long, lanceolate, midrib somewhat one-sided; peduncle 2.5 to 3.5 cm. long; calyx 2 mm. long; corolla elongated, 6 to 8 mm. long; stamens 3.5 cm. long; pods 10 to 13 cm. long.

Apparently common along the upper edges of the Tropics. Collected by J. N. Rose near Colomas, State of Sinaloa, July 18, 1897 (No. 1753), and at Dolores, Territorio de Tepic, August 6, 1897 (No. 3365).

Near *C. emarginata*, but leaflets always in one pair and not 3-nerved.

MISCELLANEOUS SPECIES.

Acacia subangulata Rose, sp. nov.

A spreading shrub, 5 to 7 m. high; branches somewhat angled, bearing short straight prickles, more or less puberulent; stipules small, somewhat membranaceous, 2 to 4 mm. long; petiole short (13 mm. long), bearing a large but inconspicuous and depressed oblong gland near the middle; main rachis somewhat 4-angled, sometimes prickly; pinnae about 7 pairs; stipels minute; leaflets 20 to 30 pairs, oblong, 5 to 7 mm. long, midnerve strongly eccentric, thickish, puberulent; inflorescence a large spreading naked panicle; heads more or less verticillate, on peduncles less than one inch long; stamens numerous, pale yellow; legume unknown.

Collected by Mr. C. G. Pringle on calcareous hills near Tehuacan in the eastern part of the State of Puebla, August 6, 1897 (No. 6775).

This *Acacia* comes nearest *A. berlandieri*, but has fewer pinnae and leaflets, the latter larger, thicker, and greener, etc.

Brongniartia lunata Rose, sp. nov.

A low shrub; branches slender, pubescent; leaves 1.5 to 2 dm. long; stipules lunate-reniform, but the upper lobe acute; leaflets distant, 3 to 5 pairs, oblong, 48 to 55 mm. long, rounded and apiculate, above pubescent, becoming glabrate in age, beneath paler, appressed-pubescent, and in age reticulated; flowers in pairs in the axils; peduncle 2.5 mm. long, glabrous; subtending bracts not seen; calyx 15 mm. long, glabrous without; corolla 25 mm. long; legume not seen.

Collected by J. N. Rose in the State of Durango, east of Huasemote, August 15, 1897 (No. 2314). Very different from the above and all other species which I have seen in the shape of its stipules.

Brongniartia diffusa Rose, sp. nov.

Low, diffuse shrub, about 1 dm. high, glabrous or nearly so throughout; stipules oblong to ovate, 6 to 8 mm. long, acute, deciduous; leaflets 3 to 9 pairs, oblong, 12 to 20 mm. long, rounded or slightly cordate at base, rounded or retuse at apex, apiculate, glabrous; flowers 1 to 2 in the axils; peduncles 25 to 35 mm. long, slender; bracts subtending the flowers broadly ovate, 8 mm. long, scarious, caducous; calyx 8 mm. long, the lobes acute, the 2 upper lobes united to near the top, glabrous without, pubescent within; corolla 18 mm. long, purplish; ovary glabrous, stipitate, 3-ovuled; immature pods, 35 mm. long, 12 mm. broad.

Collected by J. N. Rose between Pedro Paulo and San Blasito, August 4, 1897 (No. 1978).

This species is very distinct from any other species of this genus which I have seen.

Cassia pringlei Rose, sp. nov.

Shrub 2.5 to 4 m. high; young branches somewhat pubescent, but soon becoming glabrate; leaves 2.5 cm. long, without glands; stipules wanting; leaflets 2 or 3 pairs, becoming glabrate in age, mostly oblong, sometimes orbicular or obovate, somewhat oblique at base, rounded at apex, sometimes apiculate; inflorescence and flowers similar to the above; legumes 1.8 to 2.3 dm. long, 6 mm. wide.

Collected by Mr. C. G. Pringle, at Tomellin Station, State of Oaxaca, altitude 615 meters, July 14, 1897 (No. 7478); and by Mr. E. W. Nelson between Petlatcingo and Acatlan, State of Puebla, November 20, 1894 (No. 1996).

This species is near *C. wislizeni* Gray, but abundantly distinct. (Only 4 or 5 specimens taken while the train stopped for dinner.)

***Cassia unijuga* Rose, sp. nov.**

Small shrub, 3 to 6 dm. high; leaves without glands; young branches densely villous; stipules filiform, 4 to 6 mm. long; petiole very short or wanting; leaflets 1 pair, rarely 2 pairs, nearly orbicular, rounded or somewhat cuneate at base, rounded and apiculate at the summit, about 12 mm. in diameter, more or less villous, but becoming glabrous; flowers large, in few-flowered axillary racemes; sepals large and obtuse; corolla 2.5 cm. or more in diameter; perfect stamens 7, abortive 3; legume flat, 1 to 1.3 dm. long, 6 mm. wide, acuminate, stipitate.

Collected by Mr. C. G. Pringle in the eastern part of the State of Puebla, near Tehuacan, August 5, 1897 (No. 6773).

This species comes nearest our United States species, *C. wislizeni*, differing especially in its leaflets. It has no close affinities with any of the other described Mexican species except *C. pringlei* above.

***Pithecolobium acatlense* Benth. Trans. Linn. Soc. 30:593. 1875.**

This species is very common in the tropical valleys of western Mexico. It is a shrub growing to the height of 3 to 5 meters, the corolla is covered with long silky hairs and the stamens are long-exserted as in *Calliandra*. The pod, which has never been described, is 15 cm. long and 2 cm. wide, much flattened, tapering at base into a stipe and apiculate at tip, densely covered with short reddish hairs.

Collected by J. N. Rose in southern Durango between the two ranges of the Sierra Madre, August 14, 1897 (No. 2270); near San Juan Capistrano, Zacatecas, August 19 (No. 2434); near Huejuquilla, Jalisco, August 25 (No. 3564), and at Bolaños, September 10 to 19 (No. 3692).

DESCRIPTIONS OF MISCELLANEOUS NEW OR RARE SPECIES.

***Ayenia fruticosa* Rose, sp. nov.**

Low shrub; young branches densely stellate-pubescent; sepals small, 2 to 3 mm. long, ovate, acuminate; petioles short, 2 to 4 mm. long; blade ovate, acute or obtuse, 8 to 15 mm. long, stellate-pubescent on both sides, paler beneath; flowers solitary and axillary; pedicels slender, long (much longer than the subtending leaf) 20 to 30 mm. long, bracteate some distance below the middle; sepals ovate, shortly acuminate, 2.5 mm. long; stamens 5; anthers 3-celled; ovary sessile; fruit densely covered with long (for the genus) prickles.

Collected by Mr. C. G. Pringle near Tehuacan, State of Puebla, altitude 1,500 meters, 1897 (No. 6743).

***Celastrus pringlei* Rose, sp. nov.**

A vine climbing to 6 meters, the branches reddish, thickly dotted with small whitish lenticels; leaves alternate, narrowly elliptical, rounded or wedge-shaped at base, acute, 7.5 to 10 cm. long, 1.8 to 2.5 cm. broad at the middle, with shallow, obtuse teeth, usually apiculate, dark green, glabrous; racemes 1 to 3 in an axil, 2.5 to 5 cm. long; pedicels 4 to 6 mm. long, 2 or 3 bracted, jointed just below the flower; sepals 5; petals 5, white; stamens 5, filaments attached below the disk; anthers broadly ovate, apiculate; disk prominent, lobed; ovary 3-celled; cells each with one erect ovule; dehiscence of capsule loculicidal; seeds covered with a yellow aril.

Collected by Mr. C. G. Pringle in canyons of mountain side above Cuernavaca, altitude 2,300 meters, June 1, 1898 (No. 6842).

Cleome humilis Rose, sp. nov.

Annual, erect, slender, simple or somewhat branching, 10 to 30 cm. high, glabrous except a little scabrosity on stem, petioles, and blade; leaflets 3, linear-lanceolate, acute, 6 to 30 mm. long, longer than the petioles; racemes loose, few-flowered; pedicels 6 to 8 mm. long; petals yellow, 3 to 4 mm. long; pods sessile, narrow, spreading, 30 mm. long.

Found in the tropical valleys of the table-land. Collected by J. N. Rose near San Juan Capistrano, August 22, 1897 (No. 2429), and at Bolaños, September 10 to 19 (No. 2900). This species is very similar to *C. tenuis* Watson, but of different range and with 3 instead of 5 leaflets, etc.

Couepia polyandra (H. B. K.) Rose. *Hirtella polyandra* H. B. K. Nov. Gen. et Sp. 6: 246, t. 565. 1823. *Moquilea kunthiana* Mart. & Zucc. Abh. Akad. Muench. 1: 390. 1830. *Couepia kunthiana* Benth. Hook. Journ. Bot. 2: 216. 1840.

This species was collected by Humboldt and Bonpland near Acapulco, and was named and described by Kunth as a *Hirtella*, the fruit being then unknown. Mr. Hemsley also refers to this species a plant collected by Linden in Tabasco. These are the only published records of the collection of this species. We have no authentically named specimens in the National Herbarium. The species has recently been re-collected at the type locality by Dr. E. Palmer, also only in flower. I collected the specimens at several places about Acaponeta, where it is certainly native and is well known under the name of zapote. At Acapulco, Dr. Palmer states that it is called zapote amarillo. The fruit is apparently eaten, but I saw none in the markets. The fruit is oblong, about 3 inches long, of yellow color and with a somewhat roughened or warty skin. It contains one large seed which is attached at the base. We now have the following specimens in the National Herbarium:

Dr. E. Palmer's No. 401 (1894-95) from Acapulco.

J. N. Rose's Nos. 1515, 3120, 3310 (1897) from near Acaponeta.

Cuphea trichopetala Rose, sp. nov.

PLATE XXII.

Stems weak, shrubby at base; branches glabrous, leaves usually much longer than the internodes, lanceolate or oblanceolate, 5 to 14 cm. long, acute, sometimes slightly acuminate, sessile or tapering into a broadly winged petiole more or less auriculate at base, nearly smooth except on the veins; inflorescence short, terminal, few-flowered; calyx greenish, 16 mm. long, strongly spurred, glabrous within, more or less setose without, the upper sepal slightly larger than the 5 lower; the appendages alternating with, and shorter than the sepals, each 3 to 6 setose; two dorsal petals showy, red, 7 mm. long, orbicular and rounded at apex, tapering at base into a slender claw; the 4 ventral petals reduced to long hairs, 11 mm. long, purplish at tip; stamens 11, equally inserted and all glabrous, two dorsal included; 9 exserted, unequal, 5 longer; style and ovary glabrous; seeds 10; gland large, reflexed.

Collected by J. N. Rose in a deep canyon just below Colomas, Sinaloa, altitude 2,000 feet, July 20, 1897 (No. 1769).

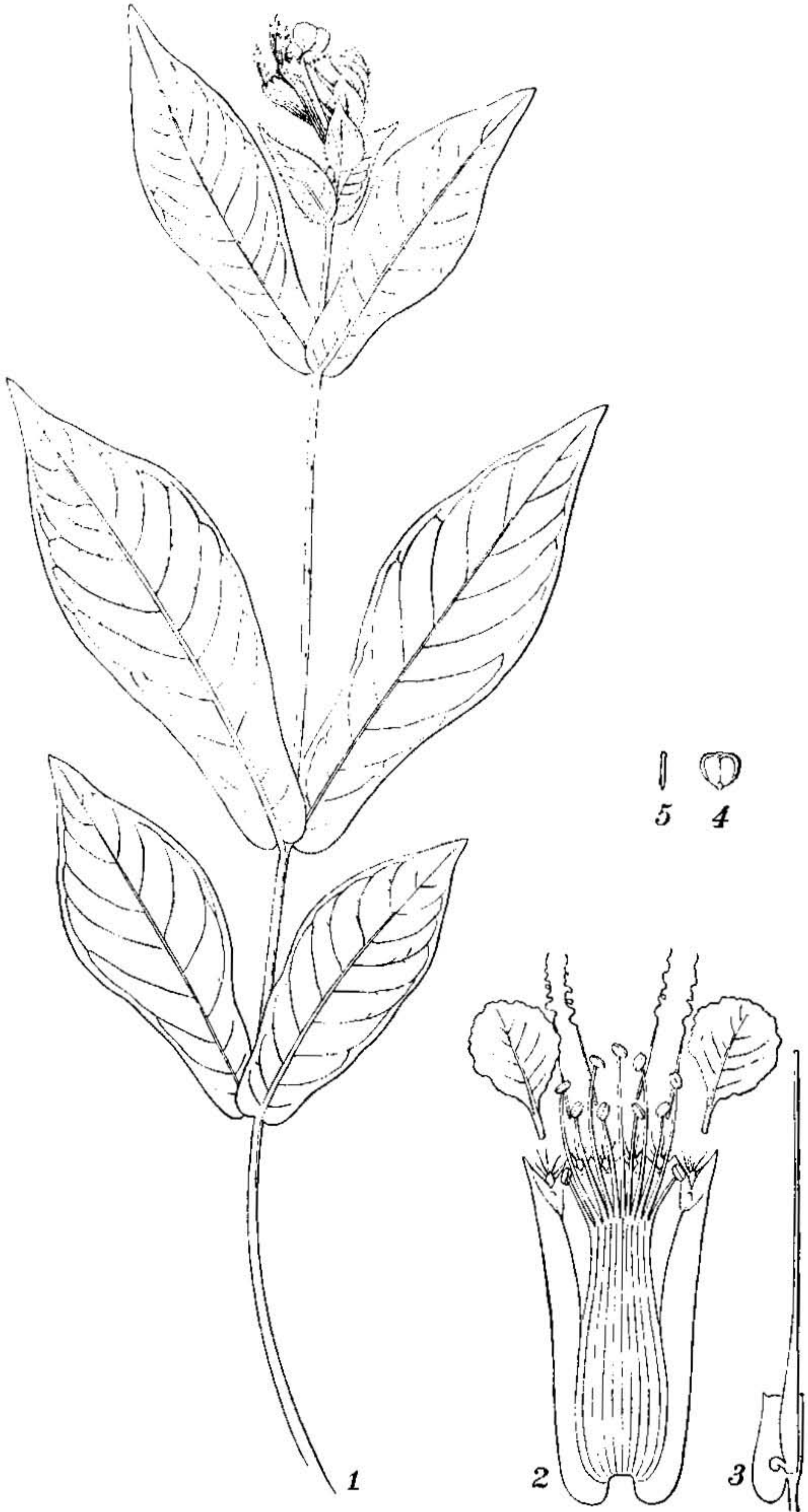
This species is near the next and *C. graciliflora*, but differs in its leaves, petals, etc. It is especially remarkable in having the four ventral petals reduced to long hairs, which curl up at the tip much like a tendril.

EXPLANATION OF PLATE.—Fig. 1, the upper part of the plant; fig. 2, flower with the calyx split open and the 6 petals detached; fig. 3, the ovary and glands; figs. 4 and 5, face and side views of the seed. Fig. 1, natural size; figs. 2 and 3, scale of 3.

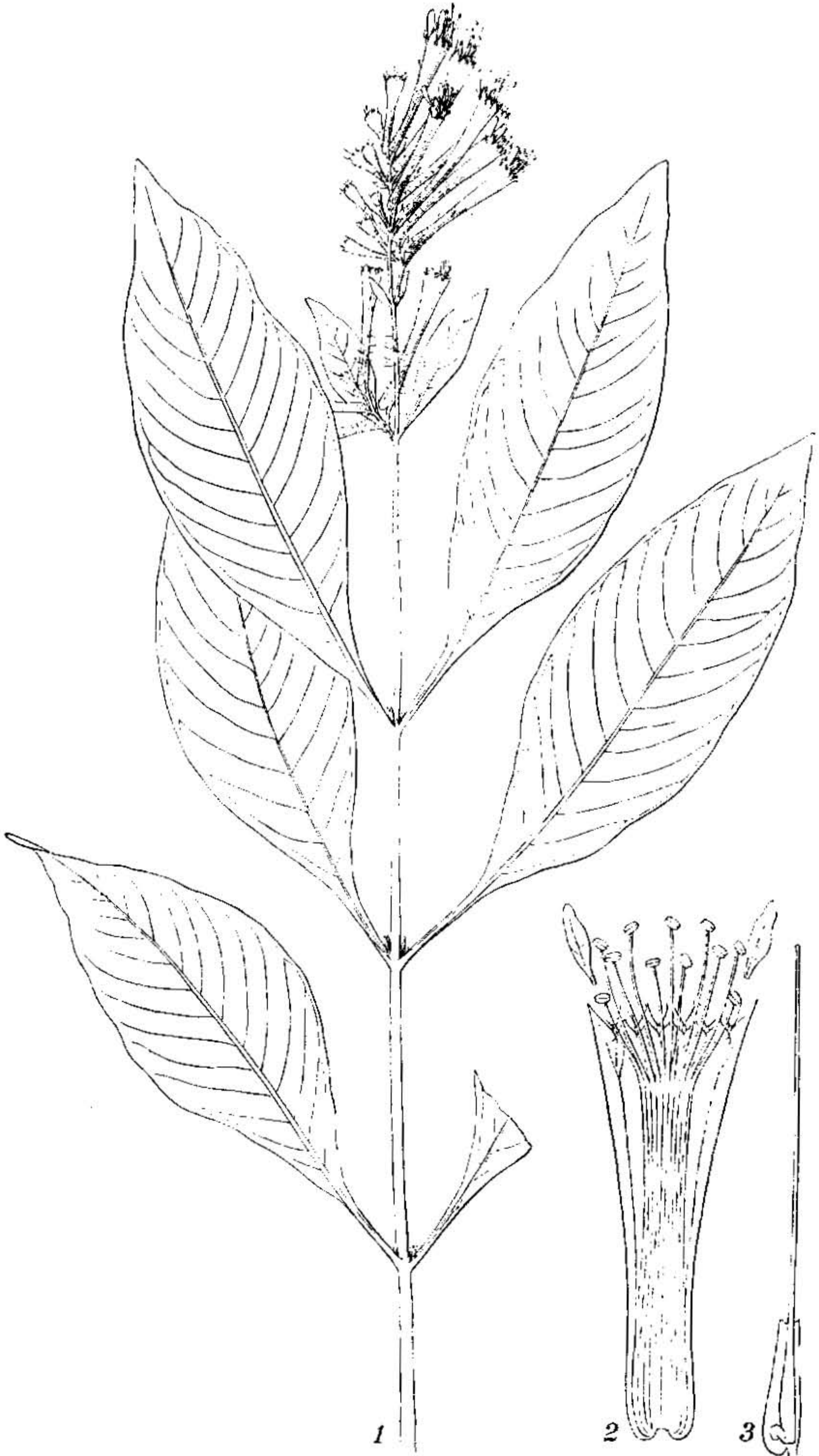
Cuphea cristata Rose, sp. nov.

PLATE XXIII.

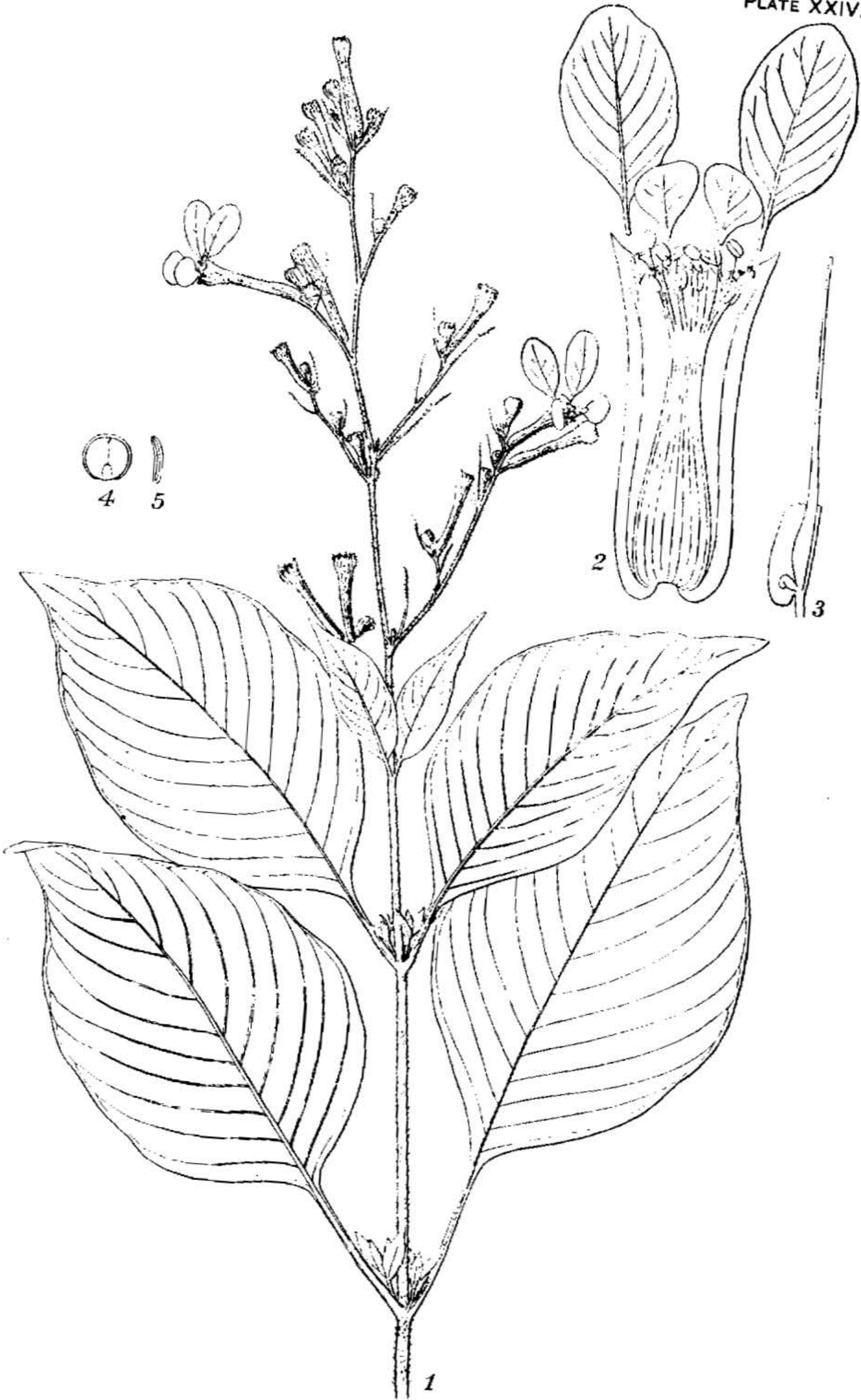
Plant more or less shrubby at base; branches with minute appressed pubescence, the internodes either short or elongated; leaves lanceolate, 7.5 to 12 cm. long, 25 to 40 mm. broad, tapering at base into a short petiole, slightly roughened above, paler beneath, mid-nerve and lateral veins somewhat prominent; inflorescence (in my specimens) a short, dense, terminal leafless raceme; pedicels short; prophylla ovate, deciduous; calyx slender, 28 to 30 mm. long, narrowly funnel-formed, glabrous



CUPHEA TRICHOPETALA Rose.



CUPHEA CRISTATA Rose.



CUPHEA KOEHNEANA Rose.

within, sparingly setose and with short appressed pubescence without, reddish or bluish above, greenish below, somewhat gibbous at base, the upper sepal slightly larger than the 5 lower; the appendages alternating with the sepals, only half their length, and bearing long setae as long as the sepals; petals 2, dorsal, narrowly oblong, apiculate, red, 6 mm. long, each subtended by a small flat squamula below the sinus; stamens 11, equally inserted and all glabrous; two dorsal much shorter; the other 9 much exserted, the 5 opposite the sepals longer than the 4 alternating with them; style and ovary glabrous; ovules 9; gland reflexed.

Collected by J. N. Rose in the foothills between Acaponeta and Pedro Paulo, Jalisco, August 2, 1897 (No. 1917), and between Pedro Paulo and San Blasito, Tepic, August 4 (No. 3341).

This species is nearest *C. graciliflora* but quite different.

The specific name is suggested by the crest of hairs which crowns the flower buds.

EXPLANATION OF PLATE.—Fig. 1, a flowering branch; fig. 2, flower with the calyx split open and the petals detached; fig. 3, style and gland. Fig. 1, natural size; figs. 2 and 3, scale of 3.

Cuphea koehneana Rose, sp. nov.

PLATE XXIV.

Annual; stems simple, 6 to 7 dm. high, clothed with short, rather stiff pubescence; leaves opposite, broadly lanceolate, 10 to 15 cm. long, including the slender petiole (18 to 35 mm. long), somewhat oblique and tapering at base, acuminate, very thin, with scattered appressed pubescence on both sides, paler beneath, the lateral veins prominent beneath; the inflorescence terminal and paniculate; bracts long, filiform, setose; calyx slender, 18 to 20 mm. long, shortly spurred at base, somewhat enlarged at the top, two-nerved within, glabrous below; two dorsal petals 12 to 15 mm. long, 8 mm. broad, tapering into a slender claw 2 to 5 mm. long, deep purple, inserted on each side of the dorsal sepal just above the corresponding sinus; 2 ventral petals much smaller (5 mm. long); stamens 11, some of them exserted, two a little farther than the others, these densely clothed with long, purple wool; seeds about 9; disk dorsal, reflexed.

Collected by Mr. C. G. Pringle at Cuernavaca, Mexico (No. 6657).

This species belongs in Koehne's section *Diploptychia*, but is very distinct from the other species of the section. Perhaps nearest to *C. nudicostata* and *C. pinetorum*.

EXPLANATION OF PLATE.—Fig. 1, a flowering branch; fig. 2, a flower, showing the calyx split open and the petals detached; fig. 3, the style and gland; figs. 4 and 5, face and side views of seed. Fig. 1, natural size; all dissections scale of 3.

Gronovia longiflora Rose, sp. nov.

FIGURE 30.

Leaves slightly lobed, with open sinus; flowers tubular, 20 mm. long, ovary 2 mm. long, tube 10 mm. long, sepals 2 to 3 mm. long; petals and stamens longer than the sepals, free to the base, the former 14 to 16 mm. long; fruit strongly 5-winged, the wings toothed.

Collected by C. G. Pringle on lava beds near Cuernavaca, November 3, 1896 (No. 7322).

Hippocratea pauciflora Rose, sp. nov.

Rather low woody vines; leaves opposite, obovate to spatulate-oblong, 5 to 7.5 cm. long, 16 to 28 mm. wide, rounded at apex, glabrous, pale green on both sides, crenate; petioles 4 mm. long; stipules small, lacerated; flowers not seen; fruit solitary, or in small dichotomous clusters of twos to fours; peduncles 2.5 to 3.8 cm. long, either axillary or terminal; carpels oblong, 5 to 6.5 cm. long.

Collected by J. N. Rose, near Rosario, State of Sinaloa, June 10, 1897 (No. 1587). Only a single plant of this species was seen, in a deep wooded canyon about 1 mile north of Rosario near the river.

Hippocratea utilis Rose, sp. nov.

High-climbing woody vines; leaves opposite, oblong, 7.5 to 8.5 cm. long, 3.5 to 5 cm. broad, obtuse, rounded at base, glabrous, dark green above, paler beneath, thickish, coarsely crenate (each tooth bearing a deciduous apiculation); petioles 10

mm. long; stipules linear, 2 mm. long; flowers not seen; fruit apparently borne in small panicles; carpels elliptical, oblong, 3.2 to 4.5 cm. long, less than 2.5 cm. wide, rounded at both ends.

Collected by J. N. Rose near Colomas, State of Sinaloa, in the foothills of the Sierra Madre, July 16, 1897 (No. 1706).

This is the most northern species known, all the species referred to by Hemsley in the *Biologia* being confined to south Mexico and Central America, 6 of the 15 being from Panama. The other species are apparently all from the Tropics, while this species is found in the edge of the Lower Sonoran area at an altitude of about 2,900 feet. This is a very important vine and much used by the people on the west coast of Mexico, where it is known as "bejuco colorado." It is used in many ways, and

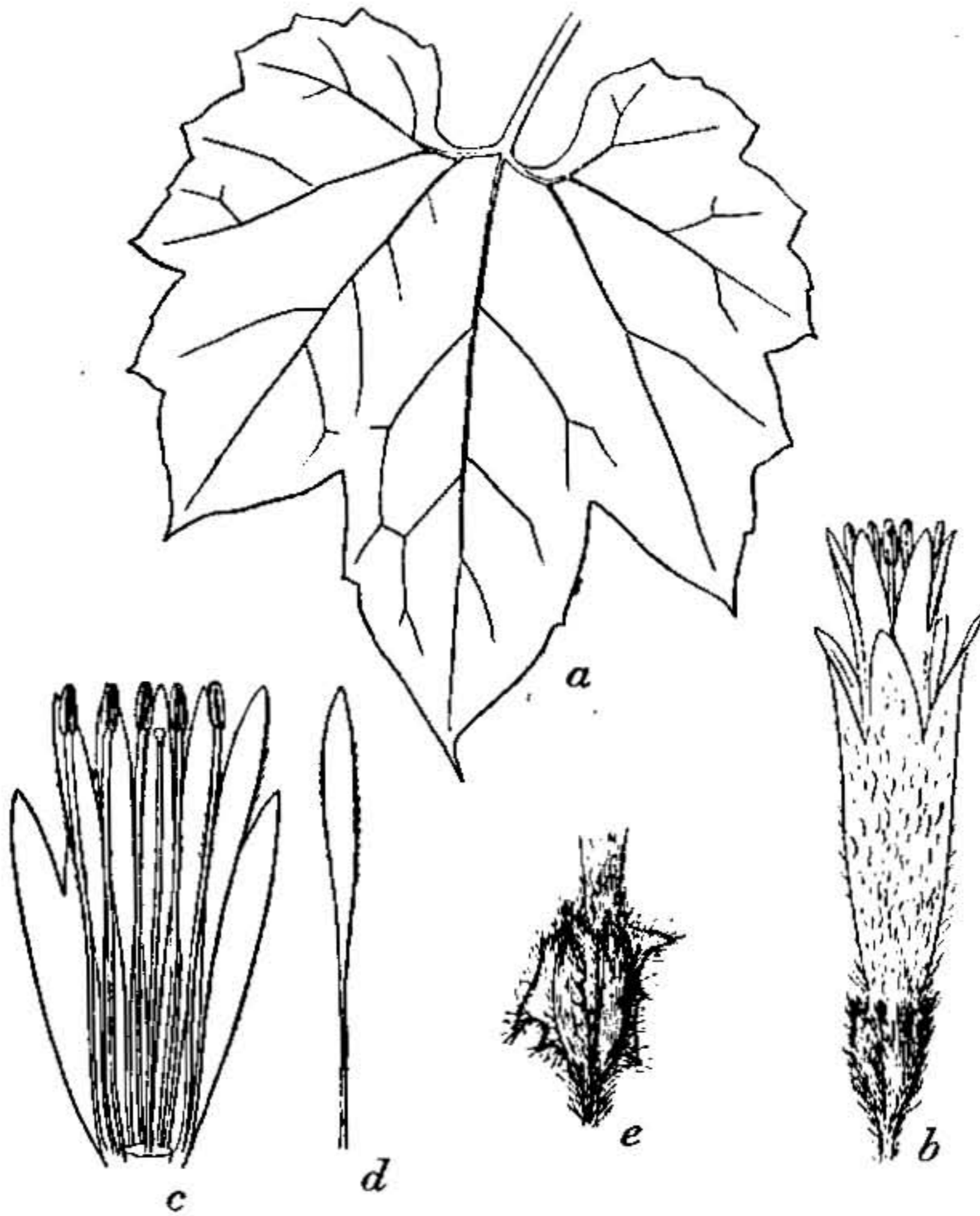


FIG. 30.—*Gronovia longiflora*. a, Leaf; b, flower; c, same cut open; d, petal; e, fruit. a, scale of $\frac{3}{4}$; b, c, d, e, scale of 2.

takes the place of ropes, wires, etc., among the plain people. It is employed in making the cactus fences to fasten the upright trunks together. In the building of their rude huts it serves to tie fast the rafters. I saw, at Palmacito, Sinaloa, a vine 18 meters long used for a clothes line. The vine is said to have great strength. A second species grows along the coast, but I was repeatedly told that the "bejuco colorado" was always obtained from the mountains.

***Nesaea pringlei* Rose, sp. nov.**

Perennial, diffuse, much branched at base; branches slender, procumbent or ascending, glabrous, terete or nearly so, 5 cm. to 9 dm. long; leaves opposite, linear, somewhat variable in length, 1 to 4 cm. long, usually 2 mm. or less wide, sometimes narrowly oblong and 4 mm. wide, the margins not revolute, tapering at base into very short petioles, usually much longer than the internodes, but sometimes much



RANUNCULUS MADRENSIS Rose.

shorter; flowers solitary in the axils; peduncles 2.5 cm. or more long, bibracteate near the base of the flowers; calyx campanulate, 6 mm. high, 12-nerved, 6-lobed, the lobes ovate, acute, 2 mm. long; petals 6, purple, 10 mm. long; stamens about 12, much shorter than the petals, about equal, inserted in a single row near the middle of the calyx; style elongated much longer than the stamens, nearly as long as the petals; ovary shortly stipitate, orbicular, 4-celled; the carpels apparently splitting to the very top.

Collected by Mr. C. G. Pringle on dry plains near Tehuacan, State of Puebla, August 2, 1897 (No. 6758).

This species is closely related to *N. longipes* Gray and the two may represent a new generic type.¹ The dehiscence of the capsule is uncertain in Mr. Pringle's plant, and it has also been uncertain in *N. longipes*; but Professor Coulter states in the Botany of Western Texas² that the capsule opens by a little lid.

Ranunculus madrensis Rose, sp. nov.

PLATE XXV.

Rather slender, erect, from a cluster of somewhat thickened roots; 18 to 26 cm. high, glabrous below; basal leaves erect, long-petioled (4 to 10 cm. long); blade linear to linear-oblong, cuneate at base, obtuse at apex, with coarse distant teeth, 3 to 5 cm. long, 4 to 8 mm. wide, thickish, strongly nerved; stem leaves reduced to a few simple or 3-lobed linear bracts; stem bearing 1 to 4 small flowers; peduncle slender, 6 to 10 cm. long, hairy above, especially just under the flower; sepals purplish or yellowish, about half the length of the petals, glabrous, deciduous; petals about 10, yellow, nearly obovate, rounded at apex, 8 mm. long; receptacle hairy; akenes small (2 mm. or less long), lenticular, glabrous, tipped with a slender persistent style equal in length to the akene.

Collected by J. N. Rose on the top of the Sierra Madre between Santa Gertrudis and Santa Teresa, Territorio de Tepic, altitude about 2,000 meters, August 8, 1897 (No. 2102); and in the State of Zacatecas, altitude about 2,615 meters, August 18, 1897 (No. 2375). I found this plant common in damp grassy meadows on the flat tops of the two ranges of the Sierra Madre, and it doubtless has a wide distribution, although I have not been able to identify it with any one of the 25 Mexican or Central American species hitherto described. In fact it is not near any of the Mexican species which I have seen, but it most suggests the *R. vagans* of Watson. It is nearer, however, our Western United States species, *R. alismaefolius*.

EXPLANATION OF PLATE.—Fig. 1, a flowering plant; fig. 2, a petal; fig. 3, an akene. Fig. 1, natural size; fig. 2, scale 5; fig. 3, scale 2.

Samyda mexicana Rose, sp. nov.

Shrub 15 to 25 dm. high; branches rather short and stiff, with grayish bark, the younger ones more or less pubescent, very leafy; leaves 3 to 7 cm. long, oblong, rounded or somewhat narrowed at base, shortly acuminate and obtuse, at first softly pubescent on both sides, in age more scantily and coarsely, becoming more or less reticulated beneath, the margin bearing small distant and gland-tipped teeth, the

¹As the genus *Nesaea* is now understood we have only the two above species in America. The following key seems to separate them:

* *Leaves auriculate at base, the margin revolute; petals small (6 mm. long); calyx tube 4 mm. long, twice longer than the lobes; stamens inserted at the base of the calyx tube; ovary sessile (?)*.

N. LONGIPES Gray, Pl. Wright. 1:68. 1852.

* * *Leaves not auriculate at base, the margin not revolute; petals large (10 mm. long); calyx tube 6 mm. long, three times longer than the lobes; stamens inserted near the middle of the calyx tube; ovary stipitate*.

N. PRINGLEI Rose, supra.

²Contr. Nat. Herb. 2: 112. 1891.

surface covered with round or oblong pellucid dots, petioles very short; bracts of buds ovate to orbicular, pubescent; pedicels short; calyx white, pubescent; tube 8 mm. long; sepals 4 or 5, 5 or 6 mm. long, oblong, rounded at apex, spreading; petals (as in the genus) none; stamens united into a tube 2 mm. long; anthers 10 to 12, sessile, ovate, alternating with small hairy-tipped staminodes; ovary pubescent; style 6 mm. long, extending beyond the stamens; carpels 3.

Collected by Dr. E. Palmer at Acapulco, November, 1894 (No. 81). The type. Here, perhaps, also belongs Sinclair's plant from the same locality referred to *Samyda* by Hemsley without specific name. Specimens collected by Dr. Palmer at Manzanillo in 1890 (No. 1812), and others by M. E. Jones at Colima in 1892 (No. 72), probably also belong to this species, although the pedicels are much longer.

With the exception of two very uncertain species the above is the only Mexican representative of this genus.