

STUDIES OF MEXICAN AND CENTRAL AMERICAN PLANTS—NO. 7.^a

By J. N. ROSE.

INTRODUCTORY NOTES.

The present number of these studies is confined almost entirely to Mexican plants. The rich collections of E. W. Nelson and E. A. Goldman, C. G. Pringle, E. Palmer, C. A. Purpus, and C. Conzatti have, as in previous reports, furnished most of the new species. In addition to these my own collections, now comprising some 10,000 numbers, have been drawn upon. These come from all parts of Mexico, my visits having now been extended to all but four of the twenty-nine States and Territories of that country.

In 1908 I made my seventh journey to Mexico. Primarily this was not a Mexican expedition, but rather one into the southwestern United States. I had been invited by Dr. D. T. MacDougal, director of the Desert Laboratory, to make a special study of the Cactaceae about Tucson, Arizona, and upon his recommendation a grant from the Carnegie Institution was made to enable me to visit the Southwest, making collections in western Texas, New Mexico, Arizona, and southern California. While thus engaged I entered Mexico at three points. At two of these, Nogales, Sonora, and Initial Monument, Lower California, only a short time was spent in collecting plants. Opposite El Paso more time was given to this work.

On March 30, accompanied by Dr. E. Palmer, the veteran botanical collector, I left El Paso over the Mexican Central Railroad for Chihuahua City, some 250 miles south of the United States border, and the following day I took train for Miñaca, located some 250 miles west of Chihuahua City. Here I made a small collection, obtaining two interesting cacti, *Opuntia tenuispina* and *Echinocactus polyacanthus*, along with various herbs and shrubs. The next day I returned east from Miñaca as far as San Antonio, where I took a stage for Cusihuiachic. From San Antonio the road runs almost directly south over a grassy mesa until within a few miles of the latter place, when it rapidly descends into a deep and narrow ravine. Nearly all

^a Continued from vol. 12, p. 302, of the Contributions.

the houses face the single street, which is several miles long. The elevation of the town is a little over 1,800 meters, but the mountains come down to its edge, and one of the near-by peaks, called the Bufo, rises to an elevation of nearly 2,400 meters. At the time of my visit the town was in a deplorable condition of decay, hundreds of people having departed to other localities.

I had long been anxious to visit that locality, as it was the place where Dr. A. Wislizenus was held a prisoner during the Mexican war and where he collected many new species. I went especially to re-collect his Cactaceae, of which Dr. George Engelmann had described six species. The cactus flora was very scant, but all the species were collected, although in most cases only a single specimen was found. The forest vegetation has doubtless changed very much since Wislizenus's time, for the pines, of which he found three new species, have nearly all disappeared and the mountains are nearly treeless. Along the stream which runs through the town are still some large poplars.

On April 4, accompanied by Dr. E. Palmer, I took the train at Chihuahua City and proceeded up into the Santa Eulalia Mountains, some 10 miles east of Chihuahua City. In these mountains considerable silver ore is mined, and at the time of our visit work was being actively prosecuted. Only one day was spent here, but many interesting Cactaceae were examined, some of which proved to be undescribed. A few weeks later Doctor Palmer returned to Santa Eulalia and made an extensive collection. In 1888 these mountains were widely explored by Dr. C. G. Pringle, who brought out of them many new species.

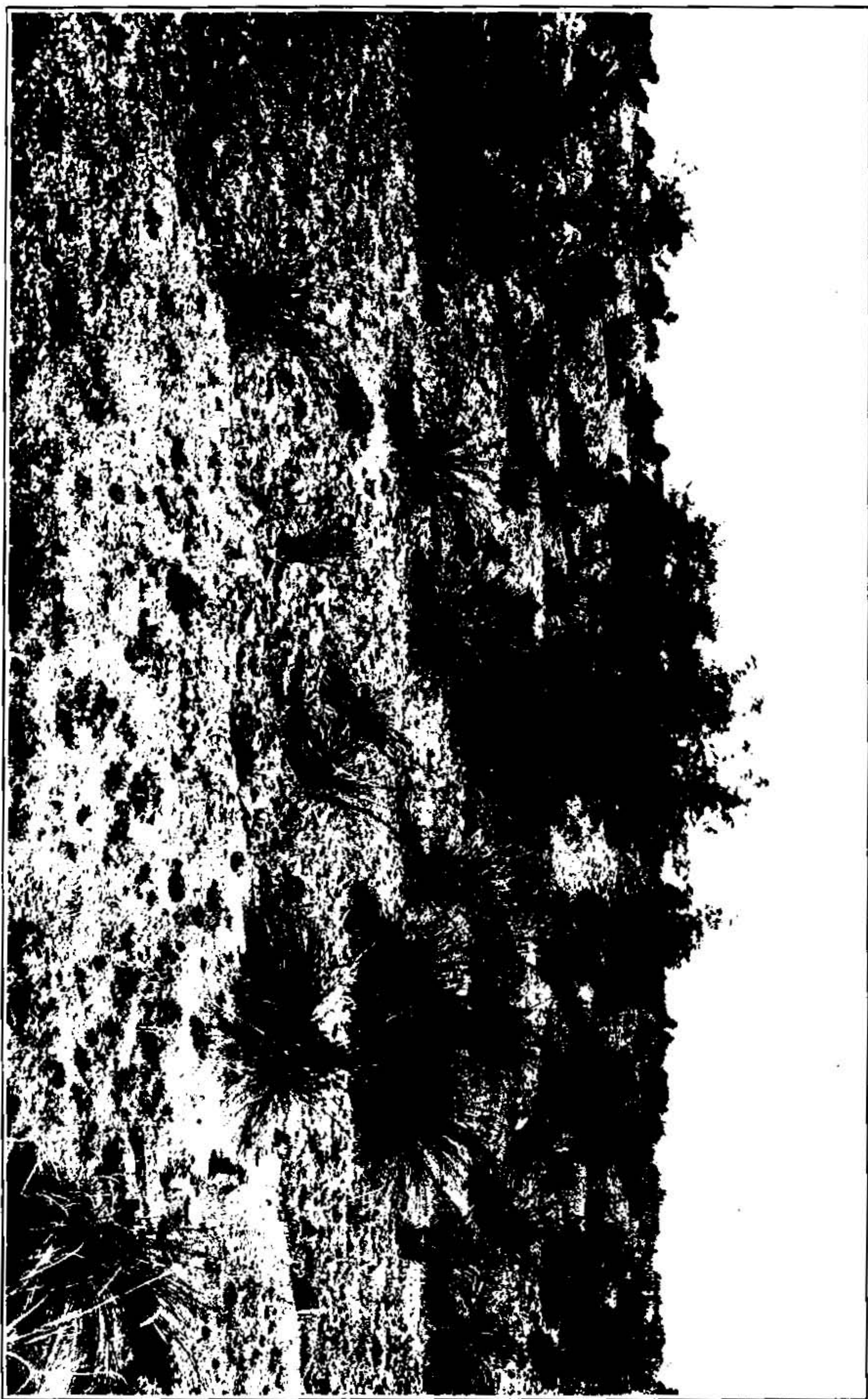
Several days were spent at El Paso and Juarez. Several excursions were made into the Franklin Mountains and a day was given to exploring the low hills in Chihuahua southwest of El Paso. On this day I had the assistance of Prof. Elmer Stearns and his botanical students, some thirty in all, of the Agricultural College at Juarez. These Mexican boys were greatly interested in my work and brought in many cactus specimens. In 1907 I had made a previous visit to El Paso and during these two short trips some forty numbers were collected.

These places were especially interesting as being the type localities of many of the species collected by some of the older explorers. Of these species were obtained *Echinocereus stramineus* Engelm. and *Populus wislizeni* Sargent.

On the morning of April 29 Doctor MacDougal took me in an automobile from Tucson to Nogales on the international boundary. The next day we collected various Cactaceae and some other plants, and also obtained some fine photographs both of the landscape and of individual plants. (Plates 46, 47.)



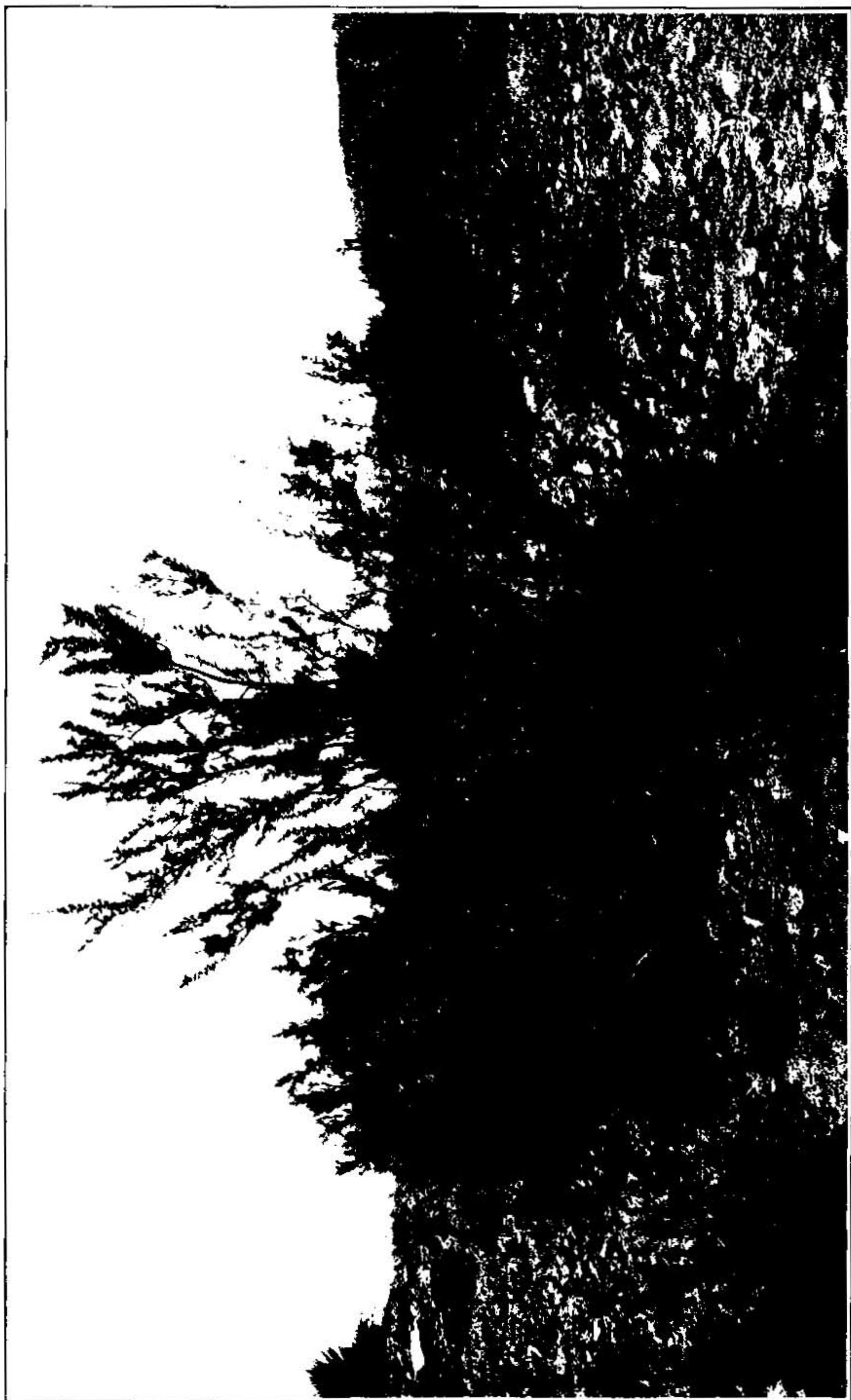
VIEW AT NOGALES, SHOWING SCANTY VEGETATION.



VIEW AT NOGALES, SHOWING BEAR GRASS (NOLINA) AND SCRUB OAKS.



YUCCA BREVIFOLIA AND AN OAK AT NOGALES.



COWANIA STANSBURIANA, A CHARACTERISTIC DESERT SHRUB AT NOGALES.

The hills about Nogales are low with rounded summits and bear a very scanty desert vegetation. Seven species of Cactaceae belonging to the genera *Mamillaria*, *Opuntia*, and *Echinocactus* were collected. The rare *Yucca brevifolia* Engelm., was collected in full flower (pl. 48). This was taken not far from the type locality of the species, which was first collected by A. Schott some time in the fifties. Only leaves were obtained by Schott and flowers have never been collected until now. These are borne in large, erect, compact panicles, are white and hanging, and instead of being small as they were supposed to be, are very large. *Linum puberulum* (Engelm.) Heller, was common, while a curious *Rhus*, perhaps *Toxicodendron phaseoloides* Greene, grew attached to the perpendicular side of a cliff. A *Nolina* was common, but was not in flower or fruit and no specimens were taken. *Cowania stansburiana*, a characteristic shrub was in full flower and herbarium specimens and a photograph were secured (pl. 49). *Calochortus kennedyi* was not uncommon.

On May 16, accompanied by Mr. C. R. Orcutt, I drove from San Diego to Initial Monument on the boundary line between Lower California and the State of California. As Mr. Orcutt is very familiar with all this region it was an unusual privilege to have him point out the many interesting plants, not a few of which have their type localities at this station. Among the Cactaceae which were of interest to me were *Bergerocactus emoryi*, *Echinocactus limetus*, *Opuntia serpentina*, *O. prolifera*, and *Mamillaria dioica*.

ITINERARY.

1908.

March	29, 30.....	Juarez and vicinity, Chihuahua.
April	1, 2.....	Miñaca, Chihuahua.
	2, 3.....	Cusihuiriachic, Chihuahua.
	3, 4.....	Chihuahua City, Chihuahua.
	4.....	Santa Eulalia Mountains, Chihuahua.
	5-9.....	Juarez and vicinity, Chihuahua.
	29, 30.....	Nogales and vicinity, Sonora.
May	14.....	Initial Monument, International Boundary, Lower California.

COMMELINACEAE.

SETCREASEA AN OLDER NAME THAN NEOTRELESEA.

A new genus *Treleasea* was established by the writer in 1899, but in 1903 he changed the name to *Neotreleasea* on account of an earlier genus *Treleasea* of fungi which had been overlooked. In the meantime, however, Schumann and Sydow had renamed it *Setcreasea*.^a

Since my publication of this genus as *Treleasea* I have repeatedly studied it in the herbarium and greenhouse and in the field in Mexico. The generic characteristics assigned to it are perfectly satisfactory.

^a *Setcreasea* Schum. & Sydow, Just's Bot. Jahresb. 27¹:452. 1901.

One of the results of this continued study is the addition of two new species which are here described. These are accompanied by the names of the species heretofore described.

Setcreasea australis Rose, sp. nov.

Stems from a cluster of tuberous roots, 50 to 60 cm. high, glabrous; leaves lanceolate, 15 to 20 cm. long, perhaps even longer, acuminate, glabrous above, softly pubescent beneath, the margin purplish and ciliate, clasping at base; flowers numerous, in both axillary and terminal clusters; corolla pinkish; stamens borne on the petals; anthers short and broad, the connective rather narrow; ovary glabrous.

Type U. S. National Herbarium no. 454128, collected by J. N. Rose in Tomellín Cañon, Oaxaca, Mexico, September 7, 1906 (no. 11340).

Setcreasea brevifolia (Torr.).

Tradescantia leiandra brevifolia Torr. Bot. Mex. Bound. 225. 1859.

Tradescantia speciosa Buckl. Proc. Acad. Phila. 1862: 9. 1863, not L. nor H. B. K.

Zebrina (?) *leiandra* Clark in DC. Monogr. Phan. 3: 318. 1881.

Tradescantia leiandra Wats. Proc. Amer. Acad. 18: 167. 1883, not Torr.

Tradescantia leiandra ovata Coulter, Contr. Nat. Herb. 1: 50. 1890.

Tradescantia (?) *brevifolia* Rose, Contr. Nat. Herb. 3: 323. pl. 16. 1895.

Treleasea brevifolia Rose, Contr. Nat. Herb. 5: 207. 1899.

Neotreleasea brevifolia Rose, Contr. Nat. Herb. 8: 6. 1903.

Setcreasea leiandra (Lindley).

Tradescantia leiandra Torr. Bot. Mex. Bound. 224. 1859.

Treleasea leiandra Rose, Contr. Nat. Herb. 5: 208. 1899.

Neotreleasea leiandra Rose, Contr. Nat. Herb. 8: 7. 1903.

Setcreasea pallida Rose, sp. nov.

Stems at first erect but soon clambering, 20 to 40 cm. long, glabrous and green; internodes rather short; leaves oblong, 8 to 10 cm. long, trough-shaped above, pale and somewhat glaucous on both surfaces, glabrous except for some cobwebby hairs along the margin, clasping at base; involucre leaves 2 or 3, similar to the leaves but shorter; umbel sessile, several-flowered; sepals 3, scarious; corolla purplish white, funnel-shaped.

Type U. S. National Herbarium no. 572818, collected by Dr. E. Palmer near Victoria, Tamaulipas, Mexico, 1907, and flowered in Washington, D. C., July, 1907.

Setcreasea tumida (Lindl.).

Tradescantia tumida Lindl. Bot. Reg. 26: pl. 42. 1840.

Tradescantia virginiana tumida Clark in DC. Monogr. Phan. 3: 291. 1881.

Treleasea tumida Rose, Contr. Nat. Herb. 5: 208. 1899.

Neotreleasea tumida Rose, Contr. Nat. Herb. 8: 7. 1903.

CRASSULACEAE.

Since the publication of the Crassulaceae by Britton & Rose in the North American Flora in 1905, collectors in Mexico have continued to send material to Washington. Not all of it has yet flowered, but many specimens have done so, a considerable number of which are new. Herewith are presented the descriptions of 15 new species of *Sedum*, 1 species of *Urbinia*, 3 species of *Echeveria*, and 2 species of *Tilleastrum*, and of 1 new genus, *Graptopetalon*. So far as possible photographs are taken when the plants are in flower and in every



ECHEVERIA GLORIOSA ROSE.

(Scale one half.)



ECHEVERIA GLORIOSA ROSE.

case herbarium specimens are preserved in the National Herbarium. In most cases living material can be supplied to Botanical Gardens or persons who have growing collections. Two species, *Sedum potosinum* and *S. farinosum*, are offered for sale by Haage & Schmidt. The plates are all from photographs of living material taken in Washington.

FOUR NEW SPECIES OF ECHEVERIA AND ONE NEW NAME.

Echeveria crenulata Rose, sp. nov.

Caulescent, the stem in cultivated specimens short but in wild specimens much elongated and enlarged; basal leaves in the wild plant broadly obovate, more than 30 cm. long, 15 cm. broad, rounded at apex, tapering at base into a very distinct petiole; stem leaves pale green, a little glaucous, the margin wavy and purplish red; leaves on flowering stems acute, ovate to spatulate, tapering into a stout, thick petiole; inflorescence a short panicle, the lateral branches short, few-flowered, the bract instead of subtending the branch usually carried up for some distance on the peduncle; sepals widely spreading, very unequal, acute; corolla 15 mm. long, strongly angled, yellowish red, its lobes acute.

Type U. S. National Herbarium no. 454957, collected by J. N. Rose and J. H. Painter near Cuernavaca, Morelos, Mexico, September, 1903 (no. 797). No. 790 of Rose and Painter is the same. The species has flowered repeatedly in Washington and New York.

Echeveria gloriosa Rose, sp. nov.

PLATES 50, 51.

Stems about 30 cm. tall, crowned with a compact cluster of highly colored leaves, from which arise several erect or spreading flowering stems sometimes a meter long; leaves 10 to 15 cm. long, 7 to 10 cm. broad, rounded at apex, deep purple, thickish; flowering stem stout, glaucous; stem leaves narrow, thickish, very glaucous; inflorescence an open panicle; lateral branches bearing numerous sessile flowers; sepals ascending; corolla 12 mm. long, dark red, in bud broadly ovate, but when fully open showing a wide mouth.

Type U. S. National Herbarium no. 615398, derived from a specimen collected on rocks of Cerro de Santa Lucia, Puebla, altitude 1,500 to 1,800 meters, 1907 by C. A. Purpus (no. 423), which flowered in Washington in 1909 and 1910.

Echeveria holwayi Rose, sp. nov.

Caulescent, in cultivated specimens the stem short and stout; leaves forming a dense rosette at top of stem, pale green, slightly glaucous, sometimes purplish, obovate, obtuse, mucronate, narrowed at base into a stout, short petiole, the margin somewhat wavy, 10 to 12 cm. long; flowering stem 90 to 120 cm. long, often deep red and glaucous, its leaves scattered; inflorescence a much-branched panicle; main branches axillary, 5 to 15-flowered; flowers arranged in a secund raceme; pedicels short, often only 1 or 2 mm. long; sepals erect or ascending, linear, acute, very unequal; corolla 12 mm. long, rose-colored when fully open, its lobes acute, with spreading tips.

Type U. S. National Herbarium no. 399680, collected by E. W. D. Holway near Oaxaca, Mexico, November, 1903, and flowered in Washington, December, 1905, and November, 1909 (Rose's no. 693). This species flowered in Washington at the side of *E. gigantea*. It is of similar stature to this, but has much lighter and differently margined leaves, redder stems, longer flowering branches, and different flowers.

Echeveria microcalyx Britt. & Rose.

Echeveria purpusi Britton, N. Amer. Flora 22: 26. 1905, not Schum. 1896.

This species was again collected in 1907 and flowered in Washington in 1909 and 1910.

***Echeveria pittieri* Rose, sp. nov.**

Caulescent, 10 cm. or more high, crowned at the apex by a loose rosette of leaves, glabrous throughout; leaves 6 to 8 cm. long, oblanceolate, tapering into a distinct petiole, acute, greenish or somewhat purplish, sometimes a little glaucous; flowering stem about 20 cm. long, leafy; leaves similar to stem leaves; inflorescence a dense spike 4 to 5 cm. long; flowers subtended by small linear rose-colored bracts and two inner bractlets; calyx cleft nearly to the base into linear, acute lobes about two-thirds the length of the corolla, rose-colored; corolla when in bud somewhat 5-angled; corolla about 12 mm. long, deeply cleft, the lobes stiff, erect or slightly spreading, acute, rose-colored, with a pronounced pocket near the base within; 5 stamens opposite the 5 petals inserted just above this pocket, the other 5 attached to the corolla but lower down; ovaries erect, tipped by the long, slender styles.

Type U. S. National Herbarium no. 618381, collected around the lagoon on the volcano of Ipala, Guatemala, altitude, 1,500 meters, by Henry Pittier (no. 1880).

The living material sent by Mr. Pittier flowered in Washington in January, 1911.

GRAPTOPETALUM, A NEW GENUS.***Graptopetalum* Rose, gen. nov.**

Acaulescent or in time becoming shortly caulescent; leaves forming a rather compact rosette, thickish, acute; inflorescence a few-flowered, open cyme; sepals 5, erect, green, nearly distinct; corolla short-tubular, its lobes widely spreading horizontally or even reflexed, more or less banded with red; stamens 10, in age recurved back of the petals; carpels 5, erect even when mature, abruptly contracted into a short style; scales small.

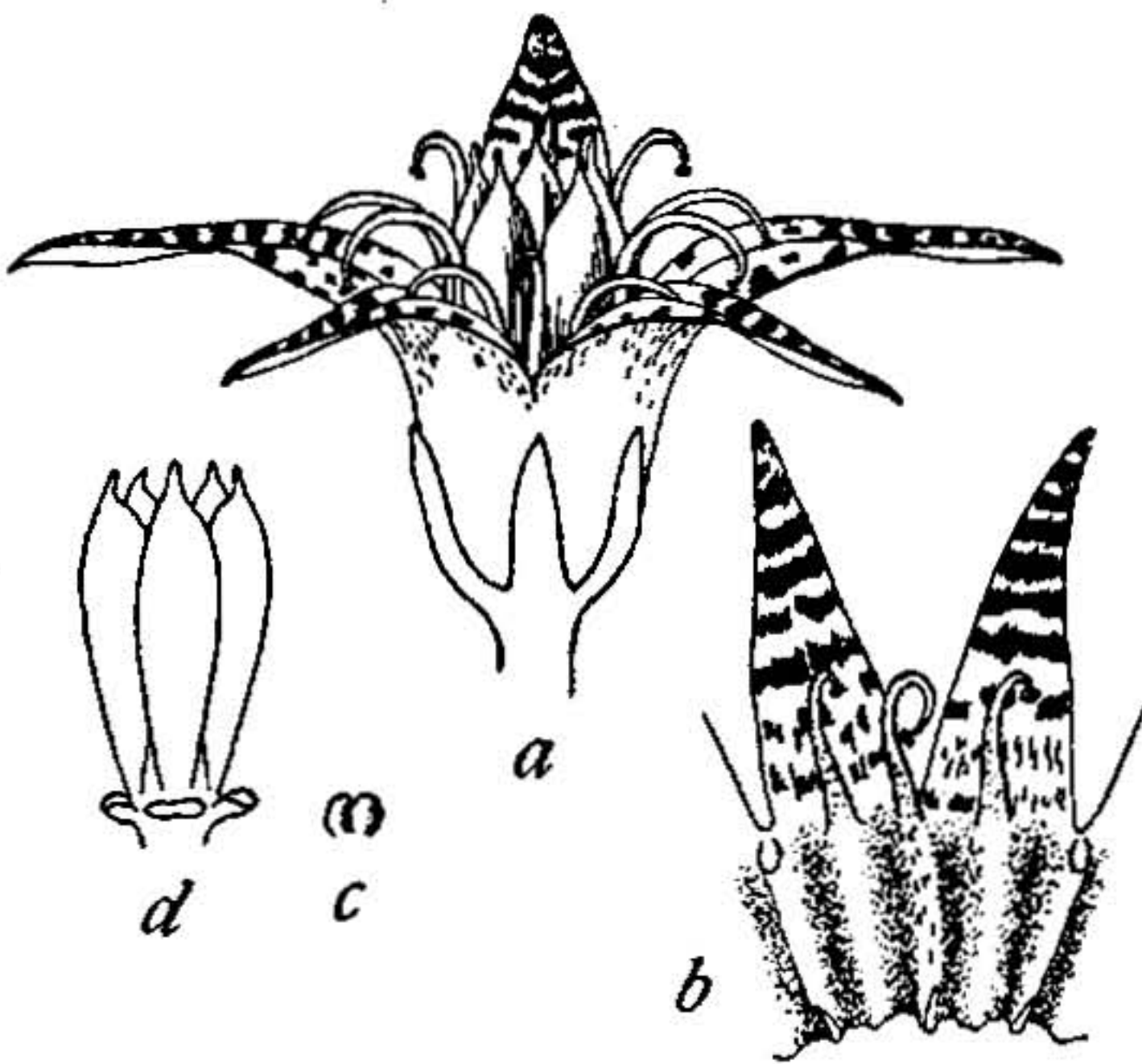


FIG. 55.—*Graptopetalum pusillum*. a, Flower; b, petals and stamens; c, scale at base of carpel; d, carpels. Natural size.

The rosettes of this plant suggest a small *Echeveria*, while the flowers and inflorescence point to *Sedum*. The rotate corolla is very unlike a true *Echeveria*, while the united petals would keep it out of *Sedum*. The flower is somewhat like that of *Altamiranoa*, but its habit, foliage, etc., do not agree well with that genus.

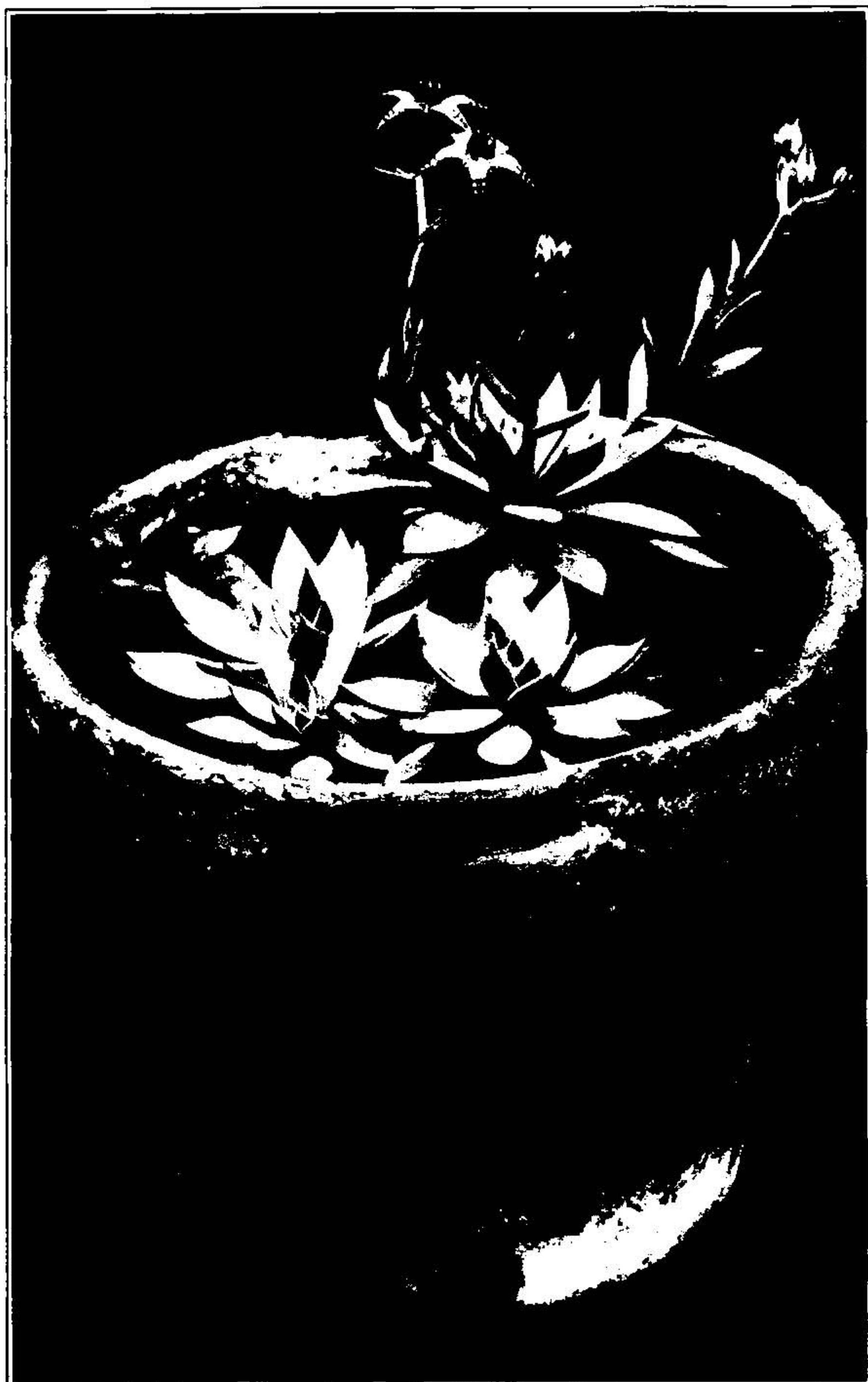
The name alludes to the markings of the petals.

***Graptopetalum pusillum* Rose, sp. nov.**

PLATE 52. FIGURE 55.

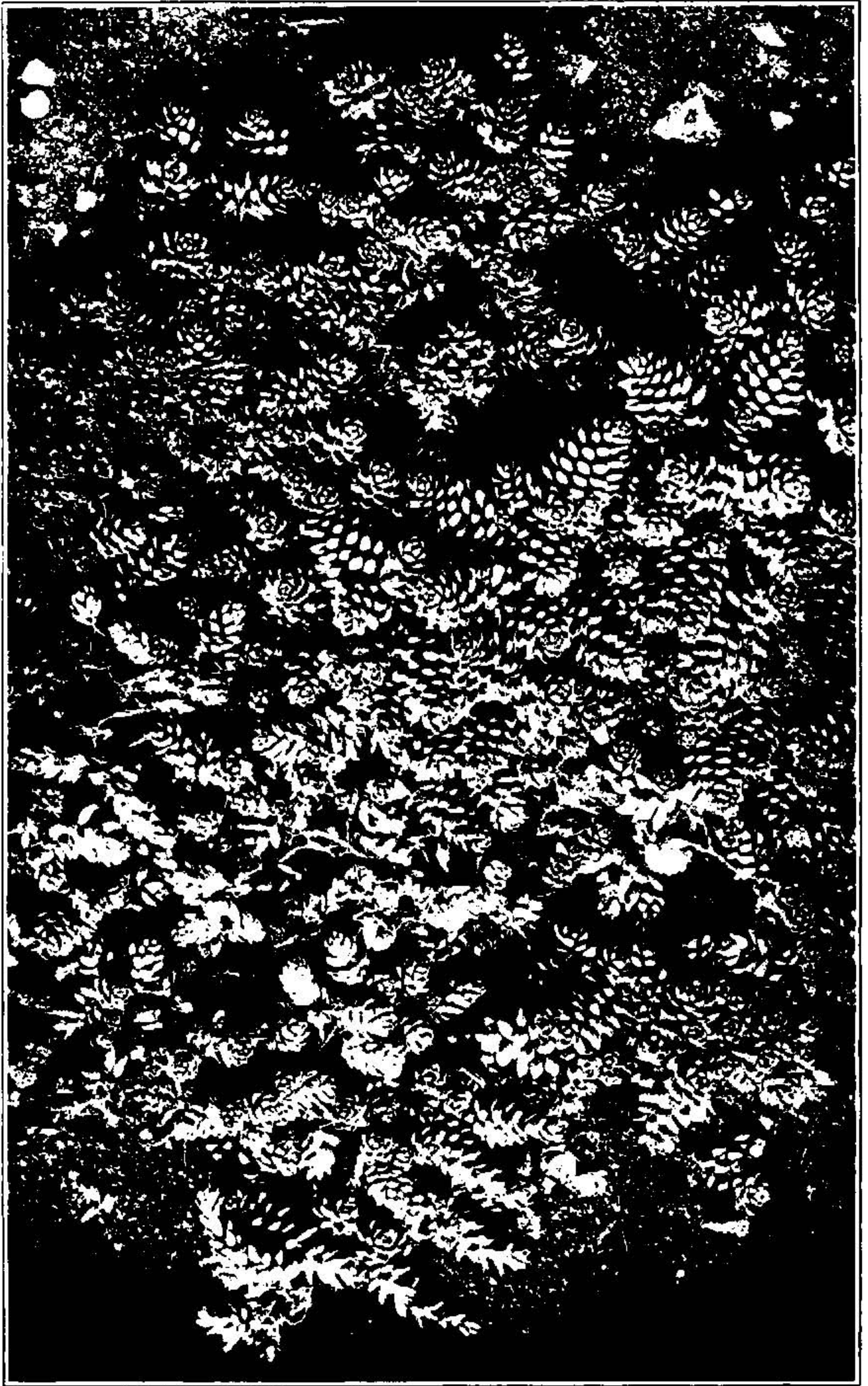
Rosettes 3 to 4 cm. in diameter; leaves spatulate, 2 to 4 cm. long, acute, glabrous, pale, and slightly glaucous; stems about 10 cm. long, weak but erect or often falling over; stem leaves alternate, linear; inflorescence somewhat cymose; pedicels 4 to 8 mm. long; sepals linear, acute, distinct nearly or quite to the base, 2 to 3 mm. long, slightly glaucous; corolla tube 2 to 3 mm. long; lobes 6 to 7 mm. long, spreading or recurved, acute, yellowish to cream-colored, slightly blotched or banded with red; stamens slender, in age recurved upon the tube of the corolla; carpels erect at least when young.

Type U. S. National Herbarium no. 615399, derived from material collected by Dr. E. Palmer in the State of Durango, Mexico, in 1906, and flowered in Washington in 1906 and 1907.



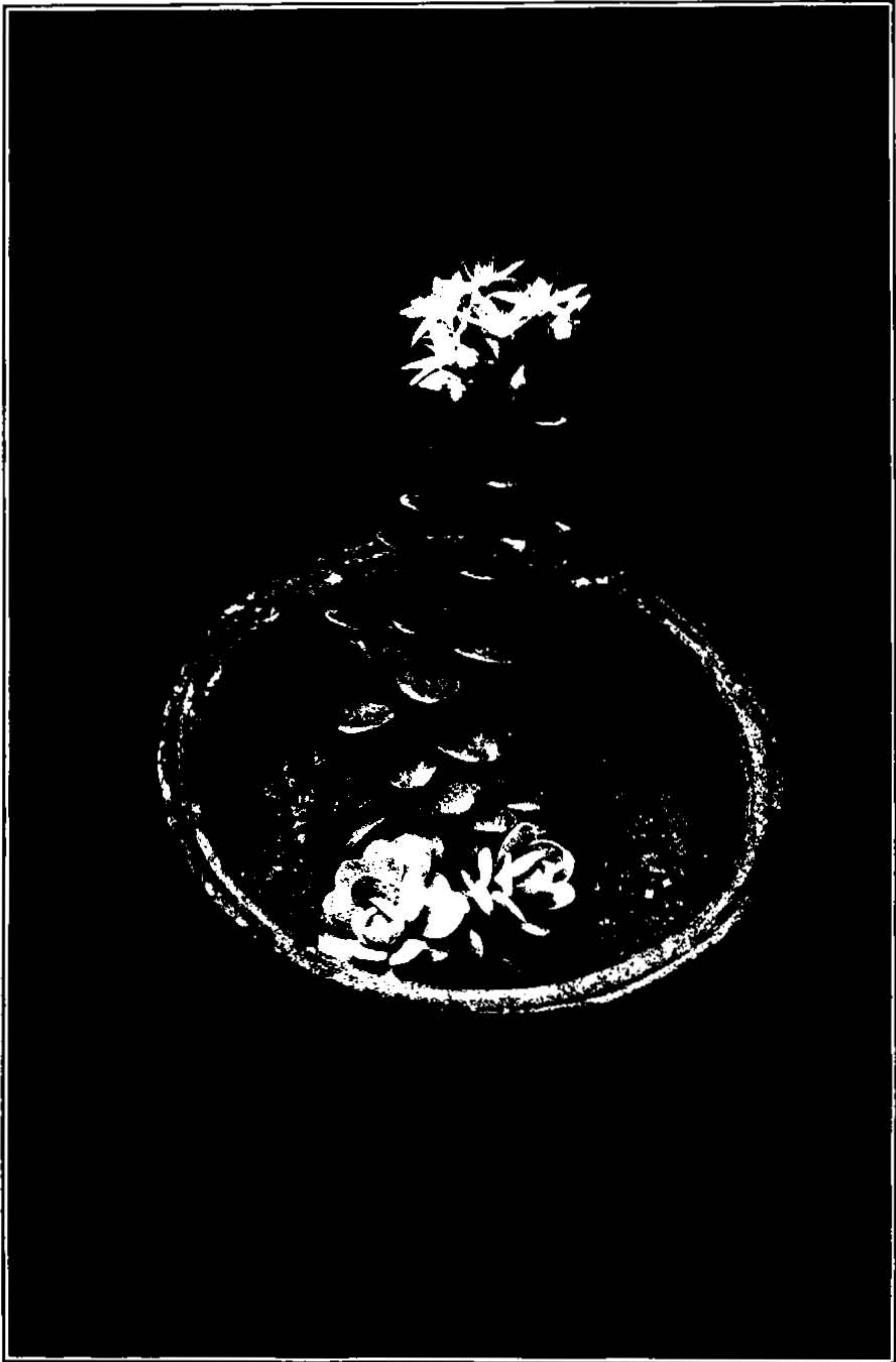
GRAPTOPETALUM PUSILLUM ROSE.

(Natural size.)



SEDUM COMPACTUM ROSE.

(Natural size.)



SEDUM FARINOSUM ROSE.
(Natural size.)

FIFTEEN NEW AND ONE RESTORED SPECIES OF SEDUM.

Sedum (P) **clavifolium** Rose, sp. nov.

Perennial, branching at base and forming dense mats; basal and lower stem leaves 1 to 3 cm. long, thickened but flattened above, tapering below into long, slender, nearly terete petioles, obtuse; stem 1 to 3 cm. high (in cultivated specimens 8 cm.); stem leaves similar to the basal but smaller, alternate; inflorescence a few-flowered cyme; pedicels 5 to 8 mm. long; sepals 5, distinct, green, unequal, spreading, thick and club-shaped, rounded at the apex, all longer than the petals; petals widely spreading, or even reflexed between the sepals, somewhat cup-shaped beyond the sepals, obtuse, pale greenish yellow, about 3 mm. long; stamens 10, the five opposite the petals borne upon them, the other five distinct; scales 5, large, deep red, erect, more or less lobed and toothed at the apex; carpels 5, ovate, erect even in fruit, tipped by very short styles; seeds oblong, several in each cell.

Type U. S. National Herbarium no. 399592, derived from material collected by Dr. C. A. Purpus on rock above timber line, Ixtaccihuatl, State of Mexico, Mexico, in November, 1905 (no. 1681), and flowered in Washington in June, 1906.

This little plant is very tenacious of life, for the herbarium specimens collected in November, 1905, were sending out new leaves June 14, 1906.

This species is very unlike a true *Sedum* in its erect carpels, very large petaloid scales, reflexed petals, distinct sepals, etc.

In its flower structure it comes close to *Sedum longipes* Rose.

Sedum compactum Rose, sp. nov.

PLATE 53.

Plants creeping, forming a dense, moss-like carpet; sterile branches small, bearing a compact rosette of leaves; leaves closely imbricated, narrowly oblong, 3 to 5 mm. long, obtuse, flattened but fleshy, glabrous; flowering branches ascending or erect, 3 or 4 cm. high, their leaves alternate, similar to those on sterile branches; flowers solitary, terminal, sessile; sepals similar to the leaves and about half the length of the petals; petals white, broadly ovate, 4 mm. long, cup-shaped within.

Type U. S. National Herbarium no. 574880, collected by C. A. Purpus on rocks, Cerro de Sentile, Oaxaca, Mexico, altitude 2,100 to 2,400 meters, 1907, and flowered in Washington, May and August, 1909 (no. 424).

This species much resembles *S. humifusum* Rose in habit and foliage, but it is not at all pubescent and the flowers are white, not yellow.

Sedum delicatum Rose, sp. nov.

Stems from small fleshy, fusiform tubers, 1 to 2 cm., or in cultivated specimens as much as 4 cm., high, usually simple below; leaves club-shaped, nearly terete in section, obtuse, alternate; inflorescence a few-flowered (2 to 5-flowered) cyme; pedicels slender, sometimes 15 mm. long; sepals 4 or 5, very unequal, similar to the leaves, the longer ones much exceeding the petals; petals white, 2 mm. long, obtuse, ascending; stamens 8 or 10; anthers purplish; carpels 5, widely spreading in age.

Type U. S. National Herbarium no. 474951, collected by Dr. C. A. Purpus on rocks near and above timber line on Ixtaccihuatl, State of Mexico, Mexico, 1905, and flowered in Washington in June, 1906.

This is a very peculiar species, perhaps nearest *S. minimum*, but with differently shaped tubers, differently colored flowers, etc.

Sedum farinosum Rose, sp. nov.

PLATE 54.

Perennials, at first forming dense, elongated rosettes; flowering stems weak, ascending or spreading, about 10 cm. long, glabrous, whitish by a bloom especially noticeable in dried specimens; leaves flat but thickish, translucent, spatulate, broadest just below the rounded tip, 3 to 3.5 cm. long, glabrous; inflorescence a broad open cyme; pedicels 2 to 3 mm. long; sepals green, 2 to 3 mm. long, oblong, obtuse, distinct to or nearly to the base; petals white, spreading, lanceolate, 6 to 7 mm. long; stamens 10; carpels widely spreading, tipped by the slender styles.

Type U. S. National Herbarium no. 571201, collected by Dr. E. Palmer at San Ramon mining camp, 80 miles west of Durango City, April 21 to May 18, 1906 (no. 181).

This species grows on cliffs among moss. It resembles somewhat *S. spathulatum* but the flowers are pure white, not yellow. I have placed it next to *S. lumholtzii*, although that species is pubescent. I have had the plant in cultivation since 1906.

Sedum flaccidum Rose, sp. nov.

Roots thickened and probably perennial; stems annual, weak, much branched, 8 to 10 cm. long, glabrous, green or purplish; leaves alternate, turgid, ovate to linear-ovate in outline, 5 to 10 mm. long; flowers 2 to 5, rather scattered, forming an open secund raceme; pedicles often slender, 5 to 10 mm. long; sepals nearly distinct, green and leaf-like, nearly equal, 2 to 3 mm. long; corolla widely spreading; petals with a broad flat blade, spoon-shaped above and pointed at the apex, white but more or less banded, especially below, with red; stamens 10, five borne on the base of the petals, the other five distinct, curved outward; scales small, black; carpels at first erect but in age spreading; styles short.

Type U. S. National Herbarium no. 571538, collected by Dr. E. Palmer at Tejamon, Durango, Mexico, in August, 1906 (no. 513).

Undoubtedly a near relative of *S. napiferum* and *S. calcaratum*.

Sedum frutescens Rose, sp. nov.

Leaves linear, flattened, 2 to 6 cm. long, bright green, acute, closely set upon the branches, rounded and free at base; inflorescence a small, few-branched cyme; peduncle 1 cm. or less long; branches 3 to 4 cm. long; petals white, 5 to 6 mm. long, acuminate; carpels widely spreading.

Type U. S. National Herbarium no. 462340, collected by C. G. Pringle in flower in 1904 (no. 13266). The description is chiefly drawn from Mr. Pringle's material.

Living material of this species was collected by J. N. Rose on the rocky bluffs near El Parque, Morelos, in 1903 (no. 845) and sent to Washington. This material is still in cultivation, but has not yet flowered.

Very much resembling *S. oxypetalum* in size and habit, but with very different foliage and flowers.

Sedum humifusum Rose, sp. nov.

PLATE 55.

Plants creeping, forming a dense moss-like carpet, sending off hundreds of small branches 1 cm. or less long bearing a compact rosette of leaves; leaves closely imbricated, nearly orbicular, about 4 mm. in diameter, flattened but fleshy, ciliate; flowers solitary, terminal, the peduncle proper 1 cm. or less long, bearing a few leaves; sepals distinct or nearly so, leaf-like, very thick, ciliate, 2 mm. long; corolla about 10 mm. broad; petals yellow, distinct, widely spreading; stamens 10, erect; scales minute, orange-colored; carpels, in flower at least, erect.

Type U. S. National Herbarium no. 399703, derived from material collected by C. G. Pringle near San Juan del Rio, Querétaro, Mexico, in 1905, which flowered in Washington, April, 1906.

Sedum lenophylloides Rose, sp. nov.

Perennial, woody at base, 5 to 30 cm. high, somewhat branched, the branches strict; leaves at right angles to the stem, closely set, usually alternate, but the lower ones either opposite or subopposite, 10 to 15 mm. long, very turgid, rarely subterete, rounded below, somewhat trough-shaped above, acutish, often purplish; inflorescence a short terminal panicle; sepals green, ovate; petals greenish white, lanceolate; stamens 10, the five opposite the petals borne on these, the other five distinct; scales large, orange-colored; styles elongated, slender; carpels erect at first, afterwards more or less spreading.

Type U. S. National Herbarium no. 574882, collected in the mountains of Monterey, Mexico, by C. G. Pringle in September, 1907. Mr. Pringle had collected the same in 1903, and this collection has been growing in Washington since that time, but did not flower until September, 1907.



SEDUM HUMIFUSUM ROSE.
(Scale one and one-half.)



SEDUM LIEBMANNIANUM HEMSL.

(Natural size.)



SEDUM MELLITULUM ROSE.

(Scale two-fifths.)



SEDUM PACHYPHYLLUM ROSE.

(Natural size.)

This species is reluctantly referred to *Sedum*, although in habit and foliage it suggests *Lenophyllum*.

***Sedum liebmannianum* Hemsl.**

PLATE 56.

Perennial, procumbent and creeping, freely rooting at the joints, with ascending or erect branches; branches when young fleshy, green, when old completely hidden by the white bases of the dead leaves; leaves fleshy, narrow, bright green, 4 to 6 mm. long, generally obtuse, broad at the base; flowers few, in small cymes; pedicels subsessile; sepals linear, leaf-like; petals white, spreading; anthers purplish, oblong; scales short, retuse; ovaries oblong, erect, longer than the styles.

Collected by C. A. Purpus on limestone slope of Mesa de Coscomati, Oaxaca, Mexico (no. 422). Living material was sent to Washington, which flowered in June, 1909.

I at first considered this species undescribed and was about to publish it as such when I discovered that it was probably *Sedum liebmannianum*, which species has recently been referred to *Sedum moranense*. My reference of it to *Sedum liebmannianum* has been confirmed at Kew, although its distinctness from *Sedum moranense* is questioned. Living material of both species has long been under observation in Washington and their distinctness can hardly be questioned.

***Sedum mellitulum* Rose, sp. nov.**

PLATE 57.

Small, compact, much branched at base, the individual stems at first erect and nearly simple or in age becoming decumbent, very slender, pinkish, glabrous but slightly roughened; leaves scattered, standing nearly at right angles to the stem, terete, blunt, glabrous, 6 to 8 mm. long, bright green; inflorescence an open spreading cyme of 2 or 3 branches, each branch bearing 3 to 8 flowers; pedicels short (about 2 mm. long); sepals nearly or quite distinct, linear, 3 to 4 mm. long; petals a little longer than the sepals, widely spreading, white; filaments white; anthers brownish; pistils white, erect; mature carpels erect.

Type U. S. National Herbarium no. 617435, from material which flowered in Washington, D. C., originally sent by Marcus E. Jones, who collected it in the Sierra Madre, 30 miles west of Colonia Juarez, Chihuahua, in 1903. Material has been in cultivation in Washington for over seven years under the name of *S. alamosanum*, as which it has been widely distributed. In 1910 the writer collected the true *Sedum alamosanum*, which has since been grown side by side with the present species. The two species are related but can easily be distinguished.

***Sedum oaxacanum* Rose, sp. nov.**

Stem creeping, rooting at the joints, reddish, somewhat roughened; leaves rather closely set but not imbricated, usually standing nearly at right angles to the stem, thick but not terete, rounded on the back, flat on the face, obtuse, with broad base, glabrous, 5 to 6 mm. long; flowers solitary, terminal, sessile, or sometimes as many as 4 in a small terminal cyme; sepals linear, 3 mm. long, distinct nearly to the base; petals yellow, distinct, longer than the sepals; stamens 10; carpels 5, widely spreading, with long styles.

Type U. S. National Herbarium no. 462270, collected by Dr. C. G. Pringle on mossy ledges of Cerro San Felipe, Oaxaca, May 18, 1906 (no. 10243).

Living material was sent me by Prof. C. Conzatti, but it died in a short time. Unfortunately it was not photographed.

It is not near any of our other known Mexican species, but suggests somewhat *S. australe* of Guatemala, than which it is a weaker plant with smaller leaves.

***Sedum pachyphyllum* Rose, sp. nov.**

PLATE 58.

Perennial; stems woody at base, much branched, spreading or erect, glabrous throughout, 10 to 30 cm. high; leaves closely set, standing almost at right angles to the stem, terete in section, somewhat smaller below, obtuse, a little glaucous, 3 to 4 cm. long, 8 to 10 mm. in cross section; flowering stem weak, about 2 cm. long; inflorescence sessile, cymose; flowers short-pedicel or subsessile; sepals 5, widely spreading, clavate, green, obtuse, somewhat unequal, the longest one 6 mm. long; petals

yellow, widely spreading, or even bent backward, 7 mm. long, somewhat keeled on the back, spoon-shaped above; stamens 10, yellow; carpels at first erect, yellow.

Type U. S. National Herbarium no. 618380, collected by Dr. C. A. Purpus on hills near San Luis, Oaxaca, Mexico, altitude 1,800 to 2,100 meters, in 1907 (no. 416) and flowered in Washington, January, 1910.

Resembling *Sedum allantoides*, but leaves much less glaucous and flowers yellow instead of white.

***Sedum potosinum* Rose, sp. nov.**

Stems low and weak, at first erect, but soon prostrate or at most ascending; leaves closely set, ascending, nearly terete, obtuse, 6 to 8 mm. long, pale green, glabrous, slightly glaucous; inflorescence (usually?) an equilateral raceme; pedicels short, 1 to 2 mm. long; sepals linear, distinct nearly to the base, 3 mm. long; petals white or slightly tinged with pink, widely spreading, 6 to 7 mm. long.

Type U. S. National Herbarium no. 615397, collected by Dr. E. Palmer near San Luis Potosí, Mexico, in 1905, and flowered in Washington in May, 1905, and June, 1908.

Here also seems to belong Parry & Palmer's no. 236, which was referred to *S. greggii* by Mr. Hemsley.

***Sedum rhodocarpum* Rose, sp. nov.**

PLATE 59.

Perennial; 10 to 20 cm. high; stems flaccid, glabrous, somewhat 3-angled, bearing 3 to 6 whorls of leaves; leaves in 3's, flattened, rather thin, orbicular to spatulate, 2 to 4 cm. long, rounded at apex or sometimes retuse, narrowed at base into a short petiole; inflorescence cymose, few-flowered or sometimes reduced to one flower; pedicels 2 to 10 mm. long, often bearing a single bract near the middle; calyx green, deeply 5-parted; lobes often a little longer than the petals, obtuse, spreading, fleshy, 6 to 7 mm. long; petals distinct, broadly ovate, acute, reddish, in anthesis reflexed; stamens red, 10, the five alternating with the petals distinct, the other five borne on the base of the petals; carpels red, at first erect but in age widely spreading.

Type U. S. National Herbarium no. 462503, collected by C. G. Pringle on limestone ledges of the Sierra Madre above Monterey, Mexico, altitude 1,800 meters, December 21, 1906 (no. 10368), and flowered in Washington, November 19, 1907, and in 1909.

***Sedum semiteres* Rose, sp. nov.**

Perennial; sterile branches 3 to 4 cm. long, very leafy, the leaves appearing imbricate, in cultivated specimens 10 cm. long, the leaves standing nearly at right angles to the stem or somewhat drooping; leaves 1 to 2 cm. long, narrow, fleshy, nearly semiterete in section, obtuse, strongly papillose, the papillæ appearing more pronounced in dry specimens; flowering stems ascending or erect, apparently very leafy, 10 to 20 cm. long; inflorescence a widely spreading cyme more or less papillose; pedicels slender, 2 to 3 mm. long; calyx deeply cleft, the lobes ovate, 2 mm. long, obtuse; petals 5, white, lanceolate, acuminate, 5 mm. long; anthers dark-colored; carpels spreading, papillose-roughened, tipped by long, slender styles.

Type U. S. National Herbarium no. 571200, collected by Dr. E. Palmer at San Ramón, Durango, Mexico, 1906 (no. 180).

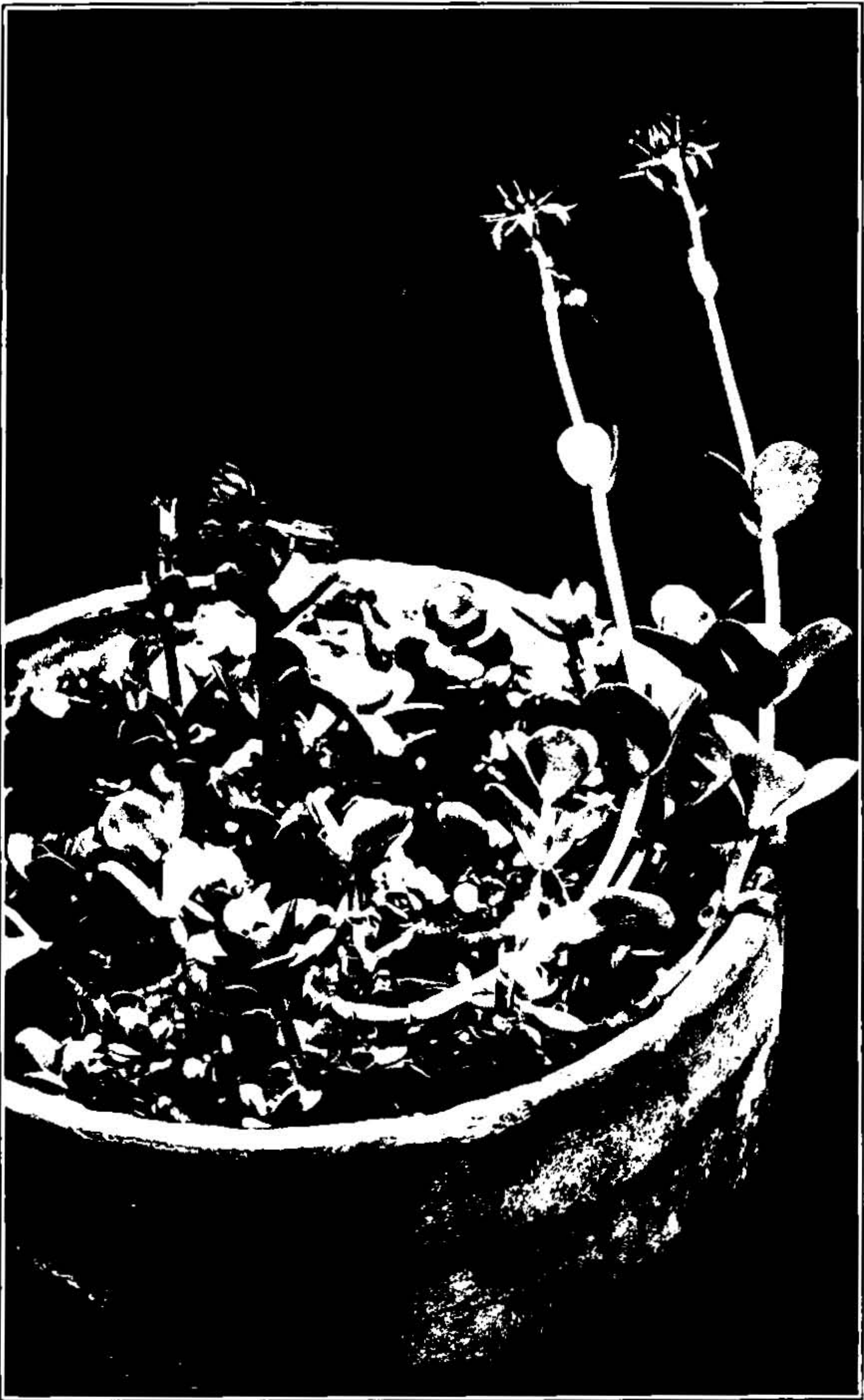
This species is nearest *S. alamosanum*, but is stouter and has more flattened, papillose leaves and white flowers.

The species is in cultivation in Washington.

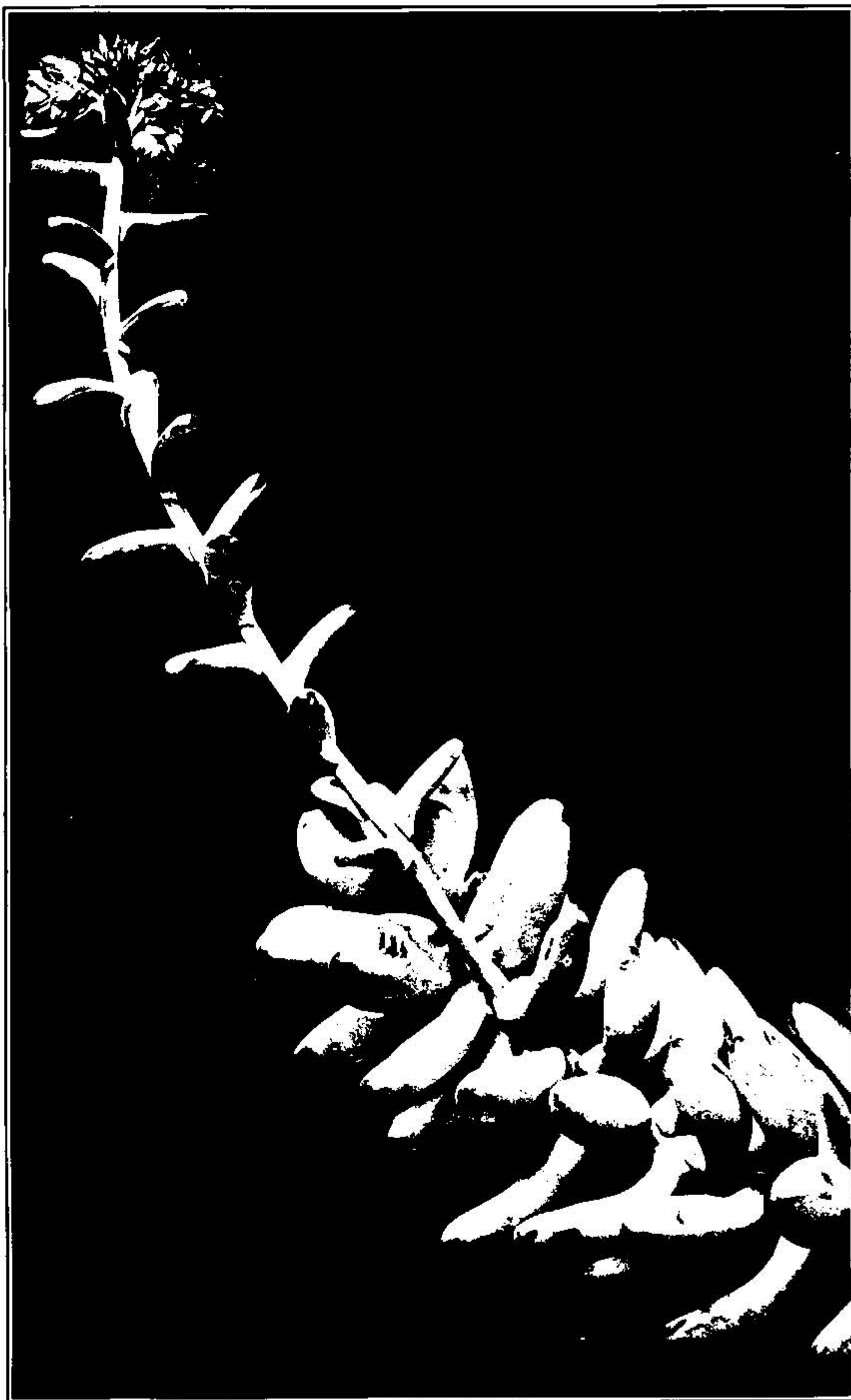
***Sedum treleasei* Rose, sp. nov.**

PLATE 60.

Perennial; stems woody at base, numerous, at first erect but finally procumbent and even pendulous in its native haunts, glaucous; leaves closely set, especially toward the ends of the branches, standing nearly at right angles to the stems, very glaucous, thick but decidedly flattened, 2.5 to 3.5 cm. long, obtuse, rounded below with the tip slightly turned up, the upper face slightly concave; flowering branches weak, slender, ascending or drooping, arising from the axils of upper stem-leaves, pinkish, the leaves narrow, obtuse; cymes sessile, small, about 3 cm. broad, compact; pedicels very short;



SEDUM RHODOCARPUM ROSE.
(Natural size.)



SEDUM TRELEASEI ROSE.

(Natural size.)



PACHYPHYTUM COMPACTUM ROSE.

(Natural size.)

sepals 5, linear, acute, terete, 3 mm. long; petals yellow, 6 mm. long, lanceolate, acute, widely spreading or sometimes turned backward; stamens 10, erect, yellow; carpels 5, long-attenuate, yellow, at first erect; scales yellow, broad.

Type U. S. National Herbarium no. 618379, collected by J. N. Rose near Tehuacán, Mexico, in 1905, and flowered first in Washington in 1910.

Named for Dr. Wm. Trelease, who first collected material (in 1904), but whose specimens have not yet flowered with me.

NEW SPECIES OF FOUR GENERA.

Tilleastrum latifolium Rose, sp. nov.

Delicate annual, 2 to 3 cm. high; leaves opposite, somewhat connate at base, 1 or 2 pairs below the flowers, the upper ones congested, lanceolate, acute or even apiculate, the margin serrulate; flowers axillary and solitary but often appearing as if in an umbel of 10 or more; pedicels filiform, 10 to 15 mm. long; sepals 3 or 4, filiform, 2.5 mm. long; petals broadly oval to orbicular, 1 mm. long, shorter than the carpels; stamens 3 or 4; carpels 3 or 4, purplish, each 10 or more seeded.

Type U. S. National Herbarium no. 451508, collected by J. N. Rose and J. H. Painter on the side of the Nevada de Toluca, Mexico, October 15, 1903 (no. 7891).

This species is not closely related to any of the Mexican species of the genus.

Tilleastrum longipes Rose, sp. nov.

Stems simple, erect, about 2 cm. high; leaves linear, acute, 1 mm. or less broad; peduncles slender, filiform, weak, 2 to 4 mm. long, sometimes much longer than the leaves; sepals green, about half as long as the petals; seeds several, oblong in outline, smooth.

Type U. S. National Herbarium no. 401957, collected by C. G. Pringle on river ledges at Trinidad, Hidalgo, May 10, 1904 (no. 13407).

Very different from both *T. viride* and *T. pringlei* in its long peduncles.

Pachyphytum compactum Rose, sp. nov.

PLATE 61.

Caulescent, 10 cm. or more high; leaves closely set at right angles to the stem, very fleshy but somewhat flattened, more or less purplish, somewhat glaucous, pointed, 2 to 2.5 cm. long; flowering stem 40 cm. long, more or less highly colored; stem leaves small (10 cm. long); flowers 7 to 10, racemose; lower pedicels 10 to 15 mm. long, the upper shorter; sepals appressed to the corolla, nearly equal, reddish below but with greenish tips, acute; corolla 8 mm. long; petals broad, reddish except the green tips, acute; stamens opposite the petals appendaged.

Type U. S. National Herbarium no. 574499, collected by C. A. Purpus at Ixmiquilpan, Hidalgo, Mexico, March, 1910.

It did not flower in cultivation until March, 1910.

Resembling *P. brevifolium* but with longer leaves and acute instead of obtuse sepals and petals.

Urbinia lurida Rose, sp. nov.

Leaves clustered in a dense rosette, very thick, ovate, acuminate, glabrous, purple or lurid in color, 3 to 4 cm. long, 1.5 to 2.5 cm. broad at widest point; flowering stem 25 cm. long, two-branched in only specimen seen; stem leaves small, bract-like, scattered; sepals small, ovate, acute; corolla 6 to 7 mm. long; petals acute, erect except the small outturned tip; carpels distinct to the base.

Type U. S. National Herbarium no. 571269, collected by Dr. E. Palmer in a "box cañon" near Tobar, Durango, Mexico, May 28, 1906 (no. 248). Only four specimens were obtained, of which two reached Washington in good condition, one of them flowering April 22, 1908. From this the accompanying illustration was made. This plant died soon afterwards, while the only remaining plant has not done well and

probably will soon disappear. This species is much smaller than any of the other three species of *Urbinia* and has much more highly colored leaves.

***Urbinia purpusii* Rose, sp. nov.**

Acaulescent; leaves forming a very compact rosette, resembling in a most remarkable way certain species of *Haworthia*, broadly ovate, acuminate, 3 cm. long, nearly as broad at base, glabrous, the surface peculiarly mottled with brown; flowering stem more or less reddish, 30 cm. long, slender, bearing numerous small, ovate, acute, appressed leaves; inflorescence a few-flowered (6-flowered in the only one examined) raceme; pedicels of lowermost flower 6 mm. long, the upper ones shorter still; sepals small, ovate, acute, green, appressed to the flower; corolla somewhat urn-shaped, 10 to 12 mm. long, pinkish without, except toward the tip, this and the inner surface pale yellow; mouth of corolla small; petals acute, each bearing a large pocket at the base; stamens 10, the alternating ones nearly or quite distant; the other 5 borne on the adjoining petals just above the pocket; ovaries short, stigmas green.

Type U. S. National Herbarium no. 615402, collected by the Purpus brothers (C. A. and J. A.) in southern Mexico in 1909.

***Villadia diffusa* Rose, sp. nov.**

Perennial, much branched and somewhat woody at base; branches glabrous, somewhat angled in dried specimens, purplish; leaves alternating, in young shoots forming small rosettes or closely overlapping and covering the stems, triangular to ovate, usually broadest at base, obtuse, 6 mm. long, glabrous; inflorescence an open spike, 2 to 12 cm. long; flowers subtended by a leaf-like bract; sepals 2 to 3 mm. long, ovate, obtuse, green; corolla about 6 mm. long, pinkish, the lobes acute, the tube about one-fourth the whole length; stamens borne on the corolla tube; styles slender.

Type U. S. National Herbarium no. 574298, collected by G. N. Collins and C. B. Doyle on Sierra Blanca, Chiapas, Mexico, January 20, 1907 (no. 131).

MENISPERMACEAE.

A NEW SPECIES OF MENISPERMUM.

In 1907 Dr. C. G. Pringle collected in northern Mexico a species of *Menispermum*. This was especially interesting since the genus had not heretofore been reported from Mexico. Doctor Pringle at first took it to be the common United States species, *M. canadense*, but a careful comparison with that species shows that it is abundantly distinct.

***Menispermum mexicanum* Rose, sp. nov.**

Stem climbing, slender, slightly pubescent; petioles 3 to 5 cm. long; blade ovate, entire, 3 to 5-lobed, 4 to 7 cm. broad, mucronate-tipped, thin, slightly pubescent on both sides but more so beneath, here paler but never glaucous; flower not known; peduncles short (2 cm. long); clusters of fruit rather large and dense; drupes bluish black, 5 mm. broad.

Type U. S. National Herbarium no. 462662, collected by Dr. C. G. Pringle in the Sierra Madre near Monterey, Mexico, July 9, 1907 (no. 10378).

This species differs from *M. canadense* in its leaves not being glaucous beneath, in its larger drupes, and in its much more southern range.

CAESALPINIACEAE.

NEW SPECIES AND NEW BINOMIALS IN POINCIANA.

Poinciana californica (A. Gray) Rose.

Caesalpinia mexicana californica A. Gray, Proc. Amer. Acad. 5: 157. 1862.

Poinciana konzattii Rose, sp. nov.

A small tree; bark grayish, glabrous; leaves glabrous throughout, large; pinnæ commonly in 4 pairs, but sometimes with an odd one; leaflets 4 or 5 pairs, oblong to obovate, 15 to 22 mm. long, rounded or retuse at apex; inflorescence a sessile raceme, 6 to 15 cm. long, glabrous; pedicels about 15 mm. long, slender, jointed above the middle; sepals highly colored, obtuse; petals yellowish red, about twice as long as the sepals; stamen long-exserted, 3 cm. long, somewhat hairy at base; pods scythe-shaped, 5 to 6 cm. long; clothed with a short, close pubescence; seed flat, 8 mm. broad.

Type U. S. National Herbarium no. 841055, collected by Hugo and C. Konzatti at Tehuantepec, Mexico, in 1909 and now in cultivation in the Botanical Garden in Oaxaca City.

Poinciana melanadenia Rose, sp. nov.

A low, bushy shrub; branches short, nearly black; leaves with 3 pinnæ; petiole and rachis both glandular and thinly pilose, slender; leaflets 4 to 6, oblong, 5 to 8 mm. long, obtuse, pubescent or glabrate with black glands along the margins; peduncle short; inflorescence usually a raceme, short, sometimes 15-flowered but sometimes 1-flowered; pedicels bearing stipitate glands, otherwise smooth, jointed above the middle; stamens a little longer than the petals, hairy at base; pods 3 cm. long, scythe-shaped, pubescent and bearing large sessile glands.

Type U. S. National Herbarium no. 454032, collected by J. N. Rose, near Tehuacán, September 1, 1906 (no. 11249).

Poinciana mexicana (A. Gray) Rose.

Caesalpinia mexicana A. Gray, Proc. Amer. Acad. 5: 157. 1862.

Poinciana palmeri (S. Wats.) Rose.

Caesalpinia palmeri S. Wats. Proc. Amer. Acad. 24: 47. 1889.

Poinciana pannosa (Brandeggee) Rose.

Caesalpinia pannosa Brandeggee, Proc. Cal. Acad. II. 2: 150. 1889.

Poinciana placida (Brandeggee) Rose.

Caesalpinia placida Brandeggee, Proc. Cal. Acad. II. 3: 131. 1891.

Poinciana sessiliflora (S. Wats.) Rose.

Caesalpinia sessiliflora S. Wats. Proc. Amer. Acad. 21: 450. 1886.

OXALIDACEAE.

NEW AND RECENTLY DESCRIBED SPECIES OF IONOXALIS.

In 1906 I published in the Contributions a partial report upon the very large series of specimens of *Ionoxalis* which had accumulated in the National Herbarium. About this time Dr. J. K. Small was finishing his revision of the Oxalidaceae for the North American Flora and I therefore turned over to him all my notes and specimens. Of the 65 species which he treated all but 9 are Mexican and nearly all (at least 60) are represented by material in the National Herbarium. Of these about 40 had been collected by me; of the new ones described 14 were of my collecting. Two species additional to those in the North American Flora are also here described.

Ionoxalis calcaria Small, N. Amer. Flora **25**¹: 37. 1907.

Plants 5 to 15 cm. tall, erect, the bulb scales several-ribbed; leaves as tall as the scape or nearly so, the petiole finely pubescent; leaflets 3, the blades lunate, 10 to 23 mm. wide, dark green and glabrous above, pale and sparingly pubescent beneath, the lobes ovate to lanceolate; scapes very sparingly pubescent; cymes 5 to 14-flowered; pedicels 0.5 to 1.5 cm. long, glabrous or nearly so; sepals lanceolate to linear-lanceolate, 2.5 to 3.5 mm. long, glabrous, each bearing 2 rather long apical tubercles; petals white, 6 to 9 mm. long; shorter filaments glabrous; longer filaments pubescent, each with an appendage on the back near the base.

Type collected on Mount Alban, near the city of Oaxaca, Oaxaca, Mexico, June 16 to 21, 1899, by J. N. Rose and Walter Hough (no. 4589).

Ionoxalis divaricata Small, N. Amer. Flora **25**¹: 33. 1907.

Plants 10 to 30 cm. tall, the bulb scales many-ribbed; leaves fully half as tall as the scape, or equaling it, the petioles glabrous, at least above the base; leaflets 4, the blades 2 to 5 cm. long, open V-shaped with the 2 oblong-ovate lobes rather spreading, bright green above, paler beneath, with scattered hairs on both surfaces; scape glabrous; cymes 3 to 11-flowered; pedicels 1.5 to 3 cm. long, glabrous; sepals lanceolate or oblong-lanceolate, 4.5 to 5 mm. long, glabrous, each bearing 2 short apical tubercles; petals violet, 12 to 16 mm. long; shorter filaments glabrous; longer filaments pubescent above, each with an appendage below the middle.

Type collected near Tlalpam, Valley of Mexico, July 15, 1901, by J. N. Rose and Robert Hay (no. 5494).

Ionoxalis goldmanii Rose, sp. nov.

Bulbs deep-seated, the brown scales 7-nerved; petioles about 20 cm. long, somewhat pubescent; leaflets 5 or 6, broadly obovate, rounded at apex, 4 to 6 cm. long, 3 to 4 cm. broad, somewhat hairy, especially toward the base; peduncles much longer than the leaves, more or less pubescent; cymes 10 to 15-flowered, pedicels 15 mm. long, glandular-pubescent; sepals lanceolate; lower stamens pubescent, appendaged on the back; style pubescent.

Type U. S. National Herbarium no. 470828, collected by E. A. Goldman at Jiquipelas, Chiapas, Mexico, May 31, 1909 (no. 1033).

Perhaps nearest *I. rosei*, but with different leaflets, etc.

Ionoxalis immaculata Small, N. Amer. Flora **25**¹: 41. 1907.

Plants 8 to 20 cm. tall, the bulb scales 3-ribbed; leaves over half as tall as the scape, the petioles glabrous; leaflets 3, the blades obdeltoid in outline, 1 to 1.5 cm. wide, glabrous, bright green above, paler beneath, the lobes broadly ovate; scapes glabrous; cymes 4 or 5-flowered; pedicels 1.5 to 3 cm. long, glabrous; sepals linear to linear-oblong, 4 to 4.5 mm. long, glabrous, each bearing two very narrow apical tubercles; petals white, 11 to 13 mm. long; shorter filaments glabrous; longer filaments pubescent, unappendaged; styles pubescent; capsules columnar, about 10 mm. long, glabrous.

Type collected on Sierra de Pachuca, Hidalgo, Mexico, July 21 and 22, 1901, by J. N. Rose and Robert Hay (no. 5545).

Ionoxalis lanceolata Small, N. Amer. Flora **25**¹: 35. 1907.

Plants 10 to 20 cm. tall, the bulb scales 3-ribbed; leaves as tall as the scape or nearly so, the petioles finely pubescent or partially glabrous in age; leaflets mostly 5 to 7, the blades 2 to 9 cm. long, typically lanceolate, sometimes narrowly so, those of the earlier leaves inclined to be broadened upward or rarely obovate, the narrower ones acute or acutish, bright green above, paler beneath or glaucescent, usually sparingly pubescent, especially on the lower surface and on the margins; scapes glabrous or nearly so; cymes 1 to 4-flowered; pedicels 1 to 3 cm. long, glabrous; sepals lanceolate or linear-lanceolate, 5 to 6 mm. long, glabrous except the ciliolate margins, acute, each bearing two rather elongate apical tubercles; petals lilac, 14 to 18 mm. long; shorter fila-

ments glabrous; longer filaments pubescent near the tip, unappendaged; styles mostly pubescent; capsules columnar, 9 to 11 mm. long, glabrous.

Type collected at Colomas, Sinaloa, Mexico, July 15, 1897, by J. N. Rose (no. 1651).

Ionoxalis macilenta Small, N. Amer. Flora 25¹: 35. 1907.

Plants 3 to 7 cm. tall, the bulb scales 3-ribbed; leaves as tall as the scape or nearly so, the petioles glabrous or with few scattered hairs near the top; leaflets mostly 4, the blades 7 to 13 mm. long, obovate to spatulate-obovate, obtuse at the apex, bright green above, glaucous beneath, often with scattered hairs on the upper surface near the margin; scapes glabrous or nearly so; cymes 1 or 2-flowered; pedicels about 1 cm. long, glabrous; sepals linear to linear-lanceolate, 3 to 4 mm. long, glabrous, each bearing two rather short apical tubercles; petals white, 13 to 16 mm. long; shorter and longer filaments pubescent, unappendaged.

Type collected between Santa Gertrudis and Santa Teresa, Tepic, Mexico, August 8, 1897, by J. N. Rose (no. 3323).

Ionoxalis magnifica Rose, N. Amer. Flora 25¹: 31. 1907.

Plants 15 to 40 cm. tall, the bulb scales several-ribbed; leaves fully one-half as tall as the scape or less, the petioles finely pubescent; leaflets mostly 7 or 8, the blades cuneate, 2.5 to 4 cm. long, truncate or abruptly short-pointed, deep green above, slightly paler beneath, usually with scattered hairs on both sides; scapes glabrous; cymes mostly 12 to 24-flowered; pedicels 1.5 to 2.5 cm. long, glabrous or finely pubescent under the calyx; sepals linear-lanceolate to narrowly lanceolate, 5 to 6 mm. long, pubescent, each bearing four, usually long and irregular, more or less confluent apical tubercles; petals dark purple, 17 to 27 mm. long; shorter and longer filaments glabrous, the latter appendaged on the back; styles pubescent; capsules slender, about 1 cm. long.

Type collected at Alturas de Matatlan, Oaxaca, Mexico, June 19-23, 1906, by C. Conzatti (no. 1491).

Ionoxalis mucronata Rose, N. Amer. Flora 25¹: 40. 1907.

Plants 20 to 30 cm. tall, the bulb scales several-ribbed; leaves mostly less than one-half as tall as scape, the petioles glabrous, except for some hairs below the leaf blade; leaflets 3, the blades obdeltoid, only slightly emarginate or truncate at the apex, glabrous, bright green above, glaucous beneath; scape glabrous; cymes about 9-flowered; pedicels 1 cm. long or slightly longer at maturity, glabrous; sepals linear to oblong-lanceolate, 4.5 to 5 mm. long, glabrous, each bearing two long apical tubercles; petals violet, 12 to 14 mm. long; shorter filaments glabrous; longer filaments pubescent, each with an appendage on the back below the middle.

Type collected on Sierra de Tepoxtlan, Morelos, Mexico, September 21, 1903, by J. N. Rose and J. H. Painter (no. 7247).

Ionoxalis painteri Rose, N. Amer. Flora 25¹: 34. 1907.

Plants 5 to 15 cm. tall, the bulb scales many-ribbed; leaves fully one-half as long as the scape, the petioles glabrous; leaflets mostly 7 to 9, the blades 1 to 2.5 cm. long, cuneate, sometimes narrowly so, notched to above the middle, bright green above, glaucous beneath, ciliate; scapes glabrous; cymes 5 to 11-flowered; pedicels 1 to 1.5 cm. long, glabrous or nearly so; sepals oblong, 3 to 4 mm. long, obtuse, glabrous, each bearing two short apical tubercles; petals violet, 8 to 11 mm. long; shorter and longer ones appendaged on the back; styles pubescent; capsules oblong, 6 to 9 mm. long.

Type collected between Pachuca and Real del Monte, Hidalgo, Mexico, August 31, 1903, by J. N. Rose and J. H. Painter (no. 6705).

Ionoxalis quadriglandula Rose, N. Amer. Flora 25¹: 40. 1907.

Plants 10 to 15 cm. tall, the bulb scales 3-ribbed; leaves fully one-half as tall as the scape, the petioles glabrous; leaflets 3, the blades lunate, 1.5 to 2.5 cm. wide, bright-green above, glaucescent beneath, glabrous, the lobes ovate; scape sometimes sparingly pubescent on the lower part; cymes 4 or 5-flowered; pedicels 1 to 2.5 cm. long,

glabrous; sepals lanceolate to oblong-lanceolate, 4 to 5 mm. long, glabrous, each bearing four long and narrow apical tubercles; petals violet, 11 to 14 mm. long; shorter filaments with few spreading hairs; longer filaments pubescent with shorter hairs, each one appendaged on the back below the middle.

Type collected on Sierra de Tepoxtlan, Morelos, Mexico, May 28, 1904, by C. G. Pringle (no. 8821).

Ionoxalis rosei Small, N. Amer. Flora 25¹: 32. 1907.

Plants 25 to 60 cm. tall, the bulb scales several-ribbed; leaves, at least some of them, often nearly as tall as the scape, the petioles nearly glabrous, or with scattered hairs; leaflets 4 or 5, the blades 2 to 4 cm. long, obdeltoid, slightly retuse at the apex, pubescent at the base, bright green and almost glabrous above, paler or sparingly pubescent beneath; scape commonly bearing a few hairs near the inflorescence; cymes 6 to 15-flowered; pedicels 1 to 2.5 cm. long, minutely viscid-pubescent; sepals lanceolate to linear-lanceolate, 4.5 to 5.5 mm. long, minutely pubescent, each with two short apical tubercles; petals violet, 15 to 20 mm. long, shorter filaments glabrous; longer filaments copiously pubescent, each with a prominent appendage near the base.

Type collected near Tlalnepantla, Mexico, July 6, 1905, by J. N. Rose, J. H. Painter, and J. S. Rose (no. 8401).

Ionoxalis tenuissima Rose, N. Amer. Flora 25¹: 35. 1907.

Plants 9 to 18 cm. tall, the bulb scales 3-ribbed; leaves about as tall as the scape, the petioles finely pubescent, or glabrate in age; leaflets mostly 8 to 11, the blades narrowly linear, 2.5 to 6 cm. long, obtuse, or slightly notched at the apex, glabrous, light green above, glaucous beneath; scapes glabrous; cymes 2 to 5-flowered; pedicels 1 to 2 cm. long, glabrous; sepals lanceolate, 3 to 4 mm. long, glabrous except the ciliate margin, acute, each bearing two rather long apical tubercles; petals violet, 10 to 12 mm. long; shorter filaments glabrous; longer filaments pubescent, unappendaged.

Type collected between Dolores and Santa Gertrudis, Tepic, Mexico, August 7, 1897, by J. N. Rose (no. 3423).

Ionoxalis trientalis Small, N. Amer. Flora 25¹: 35. 1907.

Plants 10 to 15 cm. tall, the bulb scales 3-ribbed; leaves as tall as the scape or nearly so, the petioles glabrous; leaflets 7 to 10, the blades elliptic or elliptic-lanceolate, 3 to 5.5 cm. long, rather obtuse at the apex, narrowed at the base, bright green above, pale green beneath, glabrous; scapes glabrous; cymes 5 to 8-flowered; pedicels 1.5 to 3 cm. long, glabrous; sepals oblong or nearly so, 3 to 4 mm. long, bearded at the apex, each bearing 4 uneven, rather elongate, apical tubercles; petals lilac, 13 to 17 mm. long; shorter and longer filaments pubescent, the latter unappendaged; styles mostly glabrous; capsules columnar, about 1 mm. long, glabrous and glaucous.

Type collected near Colomas, Sinaloa, Mexico, July 19, 1897, by J. N. Rose (no. 3217).

Ionoxalis trineuris Small, N. Amer. Flora 25¹: 34. 1907.

Plants 5 to 20 cm. tall, the bulb scales 3-ribbed; leaves fully one-half as tall as the scape or equaling it, the petals glabrous; leaflets 4 to 8, the blades 1 to 3 cm. long, cuneate, usually broadly so, notched to above the middle, the lobes ovate or oblong, deep green above, paler beneath, glabrous except sometimes for a few marginal hairs near the apex; scape glabrous; cymes 2 to 7-flowered; pedicels 1 to 2 cm. long, glabrous; sepals oblong to lanceolate, 3.5 to 5.5 mm. long, glabrous, each bearing 2 apical tubercles; petals violet, 12 to 16 mm. long; shorter filaments glabrous; longer filaments pubescent above, each with an appendage on the back near the base.

Type collected on "hacienda de la Encarnacion," State of Mexico, Mexico, July 7, 1905, by J. N. Rose, J. H. Painter, and J. S. Rose (no. 8472).

Ionoxalis vallicola Rose, N. Amer. Flora 25¹: 39. 1907.

Plants 1 to 3 cm. tall, the bulb scales many-ribbed; leaves as tall as the scape or nearly so, the petioles sparingly pubescent; leaflets 3, the blades obreniform, 2 to

4.5 cm. wide, deep green and glabrous above, slightly paler and with scattered hairs beneath; scapes less pubescent than the petioles; cymes 3 to 9-flowered; pedicels 1 to 1.5 cm. long, glabrous; sepals lanceolate to oblong, 4.5 mm. long, glabrous, each bearing 2 large apical tubercles; petals light blue, 9 to 13 mm. long; shorter filaments glabrous; longer filaments pubescent, each with an appendage on the back near the base.

Type collected at Tlalnepantla, Federal District, Mexico, July 5, 1898, by C. G. Pringle (no. 6895).

POLYGALACEAE.

TWO NEW SPECIES AND A NEW NAME IN POLYGALA.

Polygala konzattii Rose, sp. nov.

Slender, at least 40 cm. high, doubtless much higher, clothed with short crisp hairs; leaves scattered, shortly oblong, 2 cm. or less long, obtuse, mucronate, narrowed at base into a slender distinct petiole, sparsely pubescent; inflorescence a slender elongate raceme bearing scattered flowers; bracts subtending flowers small, ovate, puberulent on the back, persistent; pedicels 3 to 4 mm. long, in age reflexed; flowers pinkish; sepals glabrous, the upper one persistent; upper petal not crested; fruit orbicular or sometimes broader than long, 3 to 4 mm. broad, retuse, when very young densely pubescent but soon glabrate.

Type U. S. National Herbarium no. 571003, collected by C. Konzatti on Cerro San Antonio, Oaxaca, Mexico, October 28, 1908 (no. 1587).

I would place this species near *P. pavoni* Chodat, but it is not a very close relative.

Polygala lozani Rose.

Polygala calcicola Rose, Contr. Nat. Herb. 10: 122. 1906, not Chodat, 1893.

Polygala minutifolia Rose, sp. nov.

Stems much branched, diffuse, slender, nearly glabrous; leaves minute and scale-like or wanting; inflorescence a few-flowered raceme; fruiting pedicels about 1 mm. long, slightly pubescent; sepals semipersistent, 2 mm. long, somewhat scarious; petals pale; crown cristate; capsule orbicular or a little longer than broad, 3 mm. long, slightly hairy, especially near the top.

Type U. S. National Herbarium no. 462685, collected by C. G. Pringle on dry limestone cliffs of the Sierra Madre near Monterey, Mexico, July 10, 1907 (no. 13949).

MALVACEAE.

ERIOXYLUM, A NEW GENUS.

Erioxylum Rose & Standley, gen. nov.

Bractlets 3, minute, persistent, ovate, each bearing a large honey gland at base; calyx small, subtruncate, with 5 minute teeth, within bearing a ring of hairs near the base; petals large, purple; stamen tube elongated, anther-bearing except at the top, here naked and cleft into linear lobes; style elongated, simple, bearing a clavate stigma; capsule ovate to ovate-oblong, somewhat 3-sided, bearing black glands all over its surface, the carpels 3; seeds ascending in the cells, glabrous on the face, with a narrow ridge along the medial line, bearing dense cotton on the back and sides; erect shrub or small tree with strict branches; leaves entire.

This genus is nearest *Gossypium* and *Ingenhouzia*. From the former it differs in its glandless leaves and minute involucre bracts and in its seeds. It is much closer to *Ingenhouzia* but has still smaller bracts, glandless calyx, and entire leaves, and is of very different habit.

Two species are known, both from the west coast of Mexico.

Type species, *Erioxylum aridum* Rose & Standley.

Erioxylum aridum Rose & Standley, sp. nov.

Shrub or small tree, 3 to 6 meters high, with slender, upright branches; leaves simple, entire, ovate, rounded or cuneate at base, acute, both surfaces slightly stel-

late, the lower surface bearing yellowish glands; petioles densely stellate-pubescent; flowers and fruit appearing before the leaves, borne on short (3 to 5 mm. long), thick peduncles from near the tips of branches of the previous year; bracts ovate, 2 to 3 mm. long; calyx 5 or 6 mm. long, densely stellate-pubescent as are also the bracts and pedicels; corolla 4 cm. long, deep purple with a large dark, nearly black spot at base; capsule 25 mm. long, purplish, covered with large black glands; seeds 6 to 7 mm. long.

Type U. S. National Herbarium no. 637875, collected by Rose, Standley, and Russell near Culiacan, April 22, 1910 (no. 14999). The same was collected by E. A. Goldman near La Rastra, Sinaloa, March 9, 1899 (no. 267).

This species was common along the Mexican branch of the Southern Pacific Railroad between Mazatlan and Culiacan, Sinaloa. It grows on the dry hills among stunted shrubs and trees.

Erioxylum palmeri Rose.

Cienfugosia palmeri Rose, Contr. Nat. Herb. 1: 308, 1895.

Only known from the type collection which came from near Colima, Mexico.

CACTACEAE.

A NEW SPECIES OF ARIOCARPUS FROM MEXICO.

The genus *Ariocarpus* is generally supposed to contain but five species, although one or two additional ones are sometimes offered by the trade. *Ariocarpus furfuraceus* and *A. retusus* are much alike and are often confused in collections, but as they are very different from the one here described may be passed over for the present. *Ariocarpus kotschubeyanus*, although somewhat similar to *A. fissuratus* in structure, is always small and is of course quite distinct. The new species described below, however, usually passes as *A. fissuratus* and in fact is the only representative of that species in many collections. The true *A. fissuratus* (pl. 62) came from near the mouth of the Pecos River in western Texas, where I obtained some typical specimens in 1908 and whence I afterward obtained an unusually large plant through Mr. M. Dodd, an enthusiastic cactus collector. These specimens are all so similar to Engelmann's illustration of his type and so different from all the Mexican material seen that I have no hesitancy in basing a new species on the material furnished by F. E. Lloyd from the State of Zacatecas, Mexico.

Ariocarpus lloydii Rose, sp. nov.

PLATE 63.

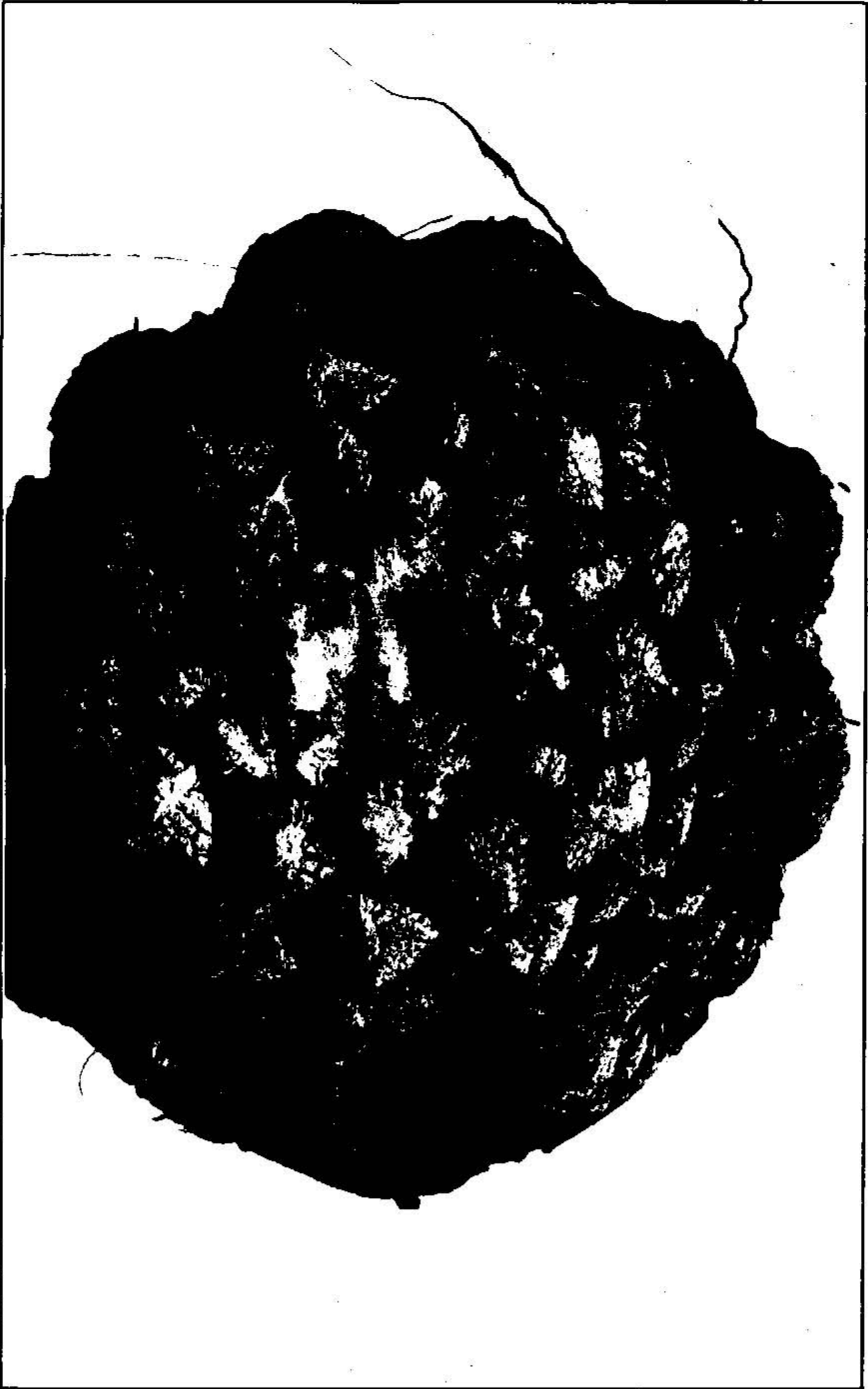
Plant body low with rounded top, 10 cm. or more in diameter, tapering below into a very thick root; tubercles imbricate, 2 cm. broad at base, the upper portion rounded, obtuse, broader than thick, the whole surface fissured but not in definite bands; areoles filled with a dense mass of hairs; flowers purple, about 3 cm. long; petals broad, apiculate; styles slender, longer than the stamens.

Type U. S. National Herbarium no. 535137, collected by Francis E. Lloyd on the Hacienda de Cedros, Zacatecas, Mexico, 1908 (no. 34). The photograph was taken in Washington.

This species is different from *A. fissuratus* in the shape and surface of the tubercles. In the latter species the corrugations are broken up into bands, the outer ones forming an elevated margin, while in *A. lloydii* they are equally distributed over the surface. Plants of *A. lloydii* are not flat and have a more southern range.



ARIOCARPUS FISSURATUS (ENGELM.) SCHUM.
(Natural size.)



ARIOCARPUS LLOYDII ROSE.
(Natural size.)



OPUNTIA BALLII ROSE.
(Natural size.)



OPUNTIA DEAMII ROSE.

NOTES AND DESCRIPTIONS OF NORTH AMERICAN SPECIES OF
OPUNTIA.

Since the appearance of Britton and Rose's paper entitled A Preliminary Treatment of the Opuntioideae of North America, published in 1908,^a some 20 additional species, chiefly of *Opuntia*, have been described. This will require a revision of that paper, material for which is now being brought together. In the meantime it seems best to put forth a few additional species, some of which have been on hand a considerable time, others only recently collected.

Opuntia ballii Rose, sp. nov.

PLATE 64.

Plant low, spreading; joints obovate, 6 to 7 cm. long, thickish, pale green, spines brownish, a little flattened, usually ascending or erect, the larger ones 4 to 6 cm. long; flowers probably small; fruit about 2 cm. long, clavate in outline, glaucous, spineless.

Type U. S. National Herbarium no. 615400, collected by C. R. Ball at Pecos, Texas, August, 1909 (no. 1506). The photograph was taken in Washington.

Mr. E. O. Wooton tells me that this species is common in the eastern part of New Mexico. I have a specimen of his plant from the top of the Guadalupe Mountains collected August 3, 1909.

Not closely resembling any species known to me.

Opuntia cyclodes (Engelm.).

Opuntia engelmannii cyclodes Engelm. Proc. Amer. Acad. 3: 291. 1856.

Opuntia lindheimeri cyclodes Coult. Contr. Nat. Herb. 3: 422. 1896.

Since the publication of the "Preliminary Treatment" I have examined considerable material of *Opuntia engelmannii cyclodes* as well as of *O. engelmannii*, the latter in its type locality, and I am convinced that the variety deserves specific rank.

Opuntia deamii Rose, sp. nov.

PLATE 65.

One meter or so high, usually with a definite cylindrical trunk, branching a short distance above the base; branches few, ascending, compact; joints erect or spreading, very large, 25 to 30 cm. long, obovate to oblanceolate, rounded at apex, at first bright leaf green, later dark green, glabrous; areoles remote, often 4 cm. apart, rather small for size of joints; spines stout, white or dull yellow, somewhat flattened, 2 to 6, usually 4, spreading or porrect, 3 to 5.5 cm. long; flowers 7 cm. long, reddish; fruit short-oblong, 6 cm. long, naked except a few spines (8 to 12 mm. long) at the tip, wine-red both within and without, disagreeable in taste; seeds small, 3 mm. in diameter.

Type U. S. National Herbarium no. 535893, collected by Charles C. Deam (no. 6228) Fiscal, June 7, 1909. The photograph was taken in the field by Mr. Deam.

Of the same species are William R. Maxon's no. 8303 from near Salama, January 20, 1905, and F. Eichlam's no. 40, also from near Fiscal.

The above description is drawn from Mr. Deam's plant supplemented by a very full description kindly sent me by F. Eichlam, who states that his plant is the same, with which opinion I am in accord.

Mr. Eichlam also states that the plants grow close together forming an almost impenetrable thicket, and that the trunks are generally covered with branches from the ground up and do not usually take the cylindrical form shown in Mr. Deam's photograph because the plants are so frequently broken or cut by the passers-by. In speaking of the distribution Mr. Eichlam states that as soon as the first high road is passed after leaving Guatemala City in the direction of Fiscal the species opens the

^a Smithsonian Miscellaneous Collections (Quarterly Issue), vol. 50, pt. 4.

area of distribution of the xerophilous flora. Large groves exist in the neighborhood of Fiscal, and the line of distribution extends from here to San José de Golfo and to Sanarata.

***Opuntia delicata* Rose, sp. nov.**

A small, procumbent plant with rather thin, ovate, bluish, slightly glaucous joints, often only 4 to 9 cm. in diameter; areoles prominent, bearing conspicuous brown spicules; lower areoles spineless, the upper ones bearing one or two slender brownish spines (the longer one 3 to 4 cm. long); flowers yellow, 5 cm. long; fruit oblong, spineless, 2 to 3 cm. long; seeds small, about 4 mm. in diameter, nearly smooth.

Type U. S. National Herbarium no. 454622, collected by J. N. Rose at Calabasa, April 30, 1908 (no. 11951).

Common in southeastern Arizona and observed at Calabasa, Nogales, and Benson. The description is made up from living and herbarium material. The fruit and seeds are described from material collected by J. W. Toumey in the Santa Rita Mountains.

Mr. Toumey refers his material to *O. stenochila*, which it closely resembles in its seeds.

***Opuntia eichlamii* Rose, sp. nov.**

PLATE 66.

Tree-like shrubs of considerable size, up to 5 and 6 meters in height, growing straight and erect, the old portions of the stem round, covered with gray bark; joints from obovate, 15 by 20 cm., to almost rotund, 25 cm. wide, forming a scanty crown; epidermis smooth, with a dull gloss, dark green; areoles oval, 2 by 3 mm., 3 to 3.5 cm. apart, visibly sunk in a protuberance, this flattened below, 10 mm. long and 6 mm. wide, with brownish wool and very transient fox-red glochids; spines 4 to 6, very unequal, 1 cm. or less long, rose-color when young, in most cases, soon becoming white, exceedingly sharp, spreading asunder, rather inclined to point downward, the lowest even lying close to the joint; leaves on young joints, caducous, cylindrical, gray at the base running into reddish above, with little red tips bent outwards; flowers produced from the edge of the joint, 7.5 cm. long; ovary cylindrical, 3.7 cm. long, 2.5 cm. in diameter, bright leaf-green, thickly covered with tubercles 6 to 7 mm. apart, its areoles with dark brown wool and dark fox-red glochids penicillately disposed; corolla 3.5 cm. long, rotate when in full bloom, beginning with dark reddish brown scales, changing into magnificent brilliant carmine petals, 1.5 cm. wide; stamens 1.5 cm. long, green at the base, rose-colored toward the top; anthers bright yellow, standing in rows of 10 to 12 on the steeply sloping wall of the deeply umbilicate ovary; style 2.5 cm. long, stout in the lower third, ventriculose, dark red, brighter toward the upper part, ending in 8 to 11 bright green, club-like stigmas inclining toward one another; ripe fruit 4 cm. long by 3 cm. thick; strongly tuberculate; pulp red, very watery, and unfit to eat; seeds developed in profusion, of a reddish brown color.

Type U. S. National Herbarium no. 617659, collected in Guatemala in 1910 by F. Eichlam (no. 13).

Mr. Eichlam states that it is not widely distributed, so far as he has been able to learn. He says that, on the high plain of Guatemala, the species is found in a northeasterly direction, in the nearest suburbs of Guatemala City, especially on the old road to Mexico, and that between the city and churchyard it is scattered about in the thickets and grass.

The above description is based upon one furnished by Mr. Eichlam, who also sent three photographs, one of which is here reproduced.

***Opuntia mackensenii* Rose, sp. nov.**

PLATE 67.

Plants often producing thick, tuberous roots, low (rarely over 30 cm. in height), sometimes 1 to 2 meters broad; stems mostly prostrate, the branches often erect or ascending; joints mostly suborbicular (occasionally broader than long), varying to obovate, 8 to 16 or rarely 20 cm. in diameter, pale and glaucous when young, rather deep green when older; areoles filled with brown bristles and pale wool when young,



OPUNTIA EICHLAMII ROSE.



OPUNTIA MACKENSENII ROSE.

(Scale one half.)

the bristles becoming yellowish in age, the lower areoles naked, the upper bearing 1 to 4 unequal spines; spines brown, white, or brown below and white above, all becoming gray or whitish in age, mostly flattened on one side and twisted, slender, on young joints spreading, on very old ones usually reflexed; flowers medium-sized, yellow, with a 7 or 8-lobed stigma; fruit spineless, oval (or sometimes narrower with or without a contracted base), 4 to 5, rarely 6 cm. long, truncate at apex, rose-purple, with a nearly colorless, pleasant-tasted pulp; seeds suborbicular, 5 to 6 mm. broad, acutish-margined, nearly white.

Type U. S. National Herbarium no. 617434, collected by Bernard Mackensen, near Kerrville, Texas, August, 1909. The photograph was taken in Washington.

The following note by Mr. Mackensen made in the field is of considerable interest:

I now send you two more packages containing more typical specimens of *O. mackensenii*. I am also trying to have a photograph made of a large, typical plant. I have had to revise my ideas of this species somewhat in consequence of the examination of numerous specimens growing under various conditions. I find that many plants are without tubers, and I believe this to be the case especially with those produced by vegetative propagation. On normal plants the fruit is oval and rose-purple; on those suffering from drouth, disease, etc., it is usually narrower and frequently contracted below.

Opuntia mackensenii differs from *O. ferruginospina* chiefly in its tuberous roots and procumbent habit, and in the shape and size of its joints, character of its spines, yellow color of its flowers, size, shape, color, and taste of its fruit, and size and color of its seeds. It is evidently more closely related to *O. macrorhiza*, from which it differs chiefly in the size of its joints and the number and character of its spines, in its 7 or 8-lobed stigma, and in the form and color of its fruit.

APIACEAE.

A NEW ARRACACIA AND A NEW ERYNGIUM.

Arracacia compacta Rose, sp. nov.

Perhaps a meter high; stems purplish, more or less glaucous; basal leaves 35 cm. or more long, ternately compound; ultimate segments lanceolate, sometimes lobed below, sharply serrate, acute, glabrous above, pubescent beneath; ultimate peduncles rather short, 2 to 4 cm. long; involucre and involucre bractlets wanting; peduncle 1 cm. or less long, pubescent when young; pedicels short, puberulent; flowers apparently purplish; fruit abundant, forming large compact heads hiding the peduncles and pedicels; carpels 12 to 14 mm. long, glabrous, sharply ribbed, with slender style but no stylopodium; ribs nearly equal, broad at base, acute; old tubes one in each interval and one under each rib; seed in cross section showing a deep concave base, the outer margin corrugated.

Type U. S. National Herbarium no. 592478, collected by Dr. C. A. Purpus at an altitude of 2,100 to 2,400 meters on Cerro de Chicamole, Puebla, Mexico, August, 1909 (no. 4110).

I have referred this species tentatively to *Arracacia*, although it lacks the stylopodium of that genus.

Eryngium purpusii Hemsley & Rose, sp. nov.

Perennial; stem rather slender, 60 to 80 cm. long, glabrous, naked below the inflorescence; basal leaves numerous, 20 to 35 cm. long, about 12 mm. broad, with numerous spinescent linear lobes narrower than the breadth of the leaves, often bearing small prickles in the axils of these lobes; inflorescence a terminal umbel somewhat compounded together with several axillary clusters; heads 2 cm. or more long, longer than broad; bracts erect, entire, pungent, 8 to 12 mm. long; bractlets entire, pungent; styles elongated; carpels naked below but bearing a few ovate scales above.

Type U. S. National Herbarium no. 592477, collected by C. A. Purpus on Cerro de Cacalotl, Puebla, Mexico, August, 1909 (no. 4109).

ERICACEAE.

A NEW SPECIES OF ARBUTUS.

Arbutus peninsularis Rose & Goldman, sp. nov.

Tree 8 to 12 meters high, the branches widely spreading, covered with smooth, deep reddish bark; leaves coriaceous, glabrous and shining above, pubescent or tomentose beneath, especially along basal portion of midrib, broadly ovate to nearly elliptic, green above and below, 75 to 95 mm. long, 4 to 6 cm. wide, on rather thinly pubescent petioles 10 to 16 mm. long; inflorescence a short terminal panicle of closely crowded racemes, the racemes about 3 cm. long; flowers pale yellow or whitish, with rather large calyx lobes.

Allied to *A. macrophylla*, but the leaves with shorter petioles, their blades tapering instead of cordate or subcordate at base and much less profusely pubescent along the under side. This species was listed by Brandegee, in his *Flora of the Cape Region*, as *A. menziesii*, the well-known madroño of California and perhaps northern Lower California, but it differs conspicuously from *A. menziesii* in having the leaves tomentose and green below, instead of glabrous and glaucous, and in the more crowded inflorescence and larger size of calyx lobes.

Type U. S. National Herbarium no. 565524, collected near La Chuparosa, on the upper slope of the Sierra de la Laguna, southern Lower California, altitude, 1,350 meters, by Nelson and Goldman, January 23, 1906 (no. 7453).

The species is rather abundant and generally distributed along with the oaks in the upper Sonoran zone from about 1,350 meters elevation to the summit of the Sierra de la Laguna. It occurs disconnectedly here on the mountain tops, like numerous other species whose congeners are absent in the wide desert interval to the northward.