

THE GENUS TALINUM IN MEXICO.

By J. N. ROSE and PAUL C. STANDLEY.

The genus *Talinum*, like other genera of the Portulacaceae and many groups of succulents, has been much neglected because of the difficulty of preparing good herbarium specimens of the plants. Dried material of this genus is usually unsatisfactory and permits one to form only an imperfect idea of the plants as they appear while growing. Commonly only the ends of branches are preserved, thus hiding their habit; and often the flowers, which furnish a means of distinguishing species, are so poorly pressed that even their color is lost. This is especially true of the flat-leaved *Talinums*. For this reason most students of the genus have grouped all its representatives under a few of the earlier published names.

During the last few years different collectors have sent to Washington living plants of various species of the genus. Many of these have thrived in the greenhouse and flowered at the proper season. With these living plants, and with additional herbarium material that has lately come to hand, we are able better to understand their peculiar characters and to use for diagnostic purposes some of these not readily perceptible in dried material and not before made out. As a result we have discovered a number of types that seem worthy of specific segregation.

The species of *Talinum* found in Mexico fall somewhat naturally into four groups. The first consists of those having terete leaves. All these are very much alike in habit, but differ in other and essential characters. Some have red, some yellow, and some white flowers. Of the flat-leaved plants the larger ones, those with their inflorescence in a compound panicle, like *T. paniculatum*, form a group composed of two species. Another group consists of plants of lower habit with inflorescence usually in the form of simple racemes, never a true panicle, typified by *T. triangulare*. Still another contains low plants with flat but very narrow leaves, like *T. lineare*; in these the inflorescence is axillary. This seems to be intermediate between the species having terete leaves and those with broad and flat ones, although more closely related, perhaps, to the latter. To be associated with the last group, but still so different as to appear almost anomalous, is a species lately described, *T. oligospermum*, with flat and narrow but very thick leaves.

The first species of *Talinum* described from Mexico was *T. lineare*, collected by Humboldt and Bonpland in central Mexico and described by Kunth in 1823. Six years later De Candolle published *T. napiforme*, also from central Mexico. It was not until 1879 that another species was described, Hemsley's *T. mexicanum*. Dr. Sereno Watson described two species from northern Mexico, *T. brevicaule* and *T. coahuilense*. The second of these seems not to be a true *Talinum*, but rather to belong in *Talinaria*, a genus recently published by Mr. T. S. Brandege. *Talinum greenmanii* was described by Doctor Harshberger in 1897 in the Bulletin of the Torrey Botanical Club, along with notes and illustrations of certain other species. The last species to be published was Mr. Brandege's *T. oligospermum* in 1906. We have seen material of all these and living plants of most of them.

Calandrinia tuberosa Benth., described from Hartweg's collections, was regarded by Bentham as closely related to *T. lineare*. It is said, however, to have obtuse leaves, and we have nothing that agrees with the description in this particular.

Judging from the differences exhibited by the specimens at hand it seems probable that when the flora of Mexico is better known several other species must be added to this list. More extended field observations of the plants disposed under *T. paniculatum* would probably reveal some constant differences among them.

KEY TO THE SPECIES.

Leaves terete.

Inflorescence not surpassing the leaves.

Plants 4 cm. high or usually much higher; leaves not narrowed conspicuously toward the base.....1. *T. greenmanii*.

Plants 2.5 cm. high or less; leaves on long and very slender petioles.....2. *T. parvulum*.

Inflorescence much surpassing the leaves.

Plants tall, 20 to 40 cm. high; flowers white, 15 mm. in diameter; leaves 8 to 10 cm. long.....3. *T. palmeri*.

Plants less than 20 cm. high; flowers yellow, pink, or purplish red (except in no. 6).

Sepals 7 mm. long or more; flowers proportionately large.....4. *T. brevicaule*.

Sepals 4 mm. long or less; flowers smaller.

Plants with poorly developed stems or acaulescent; peduncles appearing to spring from the root.

Flowers few; capsules green, very obtusely angled.....5. *T. napiforme*.

Flowers many; capsules purplish, acutely angled.....6. *T. multiflorum*.

Plants with well developed and branched stems, the peduncles arising along the branches.

Sepals obtuse; capsule subspherical.....7. *T. mexicanum*.

Sepals acuminate; capsule larger, oblong in section, pointed above.....8. *T. gracile*.

Leaves flat or flattish.

Leaves linear or linear-elliptical.

Leaves 7 mm. long or less, comparatively thick; petals
4 to 5 mm. long.....9. *T. oligospermum*.

Leaves 12 to 22 mm. long, thinner; petals 10 to 16 mm.
long.

Flowers clustered at ends of the branches; sepals 9
or 10 mm. long.....10. *T. cymbosepalum*.

Flowers never clustered at the ends of the branches;
sepals 5 or 6 mm. long.

Plants 15 cm. high or less; pedicels bracteate
at or above the middle; leaves narrowly
linear; stems branched only at the base...11. *T. lineare*.

Plants usually 40 to 50 cm. high; pedicels brac-
teate below the middle, usually near the
base; leaves wider, linear to linear-ellip-
tical; stems much branched.....12. *T. aurantiacum*.

Leaves oblanceolate, cuneate, obovate, or broadly elliptical.

Flowers axillary or in terminal simple racemes.

Flowers pink or red.

Sepals long-attenuate, not exceeding the cap-
sule.....13. *T. attenuatum*.

Sepals oblong or ovate, acuminate, longer than
the capsule.....14. *T. confusum*.

Flowers white.

Leaves comparatively large, obovate.....15. *T. triangulare*.

Leaves much smaller, oblanceolate or cunei-
form.....16. *T. diffusum*.

Flowers in terminal panicles.

Flowers yellow; stems mostly reddish; leaves all
except the uppermost obtuse, becoming grad-
ually smaller above.....17. *T. chrysanthum*.

Flowers red; stems usually green; leaves acute,
suddenly much reduced near the base of the
inflorescence.....18. *T. paniculatum*.

1. *Talinum greenmanii* Harshberger, Bull. Torr. Club 24: 183. 1897.

Type locality: "Volcanic gravel, Sierra de Ajusco, Mexico."

Six or 7 cm. high, from a thick, fleshy, tuberous root; stems only slightly developed, simple, numerous from each root; leaves numerous, crowded, terete, 4 to 5 cm. long; peduncles several from each stem, not exceeding the leaves, with 1 to 3 flowers; bracts early deciduous; petals yellow, 5; stamens 7 or 8; capsule pale green, ovoid or sectionally oblong, 6 mm. long, obtusely triquetrous.

Specimens examined:

FEDERAL DISTRICT: Sierra de Ajusco at 2,550 meters, August 31, 1896, C. G. Pringle 6472, type.

TEPIC: In the Sierra Madre near Santa Teresa, August 12, 1897, J. N. Rose 2221.

CHIHUAHUA: In the Sierra Madre, June 12 to July 29, 1899, E. W. Nelson 6094; near Colonia García, Sierra Madre, July 19, 1899, altitude 2,400 meters, Townsend & Barber 151.

2. *Talinum parvulum* sp. nov.

Cespitose from a thick, tuberous root, acaulescent, 2.5 cm. high or less; leaves terete, about 1 cm. long, on slender petioles as long or longer; inflorescence cymose, with 2 to 4 flowers on each peduncle, not exceeding the leaves; petals yellow, about 3 mm.

long; sepals rather obtuse, soon deciduous; capsule 3 mm. long, obtusely triquetrous; seeds very small, smooth.

It might be possible to confuse this with *T. greenmanii*, but it is a much smaller plant, acaulescent, and with different leaves, and the seeds are not half as large as in that species.

Type U. S. National Herbarium no. 571476, collected at Otinapa, Durango, July 25 to August 5, 1906, *Dr. Edward Palmer* 451.

3. *Talinum palmeri* sp. nov.

PLATE 44.

Perennial from a stout, thickened root, acaulescent, 40 cm. high or less; leaves terete, acutish, 8 or 9 cm. long or less, scarcely attenuate toward their bases; flowers numerous, 15 mm. in diameter; petals white, 8 or 10 mm. long; sepals obtuse, almost orbicular, 3 mm. long; stamens 5; capsule about 5 mm. long, oblong in section and triquetrous; seeds grayish, rugulose.

Its large white flowers distinguish this plant from all the related species, and the size of the plant is greater than in other members of this group.

Type U. S. National Herbarium no. 571462, collected at Otinapa, Durango, July 25 to August 5, 1906, *Dr. Edward Palmer* 436. The species has been grown in the greenhouse in Washington from plants sent by Doctor Palmer at the time he collected the type specimens.

This species is dedicated to Dr. Edward Palmer, who has collected the type material of three of the new species proposed, as well as many of the other specimens cited. Besides the type, he collected the same plant in the vicinity of Durango between April and November of 1896 (no. 303).

EXPLANATION OF PLATE 44.—From a specimen grown at Washington, sent from Tepehuanes, Durango, by Dr. Edward Palmer in 1906.

4. *Talinum brevicaule* S. Wats. Proc. Amer. Acad. 21: 446. 1886.

Type locality, "In the Santa Eulalia Mountains, Chihuahua."

A low perennial, 8 cm. high or less, from a large, thick, woody root; stems stout and woody, poorly developed and little branched; leaves terete, rather stout, 12 mm. long or less, acutish; peduncles slender, only slightly longer than the leaves, each bearing 1 to 3 flowers, these on pedicels 8 mm. long; sepals lanceolate, acute, 7 mm. long; petals purplish red, 12 mm. long; capsule not seen.

Specimens examined:

CHIHUAHUA: Santa Eulalia Mountains, May 20, 1885, *C. G. Pringle* 26 (Gray Herbarium, type).

Through the kindness of Dr. B. L. Robinson we have been permitted to examine the type. It consists of a single plant, perhaps the only one collected, for there is no material of this collection in the National Herbarium. *Talinum brevicaule* has larger flowers than any of the terete-leaved members of the genus.

5. *Talinum napiforme* DC. Prodr. 3: 357. 1828.

Claytonia tuberosa Moq. & Sesse in DC. Prodr. loc. cit.

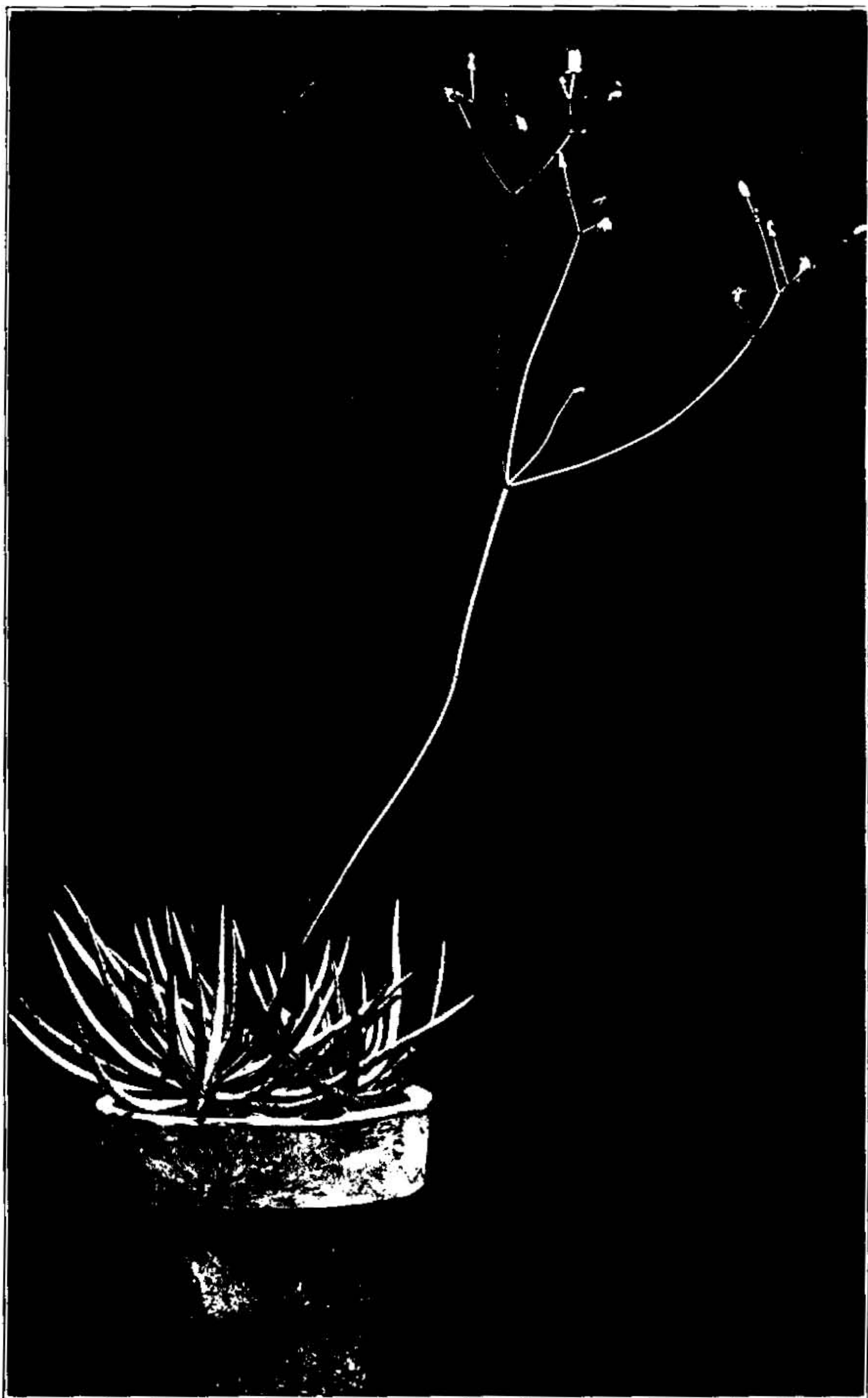
Type locality, "In Mexico."

Eight to 15 cm. high from a thick, tuberous root, almost acaulescent, the stems being poorly developed, several of them from each root; leaves terete, 4 to 8 cm. long, rather stout, erect; peduncles numerous, slender, cymosely much branched above, flowers numerous, on pedicels 7 to 15 mm. long, with white petals about 7 mm. long; sepals broadly ovate, acutish, 4 mm. long; capsules 5 mm. high, pointed at the apex, obtusely triquetrous.

Specimens examined:

FEDERAL DISTRICT: Tlalpam, Valley of Mexico, August 20, 1896, *J. W. Harshberger* 166.

The specific name, referring to the shape of the root, is very appropriate, but would apply equally well to several other members of the genus.



TALINUM PALMERI ROSE & STANDLEY.

6. *Talinum multiflorum* sp. nov.

Ten centimeters high or less, from a tuberous root; leaves terete, 3.5 cm. long or less, rather slender, all basal; peduncles several, spreading, not strictly erect, abundantly cymosely branched above; sepals oblong or ovate, obtuse, 2.5 mm. long; flowers numerous, 12 mm. in diameter when fully spread, the oblanceolate, acutish petals reflexed; capsule 4 mm. long, sharply 3-angled, purplish.

This is a smaller and more slender plant than *T. napiforme*, to which it is perhaps most closely related. Its leaves are smaller, its flowers more numerous, and its capsules purplish and much more acutely angled.

Type U. S. National Herbarium no. 571460, collected at Otinapa, Durango, July 25 to August 5, 1906, *Dr. Edward Palmer* 434. Collected again by Doctor Palmer at Tejaman, Durango, August 2-7, 1906 (no. 538). Living plants sent to Washington by the same collector from Tepehuanes, Durango, have flowered several times.

7. *Talinum mexicanum* Hemsl. Diag. Pl. Nov. 2: 23. 1879.

Type locality, "Mexico, in regione San Luis Potosi."

Five to 7 cm. high; stems slender, much branched and well developed; leaves terete, 5 to 8 mm. long, slender, acute, clustered at the summit of the stem; peduncles several from each stem, very slender, cymosely branched above, each bearing 3 to 8 very small flowers; petals 3 mm. long or less; sepals about one-half as long as the petals, almost orbicular, broadly obtuse; capsule 3 mm. long, subspherical, light green.

Specimens examined:

SAN LUIS POTOSÍ: San Luis Potosí, at 1,800 to 2,400 meters, 1878, *Parry & Palmer* 69.

8. *Talinum gracile* sp. nov.

Perennial from a thick, woody, much branched root; stems well developed, slender, much branched, 14 cm. high or less; leaves terete, numerous, scattered along the branches, 3 cm. long or less; flowers few, cymose, on pedicels 1 to 2 mm. long, these subtended by awl-shaped bracts; sepals ovate to lanceolate, with acuminate, spreading tips; capsule ovoid, 3 or 4 mm. long, obtusely triquetrous; seeds smooth.

Type U. S. National Herbarium no. 129772, collected in "thin soil of granitic ledges; La Bufa Mt. above Cusihiuriachic," Chihuahua, August 31, 1887, *C. G. Pringle* 1197. This collection was distributed as *T. parviflorum*, from which the plant appears abundantly distinct in its well developed, much branched, and more slender stems, in its numerous scattered leaves and acute sepals with spreading tips, and in not having its leaves widened but rather narrowed at their bases.

Other specimens examined:

CHIHUAHUA: Cañon de San Diego, September 17, 1891, *C. V. Hartman* 771.

9. *Talinum oligospermum* Brandegee, Zoc 5: 245. 1906.

Type locality, "On Cerro de la Yerba, Puebla, growing in dry, rocky soil."

A low perennial, 6 to 8 cm. high, from a subspherical tuberous root; stems numerous, much branched, slender, whitish; leaves linear-oblong, flat, obtuse, 7 mm. long or less, scattered along the stems; peduncles numerous, one or more to each branch of the stem, cymosely branched above and bearing several flowers; sepals broadly oblong or ovate, obtuse, purplish, 2.5 mm. long or less; petals bright yellow, 4 or 5 mm. long; capsule 3 mm. long; rather obtusely triquetrous, purplish.

Specimens examined:

PUEBLA: Cerro de la Yerba, June, 1908, *C. A. Purpus* 2513 (type collection).

In our key we have placed this species near *T. lineare*, a treatment that may be somewhat confusing, for the plant is not very closely related to that species, suggesting rather *T. gracile*. Its leaves, although flat, are very different from those of *T. lineare*, being much thicker and narrower.

10. *Talinum cymbosepalum* sp. nov.

A low perennial, 15 cm. high or less, from a thick, tuberous root; stems branched near the base, otherwise simple, stout, fleshy; leaves broadly linear, acute, flat, 15 to 40 mm. long; flowers axillary but all crowded at the ends of the stems, on very stout and thick pedicels, these 5 to 12 mm. long, flattish, bracteate at or below the middle or ebracteate; sepals ovate, acuminate, strongly concave, 9 or 10 mm. long, conspicuously nerved; petals about 16 mm. long, apparently reddish; capsule 8 mm. long, ovoid.

Type U. S. National Herbarium no. 840776, collected at Los Naranjos, Oaxaca, May, 1908, *C. A. Purpus* 3091. This collection was distributed as *T. lineare*, but the plants have much larger flowers, apparently of a different color, and broader leaves, and have the flowers clustered at the ends of the branches. *Talinum cymbosepalum* is from a locality far to the south of the area in which *T. lineare* is known to occur.

11. *Talinum lineare* H. B. K. Nov. Gen. & Sp. 6: 77. 1823.

Type locality, "Locis aridis, inter Mexico et Real de Pachuca, prope Gasave, in valle Tenochtitlanensi, alt. 1230 hex.", in the State of Hidalgo.

A low perennial, usually less than 15 cm. high, from a thick, fleshy root, branched from the base but the branches simple, stout, and fleshy; leaves 12 to 22 mm. long, linear, thick and fleshy, acute, narrowed at the base; peduncles solitary in the axils of the leaves, bearing one or two flowers, these on pedicels 1 cm. long; pedicels bracteate at or above the middle; petals bright yellow, about 1 cm. long; sepals 5 or 6 mm. long, unequal, ovate, acute or one of the two sometimes obtuse; capsules 6 mm. long, subspherical, obtusely triquetrous; seeds subspherical, black, rugulose.

Specimens examined:

HIDALGO: Near Tula, 1905, *Rose, Painter & Rose* 8298.

FEDERAL DISTRICT: Near Guadalupe, Valley of Mexico, 1903, *Rose & Painter* 8057; near Tlalnepantla, 1905, *Rose, Painter & Rose* 8425; Cerro de Guadalupe, August 18, 1896, *J. W. Harshberger* 106.

12. *Talinum aurantiacum* Engelm. Bost. Journ. Nat. Hist. 6: 153. 1850.

Type locality, "On the Sabinas and more abundantly on the Llano, rare about New Braunfels, on rocky soil or almost naked rocks," Texas; type collected by Lindheimer.

Fifteen to 50 cm. high, from a fleshy root, branched from the base, the branches usually again much branched, erect, stout; leaves flat, linear or linear-elliptical, acute, narrowed at the base, 15 to 45 mm. long; inflorescence axillary, the peduncles usually simple and 1-flowered, bracteate near the base or at least below the middle, 13 to 20 mm. long, slender, somewhat thickened toward the base of the flower, reflexed in fruit; sepals about 6 mm. long, ovate, acuminate, conspicuously nerved; capsule 7 mm. long, subspherical, obscurely triquetrous; seeds black, rugulose.

By some *T. aurantiacum* has been considered the same as *T. lineare*, but it can be distinguished from that species by its larger size, branched stems, usually broader leaves, and differently bracteate pedicels. This species is common in the southwestern United States, while *T. lineare* is not found outside of Mexico.

Specimens examined:

CHIHUAHUA: Santa Eulalia Plains, August 18, 1885, *Wilkinson*; near Lake Santa Maria, 1899, *E. W. Nelson* 6402.

SAN LUIS POTOSÍ: Region of San Luis Potosí, 1878, *Parry & Palmer* 68.

13. *Talinum attenuatum* sp. nov.

A low, somewhat suffrutescent, branched perennial; leaves oblanceolate, obtuse, not retuse, mucronate, cuneate at the base; flowers few, in terminal simple racemes, each pedicel subtended by a linear, attenuate bract 4 mm. long; sepals lanceolate, long-



TALINUM DIFFUSUM ROSE & STANDLEY.

attenuate, about 8 mm. long; petals pink, 9 or 10 mm. long; stamens about 20; pedicels about 1 cm. long, thick and fleshy, narrowly clavate.

The pink flowers of this plant might lead one to place it with *T. crassicaule* if it were not for its very narrow sepals and low stature. It has narrower sepals than any other member of this group.

Type U. S. National Herbarium no. 300431, collected at Rosario, Sinaloa, July 10, 1897, *J. N. Rose* 1585.

14. *Talinum confusum* sp. nov.

An erect perennial, branched from near the base, with thick, fleshy roots; stems stout, somewhat suffrutescent below; leaves broadly oblanceolate, retuse, cuneate at the base, about 5 cm. long; inflorescence racemose; pedicels clavate, about 1 cm. long; sepals 8 mm. long, ovate or oblong, with long-acuminate tips; petals pink; capsule shorter than the sepals, subspherical, obtusely triquetrous; bracts of the inflorescence 3 or 4 mm. long, linear.

The specimens included here have been distributed as *T. triangulare*, *T. crassicaule*, and *T. racemosum*, but they seem to be different from all those species. Ours is a lower plant with longer sepals than *T. crassicaule*, and it differs from *T. triangulare* in its pink flowers and narrower leaves.

Type U. S. National Herbarium no. 316680, collected in Tomellin Cañon, Oaxaca, July 6, 1897, *C. G. Pringle* 6738; altitude about 900 meters.

Other specimens examined:

OAXACA: Between La Venta and Niltepec, altitude 60 meters, July 14, 1895, *E. W. Nelson* 2799; about Logunes, altitude 255 meters, June 5, 1895, *Nelson* 2642.

15. *Talinum triangulare* Willd. Sp. Pl. 2: 862. 1799.

Type locality, "In America ad maris littora."

Tall, usually almost one meter high; stems thick and fleshy, rather abundantly branched; leaves obovate, 4 to 9 cm. long, rounded at the apex and sometimes obscurely emarginate, narrowed at the base; inflorescence consisting of a few short, branched, axillary peduncles; flowers on pedicels 1 cm. long; sepals 5 mm. long, broadly lanceolate, acuminate; petals white, 12 mm. long; capsule subspherical, surpassing the sepals; seeds black, finely papillate.

One Mexican specimen, collected in Yucatan by *G. F. Gaumer* (no. 733) seems to belong here. The species appears to be not uncommon in the West Indies and in South America.

16. *Talinum diffusum* sp. nov.

PLATE 45.

Perennial, about 15 cm. high, diffusely branched; stems stout and fleshy, becoming almost woody below; leaves oblanceolate-cuneiform, retuse and mucronate, very thick and fleshy, dark green; flowers in terminal simple or rarely branched racemes, their pedicels subtended by minute lanceolate bracts, the pedicels 1 cm. long or less, obtusely triangular and clavate; of the two sepals one oblong and emarginate with a stout mucro between the apical lobes, the other ovate or lanceolate and acuminate; petals white; flowers about 18 mm. in diameter; petals ovate, acute, or acuminate; stamens about 20; capsule obscurely triquetrous; seed very dark brown or black.

Type U. S. National Herbarium no. 572643, collected at Victoria, Tamaulipas, in 1907, *Dr. Edward Palmer* 415. Living plants sent to Washington, flowered during May and June of 1909. A photograph of one of these is reproduced here. The low diffuse habit of the plant, the short stout stems, narrow and small leaves, and peculiar sepals separate it from the other members of the group.

EXPLANATION OF PLATE 45.—From a specimen grown at Washington, sent from Victoria, Tamaulipas, in 1907, by *Dr. Edward Palmer*.

17. *Talinum chrysanthum* sp. nov.

Perennial from a thick, rather fleshy root; stems stout, one meter high or less, reddish, little branched or simple; leaves numerous, thick and fleshy, obovate to oblanceolate, 10 cm. long or less, rounded at the apex, attenuate to the base; inflorescence an elongated and much branched panicle; flowers on pedicels 15 mm. long; petals bright yellow; sepals very unequal, almost orbicular; capsule obtusely triquetrous, reddish; seeds black and shining, minutely papillose.

Type U. S. National Herbarium no. 301854, collected at Bolaños, Jalisco, September 10-19, 1897, *J. N. Rose* 2907.

It is possible that this is *T. reflexum* Cav., but that species was described from the West Indies and is illustrated as having acute, mostly opposite leaves. In our plant the leaves are all alternate and obtuse. The plant described here has long been confused with *T. paniculatum*, largely because herbarium specimens do not show the differences that exist between the two species. We have had the two growing side by side in the greenhouse where they seem very different. The new species has yellow flowers, red stems, and obtuse leaves which extend well up into the inflorescence, becoming gradually smaller above; while *T. paniculatum* has red flowers and green stem, and has most of its leaves about the lower part of the stem with only a few much reduced ones above. In the latter species, also, most of the leaves are acute.

The following specimens seem to belong here as well: Durango and vicinity, 1896, *Dr. E. Palmer* 607; Yautepec, Morelos, August 27, 1903, *Rose & Painter* 6563; Cuernavaca, Morelos, September 10, 1903, *Rose & Painter* 6936; Aguascalientes, August 20, 1903, *Rose & Hay* 329.

18. *Talinum paniculatum* (Jacq.) Gaertn. Fruct. & Sem. 2: 219. 1791.

Portulaca paniculata Jacq. Enum. Pl. Carib. 22. 1762.

Portulaca patens L. Mant. Pl. 242. 1771.

Ruelingia patens Ehrh. Beitr. Naturk. 3: 135. 1788.

Talinum patens Willd. Sp. Pl. 2: 863. 1799.

Type locality not given, but doubtless in the West Indies.

A tall perennial, 30 to 100 cm. high; stems stout, green, fleshy, simple, or branched near the base; leaves oblanceolate to obovate or elliptical, 5 to 10 cm. long, acute, thick and fleshy, becoming suddenly very small at the base of the inflorescence, narrowed at the base into a short petiole or sessile; inflorescence a loose panicle, this with many short, slender, mostly dichotomous, divergent branches; flowers on slender pedicels 5 to 10 mm. long; sepals reddish, almost orbicular, strongly concave; petals rose red; capsule subspherical, green, obscurely triquetrous; seeds black, minutely papillose.

The original description of this plant reads simply "*Portulaca floribus paniculatis*," but since we have seen only the one West Indian species to which this description is applicable this name is probably used properly here and should be preferred to the later *T. patens*. The latter name has been much more commonly used than has *T. paniculatum*.

Specimens examined:

JALISCO: Guadalajara, September 28-29, 1903, *Rose & Painter* 878.

SINALOA: Near Rosario, on the road to Acaponeta, July 27, 1897, *Rose* 1853.

FEDERAL DISTRICT: Near Tlalpam, Valley of Mexico, June 30, 1905, *Rose, Painter & Rose* 8248.

QUERÉTARO: Loma de Querétaro, August 20, 1905, *F. Altamirano* 1612.

COAHUILA: Saltillo, June, 1898, *Palmer* 271.

SAN LUIS POTOSÍ: Region of San Luis Potosí, *Parry & Palmer* 71.

CHIHUAHUA: Near Seven Star Mine, Sierra Madre, altitude 2,100 meters, *Townsend & Barber* 394.