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CALIFORNIA MISCELLANY II^aPHILIP A. MUNZ AND JOHN C. ROOS^b

The collections on which the following notes are based were made largely by the junior author of this paper. His earlier specimens are deposited in the herbarium of Pomona College (POM), the later ones at the Rancho Santa Ana Botanic Garden (RSA), and many at the United States National Museum (US). For completeness the following herbaria have also been consulted and abbreviations indicated in parentheses are those used to designate location of cited specimens:

California Academy of Sciences (CAS)
Stanford University (DS)
University of California at Berkeley (UC).

To all curators our gratitude is hereby expressed for their kindness in permitting us to examine materials in their care.

CHEILANTHES WOOTONII Maxon, Proc. Biol. Soc. Wash. 31:146, 1918.

Mr. A. Lefebure has called our attention to the fact that this species occurs in California, where it has been confused with *C. Covillei*. From the latter it differs by having the rhizome-scales deciduous, membranous, acuminate, usually pale brown (rather than persistent, rigid, attenuate, dark brown) and scales of the leaf blade deeply cordate and lightly attached (instead of slightly cordate and firmly attached). The following collections, all from SAN BERNARDINO COUNTY, are to be referred here: dry rocky canyon, Keystone Spring, New York Mts., at 6,200 ft., Oct. 13, 1935, *Munz 13878* (POM); mouth of Keystone Canyon, at 5,500 ft., June 22, 1949, *John & Lucille Roos 4441* (RSA); Fourth of July Canyon, New York Mts., at 5,800 ft., *Alexander & Kellogg 1411* (UC), at 5,600 ft., *Alexander & Kellogg 1412* (UC); rocky places, Bonanza King Mine, Providence Mts., at 4,000 ft., May, 1920, *Munz, Johnston & Harwood 4015* in part (POM). INYO CO.: north fork of Hanaupah Canyon, Panamint Mts., May 7, 1932, at 7,800 ft., *Munz 12571* in part (UC).

PELLAEA BREWERI D. C. Eaton, Proc. Am. Acad. 6:555, 1865.

Incorrectly reported from Sugarloaf Peak, San Bernardino Mts. as *P. Bridgesii* by Munz (Man. So. Calif. Bot., 5, 1935), this species is known also for the southern part of the state from the Panamint Mts., Inyo County: Thorndyke's, Wild Rose Canyon, July 7, 1937, *M. F. Gilman 2605* (POM) and *Munz 14849* (POM,UC); Wild Rose Canyon at 8,700 ft., *J. C. Roos 2852* (POM); Telescope Peak, at 10,000 ft., Aug 17, 1941, *J. C. Roos 44* (POM).

^aNumber 1 of this series appeared in EL ALISO, 2:77-86, 1949.

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ABIES CONCOLOR Lindl. & Gord., Jour. Hort. Soc. London 5:210, 1850.

The White Fir, so common along the principal mountain axis from Oregon to Lower California and in mountains east to Colorado, is not found much in the desert ranges of southeastern California. C. B. Wolf (Occas. Papers Rancho Santa Ana Bot. Gard. 2:45, 1932) reported it from Clark Mts. and it has recently been taken on the north slope of Kingston Peak at 7,100 ft., Sept. 2, 1949, *Roos & Weatherby 3570* (RSA). Both these localities are in the eastern Mojave Desert.

TRIGLOCHIN CONCINNA var. *DEBILIS* (Jones) J. T. Howell, Leaf. W. Bot. 5:18, 1947.

The only station on the Mojave Desert reported by Mr. Howell was Rosamund in Kern County. It is interesting, therefore, to find this plant around alkaline springs and seeps on flats below Tecopa Hot Springs, at 1,400 ft., Sept. 3, 1949, *J. C. Roos & R. Weatherby 3566* (RSA) and Oct. 9, 1949, *Munz & Campbell 14359* (RSA). It was found May 14, 1935 at hot spring 2.6 miles north of Tecopa, *C. B. Wolf 6782* (RSA), having been distributed as *T. maritima*.

BOUTELOUA ERIPODA (Torr.) Torr., U. S. Rept. Expl. Miss. Pacif. 4:155, 1856.

Generally given as from Texas to southern Utah and northern Mexico, this grass can be reported from the eastern Mojave Desert, San Bernardino County, California as follows: Barnwell, New York Mts., Aug. 25, 1937, *J. C. Roos 436* (POM,US); clay flats, Lanfair Valley north of Hackberry Mts., at 4,300 ft., June 23, 1949, *John & Lucille Roos 4462* (RSA); north side of Clark Mts., at 3,000-3,500 ft., Sept. 19, 1948, *John & Lucille Roos 4031* (RSA); Mountain Pass, Clark Mts., at 5,300 ft., June 18, 1949, *Roos 3554* (RSA,US).

ELYMUS SALINA Jones, Proc. Calif. Acad. Sci. II 5:725, 1895.

New to California, having been collected on a steep north-facing rock slide, north of Coliseum Mine, Clark Mts., eastern Mojave Desert, at 5,800 ft., May 29, 1949, *J. C. Roos 3539* (RSA,US); Keystone Canyon, New York Mts., at 6200 ft., June 20, 1949, *Roos 3549* (RSA,US). The above were determined by Mrs. Chase. What is apparently the same thing is from the west slope of the Providence Mts., 6 miles east of Hayden, at 4,800 ft., May 27, 1941, *C. B. Wolf 10766* (RSA). We had tentatively referred these specimens to *Agropyron inerme* and it may be worth quoting from Mrs. Chase's letter to the junior author of this paper concerning *Elymus salina*: "In this species and in *E. ambiguus* and *E. simplex* the spikelets are usually in 2's, at least in the middle of the spike. Yours with one spikelet at a node looks like *Agropyron*, but you will note that the very narrow glumes are distorted at the base, not directly below the first and second florets as they are in *Agropyron*. Such specimens are puzzling."

ERIOCHLOA GRACILIS (Fourn.) Hitchc., Journ. Wash. Acad. Sci. 23:455, 1933.

Listed by Hitchcock (Man. Grasses U. S., 567, 1935) as "weed in fields, western Texas to southern California, south through the highlands of Mexico" and by Beetle (*Hilgardia* 17:315, 1947) as weed "of cultivated land" on non-

alkaline soils in the desert. Definite localities are: Riverside, Nov. 22, 1937, *A. R. Roos* 7 (POM); Patton, east of San Bernardino, Sept. 5, 1937, *J. C. Roos* 438 (POM); Bryn Mawr, San Bernardino Valley, Sept. 28, 1940, *J. C. Roos* 225 (POM); El Centro, Imperial County, *H. S. Yates* 6815, July 4, 1937 (UC).

MELICA ARISTATA Thurb., Proc. Calif. Acad. Sci. 4:103, 1870.

Beetle (*Hilgardia* 17:323, 1947) and Boyle (*Madroño* 8:14, 1945) give Tulare County as the southern limit. It can be reported also for San Bernardino County: Vivian Creek, San Bernardino Mts., at 7,300 ft., Aug. 19, 1941, *J. C. Roos* 116 (POM,RSA,US).

MUHLBERGIA ARSENEI Hitchc., Proc. Biol. Sci. Wash. 41:161, 1928.

Hitchcock reports this from arid slopes, northern New Mexico and southeastern Utah. Collected Sept. 18, 1948, on rocky limestone slope, north side of Clark Mts., eastern Mojave Desert, California, at 5,000 ft., *John & Lucille Roos* 4055 (RSA,US). Determined by A. Chase.

ORYZOPSIS MICRANTHA (Trin. & Rupr.) Thurb., Proc. Acad. Nat. Sci. Phila. 1863:78, 1863.

Not previously reported from California, this grass extends over a large range from Saskatchewan and Montana to Arizona and New Mexico. Collected in crevices in limestone rocks, Clark Mts., San Bernardino County, California, at 6,500 ft., June 24, 1949, *J. C. Roos* 3543 (RSA,US), determination by A. Chase. Found also on a steep rocky slope, north side of Kingston Peak at 7,100 ft., Sept. 2, 1949, *Roos & Weatherby* 3571 (RSA).

PANICUM DICHOTOMIFLORUM Michx., Fl. Bor. Am. 1:48, 1803.

A species of the eastern United States. Reported from Fresno (Abrams, Ill. Fl. 1:112, 1923). A waif at Loma Linda, San Bernardino County, July 22, 1949, at 1,060 ft., *J. C. Roos* 4568 (RSA).

SITANION HANSENI (Scribn.) J. G. Smith, Bull. U. S. Div. Agrost. 18:20, 1899. *Elymus Hansenii* Scribn., Bull. U. S. Div. Agrost. 11:56, 1898.

Abrams (Ill. Fl. 1:253, 1923) gives the distribution of this grass as from middle California to eastern Washington and to Utah. Jepson (*Man. Fl. Pls. Calif.*, 104, 1925) gives it as in Temescal Mts., western Riverside County; Santa Lucia Mts.; Amador County to Washington and Utah. Additional Southern California records are: INYO CO.: Big Pine Creek Trail, 9,000-9,500 ft., Aug. 13, 1947, *J. T. Howell* 24056 (CAS,RSA); Chloride Cliffs, Funeral Mts., at 4,500 ft., May 5, 1938, *M. F. Gilman* 2912 (POM); near Arcane Meadow, Telescope Peak Trail, 9,900 ft., July 13, 1947, *Roos* 2889 (RSA); Spike Camp, Panamint Mts., at 9,500 ft., Aug. 19, 1939, *Gilman* 3921 (POM); Telescope Peak Trail, at 9,600 ft., Aug. 19, 1939, *Gilman* 3922 (POM); Titus Canyon, Grapevine Mts., at 3,600 ft., April 10, 1940, *Munz* 16413 (POM); dry slope, Millspaugh, Argus Mts., at 6,000 ft., May 30, 1940, *Munz* 16517 (POM). SAN BERNARDINO CO.: mesa-like pass between the Old Dad-Granite Mts. and Providence Mts., 20 miles south of Kelso on the Amboy road, at 4,000 ft., May 30, 1941, *C. B. Wolf* 10178 (RSA). SAN DIEGO CO.: Cuyamaca Lake,

June 30, 1937, *H. S. Yates 6780* (UC); Julian, June 14, 1928, *I. L. Wiggins 3148* (UC).

SPOROBOLUS CONTRACTUS Hitchc., *Am. Jour. Bot.* 2:303, 1915.

A grass ranging from Nevada and Arizona to Colorado, Texas, and Sonora. Collected Sept. 14, 1946, along a roadside about 1 mile east of Pinyon Flats, Santa Rosa Mts., Riverside County, California, *J. C. Roos 3028* (RSA,US); Palm Springs at 450 ft., Sec. 15, T. 4 S., R. 4 E., June 28, 1937, *H. S. Yates 6730* (UC).

SPOROBOLUS CRYPTANDRUS (Torr.) Gray, *Man.*, 576, 1848.

Given by Munz (*Man. So. Calif. Bot.*, 42, 1935) as in Hemet Valley, San Jacinto Mts., Riverside County and by Beetle (*Hilgardia* 17:316, 1947) as of desert alkaline flats. The following specific localities can be cited: SAN BERNARDINO COUNTY: Live Oak Mine, Keystone Canyon, New York Mts., at 6,000 ft., Aug. 13, 1949, *J. C. Roos 4619* (RSA,US); rocky slopes, southeast base of Clark Mts., at 6,000 ft., June 18, 1949, *J. C. Roos 3550* (RSA,US); South Fork of Santa Ana River, San Bernardino Mts., at 6,300 ft., July 25, 1937, *Roos 2265* (POM,US); junction of Clark's Grade road and Santa Ana Canyon road, Seven Oaks, Sept. 2, 1936, *A. R. & J. C. Roos 10380* (POM); Santa Ana River bed, Seven Oaks, *A. R. & J. C. Roos 1539* (POM); Santa Ana River, near Tri-City, June 14, 1937, *J. C. Roos 437* (POM); edge of lawn, Stewart St., Loma Linda, July 27, 1949, at 1,060 ft., *J. C. Roos 4567* (RSA,US).

SPOROBOLUS MICROSPERMUS (Lag.) Hitchc., *Jour. Wash. Acad. Sci.* 23:453, 1933. *S. confusus* (Fourn.) Vasey, *Bull. Torr. Bot. Club* 15:293, 1888.

For California mostly reported as from Mono County and northward. Collected at Hidden Lake, San Jacinto Mts., Riverside County, at 9,000 ft., Aug. 18, 1937, *J. C. Roos 2* (POM), a single plant having been found.

STIPA COMATA Trin. & Rupr., *Mem. Acad. Petersb.*, ser. VI, *Sci. Nat.*, 5:75, 1842.

This Great Basin grass, which Beetle gives as alkali-intolerant (*Hilgardia* 17:316, 1947), has been reported from the San Bernardino Mts., Argus Mts., White Mts., and farther north. It has been collected also in the Panamint Mts., in Wild Rose Canyon, at 7,700 ft., July 12, 1947, *J. C. Roos 2833* (RSA) and at the southeast base of Clark Mt., on a dry rocky slope, at 6,000 ft., June 19, 1949 *John & Lucille Roos 4396* (RSA).

TRIDENS MUTICUS (Torr.) Nash, in Small, *Fl. Southeast. U. S.*, 143, 1903. *Triodia mutica* (Torr.) Scribn., *Bull. Torrey Bot. Club* 10:30, 1883. *Tricuspis mutica* Torr., *U. S. Expl. Miss. Pacif.* 4:156, 1857.

Beetle (*Hilgardia* 17:333, 1947) shows this species as scattered over much of the desert region of San Bernardino County. More southern stations in RIVERSIDE COUNTY are: north face of Chuckwalla Mts., southwest of Desert Center, Nov. 30, 1946, *J. C. Roos 3173* (RSA); and rocky bank on west side of mouth of Lost Palms Wash, Eagle Mts., April 23, 1949, *John & Lucille Roos 4286* (RSA).

TRIDENS PILOSUS (Buckl.) Hitchc., Contr. U. S. Nat. Herb. 17:357, 1913.
Triodia pilosa (Buckl.) Merr., Circ. Div. Agrost. U. S. Dept. Agric. 32:9, 1901.

Known previously from Nevada and Arizona and ranging to Kansas, Texas, and Mexico. Found May 28, 1949, on rocky slopes and ridges, north side of Clark Mt., San Bernardino County, at 5,400-6,000 ft., *J. C. Roos 3537* (RSA, US); det. by A. Chase. Another California collection is from north slope of Mescal Range, San Bernardino Co., at 5,000 ft., May 4, 1937, *H. S. & F. M. Reed 701* (UC).

BRODIAEA LAXA (Benth.) Wats., Proc. Am. Acad. 14:237, 1879. *Triteleia laxa* Benth., Trans. Hort. Soc., Ser. 2. 1:143, 1835.

In his revision, Hoover (Am. Mid. Nat. 25:83-85, 1941) reported material from as far south as Hollywood, Los Angeles County. It is of interest, then, that the species was found in clay soil in the foothills near Loma Linda, San Bernardino County, April 27, 1948, at 1,150 ft., *J. C. Ross & R. Gustin 2911* (RSA).

Nolina Parryi Wats. subsp. *Wolfii* Munz subsp. nov.

Flowering plant mostly 4-6.5 m. tall, the trunk proper 8-40 dm. high and 6-9 dm. in diameter; leaves olive-green, scarcely if at all glaucous, flat, stiff, conspicuously hispid-serrulate on the margins and with similar hispid protuberances conspicuous on the lower surface, 12-15 dm. long, 2.5-3.5 cm. wide just above the expanded base; flower-stalk 3-4 m. high (above the basal trunk), the lower part bare of branches for 1-2 m. and 12-15 cm. in diameter; inflorescence proper 2-2.5 m. long, 0.8-1 m. in diameter, the principal bracts 3-3.5 dm. long, 0.8-1 dm. wide at base; main branches of inflorescence 3.5-6 dm. long; perianth-segments 5 mm. long, oblong; stamens 6-7 mm. long; anthers 1.5 mm. long; capsule 12-14 mm. wide, including the wings, 10-11 mm. long; seeds oblong-spherical, light brown, 3-3.5 mm. long, 2.5-3 mm. thick, slightly wrinkled on the surface. (Planta florens 4-6.5 m. alta; caule proprio 8-40 dm. alto, 6-9 dm. crasso; foliis planis, subolivaceis, rigidis, in marginibus hispido-serrulatis, 12-15 dm. longis, 2.5-3.5 cm. latis; inflorescentia 2-2.5 m. longa, 0.8-1 m. crassa, bracteis principalibus 3-3.5 dm. longis, ramis principalibus 3.5-6 dm. longis; segmentis perianthii 5 mm. longis, oblongis; staminibus 6-7 mm. longis; antheris 1.5 mm. longis; capsulis (cum alis) 12-14 mm. latis, 10-11 mm. longis; seminibus oblongo-globosis, subferrugineis, 3-3.5 mm. longis, annulatis.)

Type *C. B. Wolf 7655*, from 0.5 mile west of Beck Spring (Crystal Spring on herbarium labels), Kingston Mts., Mojave Desert, eastern San Bernardino County, California, Oct. 9, 1935, from dry granitic ridge at 3,800 ft. elevation; type mounted on two sheets, Rancho Santa Ana Botanic Garden numbers 13,100 and 13,101. Isotypes were distributed as *N. Parryi* to the Arnold Arboretum, Chicago Museum, Gray Herbarium, Missouri Botanical Garden, New York Botanical Garden, Pomona College, San Diego Museum, Stanford University, University of California at Berkeley and at Los Angeles, United States National Herbarium. Other collections of ssp. *Wolfii* are (all from SAN BERNARDINO CO.): 2 miles west of Beck Spring (Crystal Spring on labels) on Tecopa road, Kingston Mts., at 3,500 ft., May 14, 1935, *Wolf 6790* (RSA and

distributed to many of the above institutions); north side of Kingston Mts., at about 6,000 ft., June 27, 1949, *John & Lucille Roos 4502* (RSA); dry limestone slopes, 27 miles east of Tecopa, Kingston Mts., at 4,700 ft., Oct. 9, 1949, *Munz 14374* (RSA); Horse Springs, Kingston Range, March, 1934, *F. Noel* (UC); Tecopa Pass, Kingston Range, *Alexander & Kellogg 2360*, June 14, 1941 (DS, UC). The following are from RIVERSIDE COUNTY: rocky canyon bottom, Monson Canyon, Eagle Mts., April 23, 1949, *John & Lucille Roos 4282* (RSA); Keyes' Ranch, Little San Bernardino Mts., *M. E. Jones, May 17, 1931* (DS, POM, UC); Quail Springs, May 6, 1922, *Munz & Gilman 5244* (POM); Stubby Springs, *Jaeger, May 14, 1938* (POM); Keyes' Ranch, May, 1934, *Epling & Robison* (DS, UC); Keyes' View, at 5,000 ft., *Epling & Robison, June 26, 1933* (UC). A specimen that seems to be this is from Rancheria, Weldon, Kern Co., July 6, 1932, *E. W. Voegelin 29* (UC).

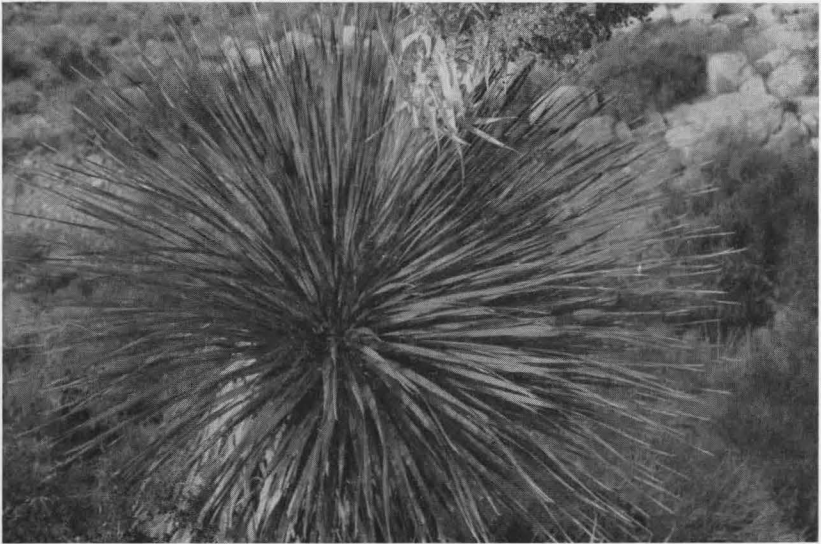


Fig. 1. *Nolina Parryi* subsp. *Wolfii*. Base of plant from which type was taken, *Wolf 7655*. Note wide, stiff, plane leaves. Photograph by Wolf, Oct. 9, 1935.

C. B. Wolf (*Occas. Papers Rancho Santa Ana Bot. Gard.* 2:46, 1938) called attention to the great size of the *Nolina* growing in the Kingston Mts., but did not find it sufficiently different from *N. Parryi* to make separation. Plants now growing in the Botanic Garden from seed collected by him are attaining some size and differ greatly from nearby plants of *N. Parryi* and *N. Bigelovii*. Their leaves are broad and flat, somewhat as in *N. Bigelovii* but are greener, with non-fibrous, serrulate margins and are more rigid than in that species. They differ also in flower and fruit and seed characters. Their flower-size, seed-color, serrulate leaf-margins are much like those of *N. Parryi*, but they have taller, more massive, less branched trunks at their base; longer inflorescences with greater diameter; flat, greener (instead of concave, gray) and wider

leaves; and longer inflorescence-bracts. It is a question as to whether they should be given specific or subspecific rank but the latter is here proposed, since the differences noted are vegetative and not reproductive. The leaf-bases are very wide where they are inserted on the trunk, being expanded to 1-2 dm. as compared to about half that in *N. Parryi*. In the latter the leaves are not only concave above and narrow, but very weak and flexible so that they often arch and the tips may even touch the ground. Subspecies *Wolfii* differs from both *N. Parryi* and *N. Bigelovii* in its much simpler habit, having one to few leaf-clusters and growing points, hence is not bushy as in those species, which have great clumps of leaf-clusters with many growing points.



Fig. 2. *Nolina Parryi* subsp. *Wolfii*. Inflorescence of type plant, Oct. 9, 1935. Note dense, large panicle. Photograph by Wolf.

The range of the three plants is distinctive. *N. Parryi* is a plant mostly of coastal drainage, from Ventura County to San Diego County and apparently reaches its inland limit in the Santa Rosa Mts. of Riverside County. *N. Bigelovii* occurs at low elevations, in Creosote Bush Scrub, from the southern Mojave Desert to Arizona, Sonora, and Lower California. Subspecies *Wolfii* is

known to us only from the Mojave Desert, where it is found at higher elevations in the Joshua Tree Woodland and Pinyon-Juniper Woodland and from the south end of the San Jacinto Mts., where it intergrades with a stiff form of *N. Parryi*.

Since the above paragraphs were written, further study of *Nolina Parryi* ssp. *Wolfii* has been made in the Little San Bernardino Mountains with Mr. and Mrs. W. Egbert Schenck, who have kindly collected additional specimens that are in the Garden herbarium. Investigation has also been made with

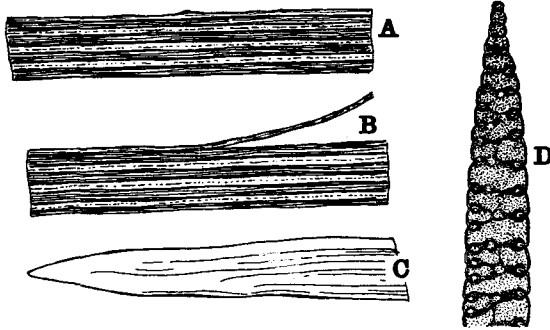


Fig. 3. *Nolina Bigelovii*. A—Margin of leaf with strand of dead tissue at upper edge. B—Strand partly loose forming a marginal fiber. C—Tip of leaf, not saw-toothed. D—Transverse section of leaf near margin.

Mr. P. C. Everett at the south end of the San Jacinto Mountains in Riverside County, about Pipe Creek region in Hemet Valley and farther to the southeast on the ridge south of the junction of the Palms-to-Pines Highway and the road to Terwilliger Valley and Coahuila. In 1931 C. B. Wolf collected near Pipe Creek at 5,500 ft., a specimen No. 1949 (RSA) from a plant 4 m. tall

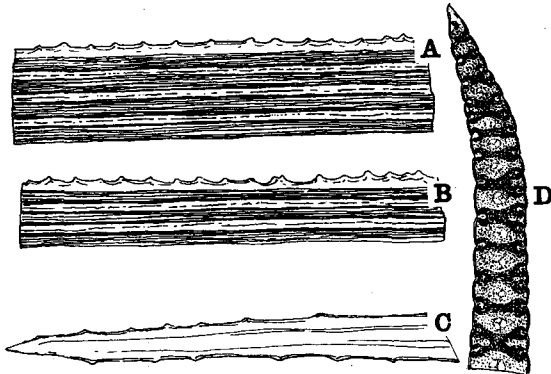


Fig. 4. *Nolina Parryi*. A—Margin of leaf showing serrations along edge 5 inches from apex. B—Margin near base of leaf. C—Tip of leaf with sharp point and small teeth. D—Transverse section of leaf near margin.

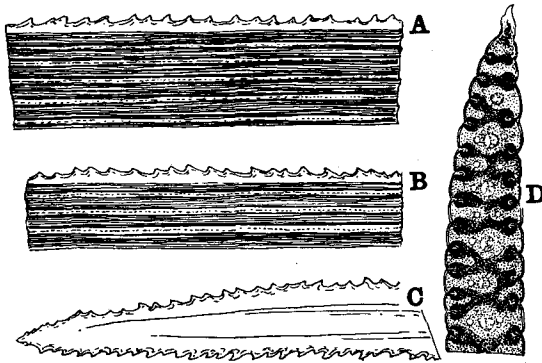


Fig. 5. *Nolina Parryi* subsp. *Wolfii*. A—Margin of leaf five inches from apex. B—Margin near base. C—Tip of leaf with strong serration. D—Transverse section near margin.

and with broad yellow-green leaves. The subspecies *Wolfii* grows there among granite rocks in the canyons and on slopes from about 4,600 to 5,500 feet, and in fairly typical form, *Munz & Everett 14910* (RSA), *14919* (RSA), and *14921* (RSA). With it in this whole area is *N. Parryi* with much more glaucous and

TABLE I. COMPARISON OF *Nolina Bigelovii*, *N. Parryi*, AND SUBSP. *WOLFII*

<i>N. Bigelovii</i>	<i>N. Parryi</i>	<i>ssp. Wolfii</i>
<i>Caudex</i> 6–9 dm. high, branched, forming a large cluster of rosettes.	<i>Caudex</i> 3–10 dm. high, branched, forming a large cluster of many rosettes.	<i>Caudex</i> 8–40 dm. high, simple or few-branched, hence with 1 to few rosettes.
<i>Leaves</i> flat, 15–30 mm. wide above the expanded base, flexible, glaucous, not or Scarcely serrulate on the margins, but with shredding brown marginal fibers.	<i>Leaves</i> concave, 8–16 (20) mm. wide above the expanded base, very flexible, glaucous, serrulate and not fibrous on margins.	<i>Leaves</i> flat, 25–35 mm. wide above the expanded base, very stiff, olive-green, conspicuously hispid - serrulate and not fibrous on margins.
* <i>Inflorescence</i> 1–2.5 m. tall, the panicle proper 6–15 dm. long, the branches 1–4 dm. long, main bracts apparently 0.5–1.5 dm. long.	<i>Inflorescence</i> 2–2.5 m. tall, the panicle proper 5–10 dm. long, the branches 1.5–3 dm. long, main bracts 1–2 dm. long.	<i>Inflorescence</i> 3–6.5 m. tall, the panicle proper 20–25 dm. long, the branches 3.5–6 dm. long, main bracts 3–3.5 dm. long.
<i>Perianth</i> 2–2.5 mm. long.	<i>Perianth</i> 5 mm. long.	<i>Perianth</i> 5 mm. long.
<i>Capsule</i> (including wings) 8–10 mm. wide, somewhat shorter.	<i>Capsule</i> 12–15 mm. wide, slightly shorter.	<i>Capsule</i> 12–14 mm. wide, 10–11 mm. long.
<i>Seeds</i> grayish-white, 3 mm. long.	<i>Seeds</i> light brown, ca. 4 mm. long.	<i>Seeds</i> light brown, 3–3.5 mm. long.
<i>Distribution.</i> Creosote Bush Scrub, below 3500 ft., western edge of Colorado Desert, southern Mojave Desert (Sheephole, Old Woman, Eagle Mts., Little San Bernardino Mts.), Orocopia and Chuckawalla Mts. to Arizona, Sonora, and Lower Calif.	<i>Distribution.</i> Coastal Sage Scrub and Chaparral below 3000 ft., Ventura to San Diego Cos., inland to 5500 ft., Santa Rosa Mts.	<i>Distribution.</i> Joshua Tree Woodland and Pinyon-Juniper Woodland, at 3000–6000 ft., Mojave Desert (Eagle Mts., Little San Bernardino Mts. and Kingston Mts.) and so. San Jacinto Mts.

*Height from ground, not from summit of caudex.

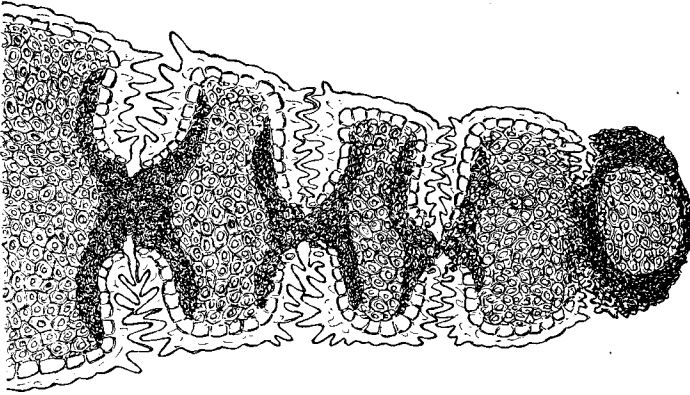


Fig. 6. *Nolina Bigelovii*. Transverse section through leaf near margin to show marginal tissue at right, which breaks off as a fiber, then alternating bands of sclerenchyma and mesophyll, the latter surrounding deep rifts into which open the stomates.

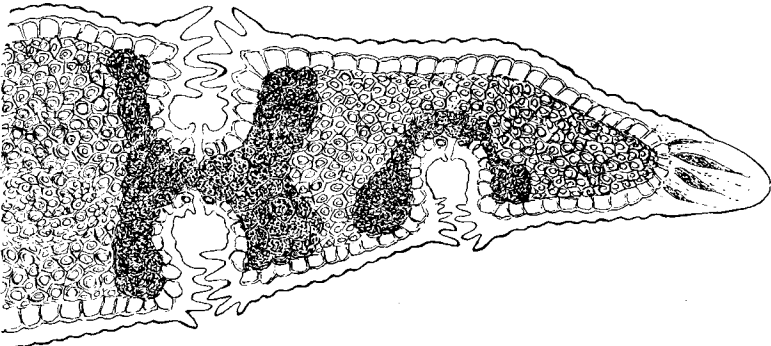


Fig. 7. *Nolina Parryi*. Transverse section of leaf showing serrulation or tooth at right, then sclerenchyma, then darkly stained chlorenchyma bordering stomate-bearing rifts.

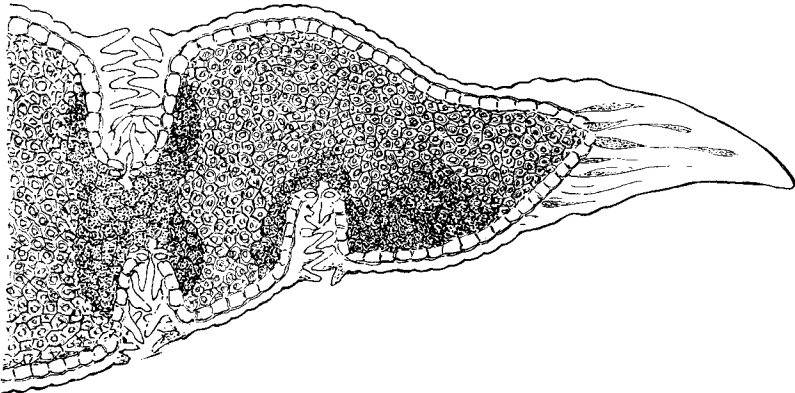


Fig. 8. *Nolina Parryi* subsp. *Wolfii*. Transverse section of leaf with very large marginal tooth, then sclerenchyma, then darkly stained chlorenchyma and stomatal rifts.

narrow leaves, which are unusually stiff. However, these plants have low often prostrate trunks with many rosettes, *Munz & Everett 14920* (RSA). Intergrades between the two were found.

The accompanying chart (Table 1) summarizes the comparison of the three plants. Mr. J. D. Laudermilk prepared cross-sections of and studied the structure of the leaves in these three and his drawings are also shown. The photographs to show the habit of subsp. *Wolfii* and its divergent stiff leaves were made by Dr. C. B. Wolf.

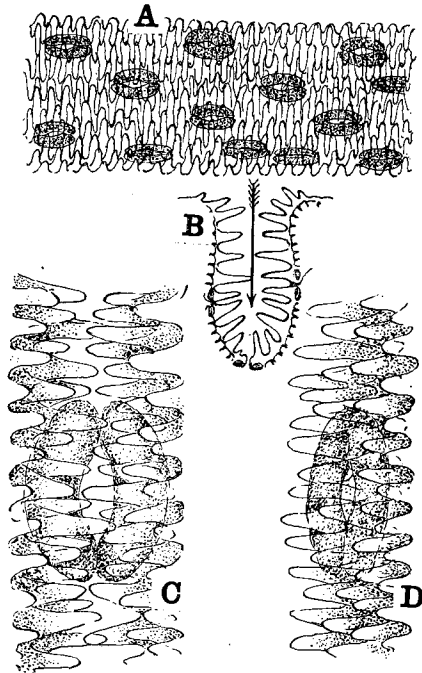


Fig. 9. *Nolina Bigelovii*. A—View along and looking into stomatal rift. B—Diagram of transverse section of rift showing tuberculations that project into it. C—View from above of a single stomate at floor of rift and partly obscured by tuberculations. D—Partly schematic view of stomate on ascending wall of rift.

QUERCUS PALMERI Engelm., Trans. Acad. Sci. St. Louis 3:393, 1878. *Q. Dunnii* Kell., Pacific Rural Press 17:371, 1879.

Best known from desert slopes along the west edge of the Colorado Desert, from the San Jacinto Mts. of Riverside County south. McMinn (Ill. Man. Calif. Shrubs, 84, 1939) cites specimens from Peachy Canyon Road, San Luis Obispo County. The following collection is of interest: south edge of Mojave Desert, Deep Creek, north base of San Bernardino Mts., at 3,000 ft., March 8, 1947, *J. C. Roos 3306* (RSA). This specimen was taken from a scrubby bush 1.5–2 m. tall and growing on a hillside near Deep Creek Public Camp, in a colony of several dozen individuals.

ERIOGONUM SULCATUM Wats., Proc. Am. Acad. 14:296, 1879.

A small rounded intricately branched shrub 1.5–4 dm. tall, with revolute narrowly elliptic leaves about 1 cm. long, and with deeply grooved, slightly scabrous twigs; growing in steep rocky places on the north side of the Kingston Mts., northeastern San Bernardino County at 6,300–6,800 ft. A specimen made Sept. 2, 1949, *J. C. Roos & R. Weatherby 3575* (RSA) is referred here.

OXYBAPHUS COCCINEUS Torr., Bot. Mex. Bound. Surv., 169, 1859. *Allionia coccinea* Standl., Contr. U. S. Nat. Herb. 12:339, 1909.

Abrams (Ill. Fl. 2:104, 1944) reports this plant from the Providence Mts., Mojave Desert, California. Additional records for the state are: SAN BER-

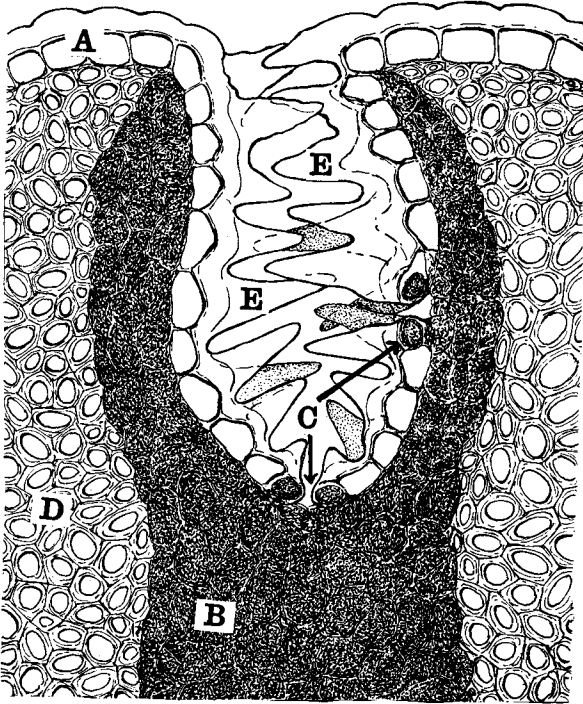


Fig. 10. *Nolina Bigelovii*. Transverse section through part of leaf to show stomatal rift and surrounding tissues: A—epidermis, B—chlorenchyma, C—stomates and guard cells, D—sclerenchyma, E—interlocking tuberculations lining sides and floor of the rift.

NARDINO CO.: New York Mts., 2 miles from Barnwell on road to Ivanpah, at 4,300 ft., May 26, 1940, *C. B. Wolf 9639* (RSA,UC); New York Mts., mouth of Keystone Canyon, at 5,000 ft., June 22, 1949, *J. C. Roos 3545* (RSA); Keystone Canyon at 5,000 ft., May 27, 1940, *Wolf 9664* (UC); Ivanpah Mts., near Kokoweef Peak, June 20, 1949, *J. C. Roos 3546* (RSA).

LEWISIA PYGMAEA (Gray) Robinson in Gray, Syn. Fl. N. Am. 11:268, 1897.

Another Sierran species heretofore known as far south as Tulare County,

can now be given for the San Bernardino Mts. It was found in a damp gravel bed on San Gorgonio Peak, Sept. 4, 1946, at 11,300 ft., *J. C. Roos 3042* (RSA).

SILENE CONOIDEA L., Sp. Pl., 418, 1753.

Hitchcock and Maguire in their paper on *Silene* (Univ. Wash. Pub. Biol. 13:14, 1947) say of this Eurasian species, "Sparingly introduced as a weed along the Pacific Coast, and in Delaware." The following collection can be reported, near Blythe, Riverside Co., May 1, 1939, *Ethelbert Johnson* (POM).

STELLARIA JAMESIANA Torr., Ann. Lyc. N. Y. 2:169, 1828.

The most southerly stations known to us have been Frazier Mt., Ventura County and Tehachapi Mts., Kern Co. The species has been found in the San Bernardino Mts., where it was growing at the edge of a meadow, in the shade of pines and firs, at 7,300 ft., July 16, 1949, Moonridge, Bear Valley, *John & Lucille Roos 4552* (RSA).

BERBERIS NEVINII Gray, Syn. Fl. N. Am. 1:69, 1895, *Mahonia Nevinii* Fedde, Bot. Jahrb. 31:102, 1901.

For some years writers have been much bothered by the large rounded bushy barberry growing at Dripping Springs and Aguanga in western Riverside County. Munz (Man. So. Calif. Bot., 177, 1935) referred it to *B. haematocarpa* Woot. because of the fruits having been reported to him as dark. He wrote as follows: "Much like *Nevinii*, but with leaflets more sinuate and with fewer teeth; fruit 7-9 mm. thick, blood red, drying dark." Abrams (Ill. Fl. 2:219, 1944) said, "Plants collected near Dripping Springs, Riverside County, California, have been referred to this species [*haematocarpa*], but they are not typical and must await good fruiting material before they can be satisfactorily determined. In foliage characters they are intermediate between *M. Fremontii* and *M. Nevinii*." McMinn (Ill. Man. Calif. Shrubs, 127, 1939) referred these plants to *B. Fremontii*.

Observations on specimens growing in the Botanic Garden, on wild plants at a hitherto unreported station in San Timoteo Canyon near Redlands, San Bernardino County and collected by the junior author of this paper, and on others near Dripping Springs by both of us, show that the fruits are bright red (a character of *B. Nevinii*), are not inflated (as they may be in *B. Fremontii*), that the leaflets are plane, very slightly crisped and ovate-lanceolate (as in *B. Nevinii*), and that the large rounded bush is, in its growth habit, entirely like *B. Nevinii*. Furthermore, examination of a larger series of herbarium specimens than was formerly available fails to reveal any consistent leaf differences from that species as it occurs in the San Fernando Valley. It is our considered opinion that the following collections should be referred to *B. Nevinii*: SAN BERNARDINO CO.: San Timoteo Canyon south of Redlands at 1,500 ft., July 12, 1949, *J. C. Roos 3564* (RSA,US) with deep red berries 8 mm. in diameter; San Timoteo Canyon, in a dry wash, Feb. 27, 1937, *Roos 476* (POM), March 6, 1949, *Roos 3525* (RSA), May 6, 1949, *Roos 3526* (RSA); Scott's Canyon, 2 miles southeast of Loma Linda, at 1,400 ft., *John & Lucille Roos 4705* (RSA). RIVERSIDE CO.: rounded shrub 15-18 dm. tall, from brushy slope near Vail Dam, 2 miles north of Dripping Springs, May 21, 1949,

John & Lucille Roos 4321 (RSA); shrub 2 m. tall, 3 m. in diam., berries red in Aug., cultivated at Bernice Ranch from plants brought from Dripping Springs, Oct. 18, 1946, *Munz 11562* (RSA); Dripping Springs, Nov. 9, 1925, *E. C. Jaeger* (POM); 0.5 mile east of Dripping Springs, June 20, 1932, *F. M. Reed 7242* (POM); Aguanga, April 20, 1927, *Jaeger* (POM). SAN DIEGO CO.: San Felipe Wash, Aug. 15, 1930, *B. D. Stark 1544* (RSA). It should be stated in passing, that the present highway does not go to the old Dripping Springs, which is now fenced within the Vail Ranch properties.

BERBERIS FREMONTII Torr., U. S. and Mex. Bound., 30, 1859. *Mahonia Fremontii* Fedde. Bot. Jahrb. 31:89, 1901.

Part of the confusion with reference to the barberries of the *Nevinii* group in the region just west of the Colorado Desert is due to the fact that two species grow there and have been confused. *B. Fremontii* is a shrub with stiff erect branches. The leaflets, especially on the old growth, are oblong-ovate in outline, very stiff and rigid, with the two halves folded upward along the midrib and strongly crisped so that some of the marginal spiny teeth are turned upward and some downward. On younger growth the leaflets, especially the terminal, may be long and narrow as in *B. Nevinii*, but are more strongly crisped. The ripe fruit is more or less reddish-purple or plum-colored. It is often given as dry and inflated when mature and in herbarium material may look brownish. Plants in the Botanic Garden grown from seed from the New York Mts. of the Mojave Desert bear fleshy, plum-colored berries which do not become dry and inflated. On the other hand, herbarium specimens from as remote localities as Cushenbury Springs, San Bernardino Mts., California and Utah do have the dry and enlarged fruits. Whether the two forms are the same seems doubtful; the whole matter needs further investigation.

At any rate, in eastern San Diego County and to the south there grows a plant included in *B. haematocarpa* in Munz's Man. So. Calif. Bot. with the Aguanga and Dripping Springs plants mentioned above under *B. Nevinii*. They are not the same, but have the characters of *B. Fremontii* as to foliage and growth habit. The following are representative: SAN DIEGO CO.: Walker's Ranch, near Jacumba, June 1, 1903, *L. R. Abrams 3693* (DS); Boulevard, July 12, 1929, *Johnson & Stark 1351* (RSA). LOWER CALIFORNIA: 50 miles southeast of Tecate, May 13, 1925, at 4,500 ft., scattered erect shrubs 2-2.5 m. high, *Munz 9534* (POM). Some other Great Basin species, such as *Anemone tuberosa* Rydb. have a similar discontinuous distribution and occur in the Jacumba region.

***Berberis pinnata* Lag. subsp. *insularis* Munz, subsp. nov.**

Stems 2-6 (8) m. tall, leaning on trees and tall shrubs for support; leaflets sub-entire or shallowly spinose-dentate, oblong, rather thin, 2-9 cm. long, 1.5-5 cm. broad. (Caulis 2-6 (8) m. alti, arboribus fruticibusque supportati; foliolis subintegris aut superficiale spinoso-dentatis, oblongis, 2-9 cm. longis, 1.5-5 cm. latis.)

Type, west of summit of Buena Vista Grade, interior of Santa Cruz Island, Santa Barbara County, California, at 1,500 ft., March 20, 1932, *C. B. Wolf*

2766, Rancho Santa Ana Botanic Garden herbarium specimen number 4554. Other collections seen, SANTA CRUZ ISLAND: semi-climbing, 4.5 m., shaded ravine, north edge of pine forest, ravine west of summit of Buena Vista Grade, March 20, 1932 at 1,500 ft., *Wolf 2767* (RSA); ravine west of summit of Buena Vista Grade, *Wolf 2768* (RSA); shaded canyon bank below Cuesta Grade, March 20, 1932, *R. Hoffmann 672* (POM), *671* (POM) a colony of five or six plants in shade of *Quercus tomentella* and *Photinia*, climbing at least 6 m. into the trees; scandent in *Q. tomentella*, 6-7.5 m. high, bank of brook at base of pines, west end of Island *Hoffmann 189* (POM). SANTA ROSA ISLAND: two or three plants in thicket above stream, 1 mile inland, Elder Canyon, Dec. 6, 1930, *Hoffmann 148* (POM).

The proposed subspecies differs from the typical mainland form of the species in its greater height and more nearly entire leaflets, the typical form being 0.3-1.6 m. high, and with leaflets ovate to oblong, 2.5-5 cm. long, 2-3.5 cm. wide, rather deeply and sinuously spinose-dentate.

FUMARIA PARVIFLORA Lam. Encycl. 2:567, 1786.

Reported by Abrams (Ill.Fl.2:237, 1944), from Santa Clara Valley, California. We know of the following more southern collections: Santa Barbara, April, 1937, sent by Mrs. M. K. Bellue (CAS); near Katella School, 2.5 miles southwest of Anaheim, Orange County, March 21, 1943, *V. Newsom Griffith* (POM); Banning, Riverside County, April, 1929, *M. F. Gilman* (POM).

RIBES LASIANTHUM Greene, Pittonia 3:22, 1896. *R. leptanthum* var. *lasianthum* Jeps., Man. Fl. Pls. Calif., 472, 1925.

Heretofore cited as from the central Sierra Nevada, where it grows at elevations of from 7,000 to 11,000 ft. and is quite variable as to pubescence and glandulosity. It apparently occurs also as a form with unusually glandular and pubescent leaves and with a few hairs on the ovaries, in the San Gabriel Mts. LOS ANGELES COUNTY: Big Pines near Jackson Lake, at about 6,000 ft., May 31, 1937, *J. C. Roos 10* (POM, RSA); Shoemaker Creek, north slope San Gabriel Mts., at 6,600 ft., May 20, 1941, *C. J. Lovell* (POM). Mr. Lovell reported it also from Big Rock Creek north of Mt. Baden Powell. These southern plants seem somewhat intermediate in pubescence with *R. leptanthum* Gray and mention is made of them here with the hope that more material may be secured and their definite status determined. The site of *Roos 10* near Jackson Lake was revisited on May 31, 1947 and all of the plants there had been washed away by the 1938 flood.

POTENTILLA SAXOSA Lemmon ex Greene, Pittonia 1:171, 1888.

Generally reported as ranging from Mono County to Lower California and extending east to the Little San Bernardino Mts. south of Twentynine Palms. An outlying station is in the rock crevices in vertical and overhanging cliffs, north side of Kingston Mts., eastern San Bernardino County, June 27, 1949, at 6000-6500 ft., *John & Lucille Roos 4504* (RSA); shade of granite rocks, large canyon to the southwest of Horse Spring, Kingston Range, Oct. 9, 1935, at 5,500 ft., *C. B. Wolf 7651* (RSA).

ACER GLABRUM VAR. DIFFUSUM (Greene) Smiley, Univ. Calif. Pub. Bot. 9:261, 1921.

Keller (Am. Mid. Nat. 27:499, 1942) showed this maple as in the San Jacinto and San Bernardino mts. and from the Panamint Mts. of Inyo County north and east to Utah and Nevada. He cited specimens from the Charleston Mts. of southern Nevada. The gap in distribution is closed somewhat by the following specimens from SAN BERNARDINO COUNTY: 1 mile south of Coliseum Mine, Clark Mts., at 6500 ft., May 25, 1940, *C. B. Wolf 9586* (RSA); Clark Mt. at 7,500 ft., June 24, 1949, *J. C. Roos 3558* (RSA).

RUTA GRAVEOLENS L. Sp. Pl., 383, 1753.

The common Rue, planted in old herb gardens, was reported by Robbins (Univ. Calif. Agric. Exp. Sta. Bull. 637:67, 1940) as found "without cultivation at Garden Grove in Orange County." This record was apparently based on a statement to the senior author of the present paper by Ethelbert Johnson in a letter dated June 13, 1936 in which he said that a single specimen was found at Garden Grove in 1933. A more recent collection was made near a spring in the pass between Pigeon Pass road and Reche Canyon, western Riverside County, at 1,500 ft., Feb. 21, 1948, *John & Lucille Roos 3771* (RSA). One from Avalon, Catalina Island, *J. J. Carlson, May 6, 1918* (CAS) may have been a cultivated specimen. Another seen was from Aram Gulch, Santa Cruz County, *C. H. Thompson, May 12, 1902* (DS).

RHUS INTEGRIFOLIA (Nutt.) Benth. & Hook. ex Brewer & Watson, Bot. Calif. 1:110, 1876.

Munz (Man. So. Calif. Bot., 293, 1935) gave the inland limit for this coastal species as Claremont, while McMinn (Ill. Man. Calif. Shrubs, 267, 1939) cited Cucamonga Wash east of Upland. Barkley in his revision of the group (Ann. Mo. Bot. Gard. 24:362, 1937) named some old collections from still farther east: low hills near San Bernardino, March, 1881, *S. B. Parish 705* and Wilder's Canyon, Jurupa Hills, Riverside, Feb. 23, 1908, *F. M. Reed 2238*. Such early records are supported by the following: rocky hilltop, Box Springs Mts. east of Riverside, Jan. 29, 1944, at 2540 ft., *J. C. Roos 2766* (POM, RSA) and Santa Ana River Wash north of Redlands, Oct. 22, 1949, at 1300 ft., *John & Lucille Roos 4693* (RSA).

OENOTHERA CAESPITOSA VAR. MARGINATA (Nutt.) Munz, Am. Jour. Bot. 18: 733, 1931. *Oenothera marginata* Nutt. ex H. & A., Bot. Beechey, 342, 1838.

The most southerly records for this widespread plant from California previously known to us are from San Bernardino County. On Aug. 14, 1938 a collection was made on a flinty ridge east of Toro Peak, Santa Rosa Mts., Riverside County at 7,500 ft., *Munz 15373* (POM) in rather a mature state for certain identification. That situation is changed now, however, by the following specimen: April 5, 1947, on a gravel slide in the upper reaches of Deep Canyon at 3,800 ft., at the north base of Santa Rosa Mts., *J. C. Roos 3427* (RSA).

SALVIA GREATAE Brandg., *Zoe* 5:229, 1906.

In 1938 Epling (*Ann. Mo. Bot. Gard.* 25:106, 1938) wrote of this species "known only from the Orocochia Mountains where it occurs in a canyon near Dos Palmas (east of Mecca, California), Salt Creek Wash, and in the narrow canyons behind Hidden Spring." Mrs. Clary has an interesting note on it in Jepson, Fl. Calif. 2:403-404, 1943. All of the collections referred to in these notes are from Riverside County. A slight extension of range to the south and into Imperial County is from the mouth of a rocky canyon, south foot of Chocolate Mts., northeast of Pope, April 6, 1949, *John & Lucille Roos 4154* (RSA).

CHAMAESARACHA CORONOPUS (Dunal) Gray, in *Bot. Calif.* 1:540, 1876.

This species, generally known to range from Arizona and Utah to Kansas and northern Mexico, was included in Brewer & Watson, *Bot. Calif.*, but doubt was expressed as to its occurrence in California. On June 22, 1949 it was discovered growing in clay soil along the roadside near Barnwell, New York Mts., San Bernardino County, *J. C. Roos 3548* (RSA).

PHYSALIS NEOMEXICANA Rydb., *Mem. Torrey Club* 4:325, 1896.

Heretofore reported for California from Elsinore, Riverside County (Munz, *Man. So. Calif. Bot.*, 457, 1935). Collected also at Tri-City Sewage Disposal Plant, San Gabriel, Los Angeles County, Aug. 26, 1942, *J. C. Roos 1749* (RSA). It was a stout spreading annual with horizontal branches 6-9 dm. long.

ANTIRRHINUM KINGII Wats. in *King, Geol. Expl.* 40th Par. 5:215, 1871.

We have known this plant from the Panamint Mts. northward and can add considerably to its range by recording it from a steep rocky slope near the Coliseum Mine, Clark Mts., San Bernardino County, California, May 29, 1949, at 5,800 ft., *J. C. Roos 3531* (RSA).

Cordylanthus tecopensis Munz & Roos, sp. nov.

Grayish glandular annual, erect, 3-6 dm. high, diffusely excurrently branched throughout, the stems somewhat purplish to green, glaucous, the branchlets 0.5 mm. thick, the main stem to 3 mm. in diameter, all scattered-pubescent with very short rather coarse, spreading to retrorse, mostly gland-tipped hairs; leaves glaucous, those of the main stems lance-linear to narrowly lance-oblong, 5-15 mm. long, 1-2 mm. wide, sessile, acute to obtusish, fleshy, glandular and somewhat glandular-pubescent, but not gland-tipped, gradually reduced up the stems, those of the branchlets numerous, 3-6 mm. long and passing through entire lanceolate bracts into sessile, narrowly ovate, glandular-scaberulous bracts 10-12 mm. long, 3-4 mm. wide, acuminate but not gland-tipped, with a pair of linear lobes about 2 mm. long near their middle, each lobed bract obscurely 5-nerved and subtending a flower above which and opposite to the bract is a second entire, lanceolate, acuminate structure (the "calyx-leaf"), 10-13 mm. long, both bracts green and forming a somewhat tubular and calyx-like structure; flowers several, axillary, forming loose spikes 2-5 cm. long; corolla pale lavender, ca. 1 cm. long, the tube 3-4 mm. long, the limb with two subequal lobes 4-5 mm. long and ca. 3 mm. wide, purple-veined,

pubescent, with some hairs gland-tipped; stamens 4; filaments glabrous, the upper pair without anthers and included in the throat, lower pair fertile, extending to the tip of the corolla, the filaments dilated; anthers 2-celled, the lower cell ca. 1 mm. long, the upper ca. 2 mm. long, slightly pubescent especially at the ends; style filiform, pubescent; capsule oblong, 7–8 mm. long; seeds several, greenish, ca. 1 mm. long, with yellowish loose reticulate coat.

Annua, cinerea, glandulosa, erecta, 3–6 dm. alta, ramosa; caulibus subpurpureis vel viridibus, glaucis, sparse glanduloso-pubescentibus; foliis glaucis, lanceolato-linearibus aut lanceolato-oblongis, 5–15 mm. longis, 1–2 mm. latis, sessilibus, acutis vel subobtusis, carnosis, glandulosis, in apicibus non glandulosis; foliis superioribus parvis, 3–6 mm. longis; foliis supremis in bracteas ovato-lanceolatas, glanduloso-scaberulas, 10–12 mm. longas, acuminatas transiuntibus; bracteis cum 2 lobis lateralibus linearibus et cum 5 venis obscuris; "calycibus" integris, lanceolatis, acuminatis, 10–13 mm. longis, viridibus; corollis pallido-lilacinis, ca. 1 cm. longis, pubescentibus; staminibus 4, glabris, 2 superioribus sterilibus, 2 inferioribus fertilibus cum filamentis dilatatis; loculis antherarum 2; stylis filiformibus, pubescentibus; capsulis oblongis, 7–8 mm. longis; seminibus 1 mm. longis.

Type from alkaline meadows with *Helianthus Jaegeri*, *Haplopappus paniculatus*, *Triglochin concinna* var. *debilis*, *Oxytenia acerosa*, etc., below Tecopa Hot Springs, southeastern Inyo County, California, at 1400 ft., Oct. 9, 1949, Munz & Campbell 14358, Rancho Santa Ana Botanic Garden herbarium sheet number 48170; isotypes widely distributed. An earlier collection and the one which started the study of this plant was at the same place, Sept. 3, 1949, Roos & Weatherby 3569 (RSA).

The proposed species falls in the section *Hemistegia* Gray (*Chloropyron* of Ferris, Bull. Torrey Bot. Club 45:418, 1918), characterized by Pennell (Proc. Acad. Nat. Sci. Phila. 99:191, 1947) as having, "Leaves lanceolate to oblong, at least the lower entire; inflorescence an elongated spike, the bracts uniform, entire to pinnately lobed, nearly equalling to exceeding the corollas; calyx ample and spathe-like, enclosing proximal portion of corolla; plants halophytic." This section has contained six species: four with 2 stamens and two with 4 stamens, namely *C. canescens* and *C. maritimus*. The latter is a coastal plant, decumbent, the floral bract 2–3 cm. long and the "calyx-leaf" toothed at the apex, hence amply distinct from our species. The former, *C. canescens*, is given as a Great Basin plant ranging from Utah to eastern Oregon and California. It resembles our species in its habit and its entire leaves, but its bracts are almost twice as long; the corolla is 15–20 mm. long; both pairs of stamens bear anthers; its herbage is loosely villous. We are greatly indebted to Mrs. Roxana Ferris of Stanford University for examining our material and lending us a photograph and fragment of the type of *C. Parryi* Wats. from southern Utah, which is generally reduced to synonymy under *C. canescens*.

MIMULUS PARISHII Greene, Bull. Calif. Acad. 1:108, 1885.

Known from the southwestern borders of the Mojave Desert (Munz, Man. So. Calif. Bot., 473, 1935) and Whitewater Creek, Colorado Desert. It can now be reported from farther east on the Mojave Desert: Rock Springs, New York

Mts., at 4,800 ft., June 23, 1949, *John & Lucille Roos 4471* (RSA); and Key-stone Canyon, New York Mts., Aug. 13, 1949, *R. Weatherby 950* (RSA). It occurs also in eastern SAN DIEGO COUNTY: San Luis Rey River, at Rincon, July 12, 1929, *C. V. Meyer 795* (UC) and near Warner's Hot Springs, *Roos 938* (POM).

PENSTEMON EATONII Gray, Proc. Am. Acad. Arts & Sci., 8:395, 1872.

Recent collections by the junior author have brought out the fact that both the species and the var. *undosus* occur in California, although only the latter is given by Munz (Man. So. Calif. Bot., 468, 1935). The quite glabrous species is represented by: INYO COUNTY, Surprise Canyon, Panamint Mts., at 7,400 ft., June 12, 1930, *R. S. Ferris 7934* (POM). SAN BERNARDINO COUNTY, Black Hawk Mine, near Victorville, July 4, 1926, *M. E. Jones* (POM); Cave Spring, Old Dad Mts., May 14, 1926, *M. E. Jones* (POM); Old Dad Mts., June 13, 1930, *M. E. Jones 25546* (POM); north slope of Clark Mt., at 5,400 ft., May 29, 1949, *J. C. Roos 3527* (RSA); southeast slope of Clark Mt., at 6,200 ft., June 19, 1949, *J. C. Roos 3528* (RSA); ledge near summit of Clark Mt., at 7,800 ft., June 24, 1949, *Roos 3530* (RSA); 1 mile south of Coliseum Mine, Clark Mt., at 6,000 ft., May 28, 1935, *C. B. Wolf 7070* (RSA). RIVERSIDE COUNTY, Pinyon Wells, Little San Bernardino Mts., May 1, 1921, *Munz 4541* (POM); Falcon Flats 20 miles south of Warren's Well, May 29, 1939, *E. C. Jaeger* (POM); upper Lost Palms Canyon, Eagle Mts., May 15, 1948, *J. C. Roos 3839* (RSA).

The var. *undosus* Jones, with puberulent stems and leaves is represented by: SAN BERNARDINO COUNTY, Van Dusen Canyon near Bear Lake, San Bernardino Mts., June 28, 1938, *Ownbey & Ownbey 1672* (POM, RSA); Cactus Flats, San Bernardino Mts., at 7,000 ft., June 13, 1922, *Munz 5747* (POM); Cushenbury Grade, June 24, 1926, *M. E. Jones* (POM); above Cactus Flats, at 6,400 ft., July 9, 1927, *J. T. Howell 340* (RSA); Crystal Creek, north side of San Bernardino Mts., 5,200 ft., June 9, 1932, *Munz & Hitchcock 12782* (POM); Keyes' View, Little San Bernardino Mts., at 5,000 ft., June 26, 1933, *Epling & Robison* (RSA); Ivanpah Mts., at 5,000 ft., June 10, 1939, *E. C. Jaeger* (POM); Cottonwood Spring, Old Dad Mts., May 14, 1926, *M. E. Jones* (POM); Clark Mt., east side at 5,000 ft., June 13, 1933, *E. C. Jaeger* (POM); 1 mile south of Coliseum Mine, Clark Mts., at 6,000 ft., Oct. 7, 1935, *Wolf 7621* (RSA); Key-stone Canyon, New York Mts., at 5,500 ft., July 30, 1937, *Wolf & Everett 9024* (RSA); near Columbia Mine, west slope of Providence Mts., at 4,800 ft., May 26, 1941, *Wolf 10719* (RSA) and *10702* (RSA).

ARTEMISIA BIGELOVII Gray, U. S. Rept. Expl. Miss. Pacif. 4:110, 1857.

McMinn (Ill. Man. Calif. Shrubs, 607, 1939) and Munz (Man. So. Calif. Bot., 574, 1935) cite a single station in Clark Mts., based on *Munz 12874*, given below. The following collections from this mountain range are now known: SAN BERNARDINO COUNTY, narrow dry canyon at 5,500 ft., Sept. 15, 1932, *Munz 12874* (POM, UC); 1 mile south of Coliseum Mine, at 6,000 ft., Oct. 7, 1935, *C. B. Wolf 7619* (RSA); 1.5 miles above Pachalka Spring, at 6,000 ft., Oct. 5, 1935, *Wolf 7572* (RSA, UC); steep limestone gulch, north slope of Clark Mts.,

at 6,000 ft., Sept. 18, 1948, *John & Lucille Roos 4059* (RSA). The species has been found also in Keystone Canyon, New York Mts., at 5,600 ft., Aug. 13, 1949, *J. C. Roos 4614* (RSA).

ASTER PAUCIFLORUS Nutt., Gen. Pl. 2:154, 1818.

This perennial aster with its slender underground rootstocks, grass-like leaves, glandular-puberulent involucre and lavender rays, seems not to have been found previously in California. It was taken on June 28, 1949 by *John & Lucille Roos, 4527* (RSA) at Tecopa Hot Springs, Inyo County, where it grew at an elevation of 1,400 ft. about alkaline and saline seeps. An additional collection on Oct. 9, 1949 was made at the same place, *Munz & Campbell 14357* (CAS, DS, RSA, UC). It is associated with *Cirsium mohavense*, *Haplopappus paniculatus*, and *Cordylanthus tecopensis*. The species is found in saline soil from Saskatchewan to Texas and Arizona. Identification of our specimens was verified by Dr. S. F. Blake.

BACCHARIS BRACHYPHYLLA Gray, Pl. Wright, 2:83, 1853.

The known stations for this low shrub, which has been reported mostly as for southern San Diego County and Morongo Wash in Riverside County, can now be increased as follows: SAN BERNARDINO COUNTY, 5 miles north of Crucero, at 2,200 ft., Oct. 8, 1938, *E. C. Jaeger* (POM); Pickaninny Buttes, Nov. 1, 1939, at 3,500 ft., *Jaeger* (POM); base of rocks, 2.5 miles south of Twentynine Palms, at 3,500 ft., Oct. 20, 1939, *Munz 15894* (POM). RIVERSIDE COUNTY, Palm Oasis in side canyon of Whitewater Canyon, at about 1,800 ft., April 2, 1949, *John & Lucille Roos 4133* (RSA), Sept. 17, 1949, *J. & L. Roos 4659* (RSA); Orocopia Mts., at 1,200 ft., Dec. 1, 1939, *E. C. Jaeger* (POM); south base of Chuckwalla Mts., Nov. 10, 1938, *E. C. Jaeger* (DS). IMPERIAL COUNTY, Fish Creek, Nov. 12, 1938, *E. C. Jaeger* (DS).

BAHIA DISSECTA (Gray) Britton, Trans. N. Y. Acad. 8:68, 1889.

Amauria (?) *dissecta* Gray, Mem. Am. Acad. Arts & Sci., ser. 2, 4:104, 1849.

In California known previously from the San Bernardino Mts. only, where it is not uncommon, chiefly in the upper Santa Ana River system at 6,000 to 8,600 ft. On Aug. 13, 1938 it was found on a dry rocky ridge east of Santa Rosa Peak, Riverside County at 7,800 ft., *Munz 15339* (POM); on Aug. 14, 1938 on a dry rocky ridge east of Toro Peak, at 8,000 ft., *Munz 15364* (POM); and on Aug. 27, 1946, in open places among the pines, at 7,500 ft., Santa Rosa Mts., *J. C. Roos 2923* (RSA).

BRICKELLIA DESERTORUM Cov., Proc. Biol. Soc. Wash. 7:68, 1892.

A desert species (Munz, Man. So. Calif. Bot., 511, 1935), but also in the interior coastal drainage: RIVERSIDE COUNTY, east slope of rocky ridge, between Reche Canyon and Pigeon Pass at 1,500 ft., Sept. 21, 1949, *J. C. Roos 4665* (RSA); seeps, Indian Canyon, Box Springs Mts., *Noel Wallace BS-45* (POM); and Hester's Springs, Box Springs Mts., *N. Wallace BS-37* (POM); near Riverside, *G. R. Hall, Oct. 25, 1902* (UC).

HELIANTHUS JAEGERI Heiser, Bull. Torrey Bot. Club 75:513, 1948.

This interesting annual sunflower was described by Dr. Heiser from a collection made by *E. C. Jaeger* from swampy areas near Soda Springs on the

border of Soda Dry Lake, Mojave Desert, San Bernardino County, California, Sept. 25, 1946 (POM). It is noteworthy that it was found growing about fifty miles north of Soda Springs, in seeps and alkaline meadows at Tecopa Hot Springs, Inyo County, at 1,400 ft., Sept. 3, 1949, *J. C. Roos & R. Weatherby 3568* (RSA, US); and Oct. 9, 1949, *Munz & Campbell 14365* (RSA). Abundant material of this collection was distributed to several herbaria. Other collections from the same place are: Sept. 19, 1948, *John & Lucille Roos 4039* (RSA, US) and June 28, 1949, *J. C. Roos 3562* (RSA). The plant attains a height of 6 to 18 dm. and large specimens branch freely. It is associated with *Xanthium pennsylvanicum*, *Cordylanthus tecopensis*, *Haplopappus paniculatus*, *Tri-glochis*, *Cirsium*, etc.

***Tetradymia argyraea* Munz & Roos, sp. nov.**

Shrub 6–15 dm. tall, as broad or more so, stiff, rather openly branched, the older branches with gray bark, the young twigs slender, silvery-white with a densely matted firm wool forming ridges on the internodes from the leaf-axils upward; primary leaves linear, becoming acicular persistent spines 8–15 mm. long, ca. 0.5 mm. thick, at first closely woolly, later glabrate and yellowish, ascending, sometimes slightly curved upward, often with linear, glabrous to woolly secondary leaves 5–12 mm. long fascicled in their axils; heads one to few, in close clusters at the ends of the leafy branchlets; phyllaries 5, equal, 6–8 mm. long, ca. 1.5 mm. wide, rigid, thick, obtuse, silvery-white with dense matted wool; flowers 5; corollas ca. 8 mm. long, yellowish, the lobes oblong-linear, 3 mm. long; stigmas brownish, oblong, ca. 1 mm. long; achenes greenish, glabrous, ca. 4.5 mm. long; pappus copious, yellowish-white, 7–8 mm. long.

Frutex 6–15 dm. altus, aequale latus, rigidus, laxe ramosus; ramulis tenuibus, argenteis, dense lanatis, cum costis lanae firmae et striis subglabris; foliis primariis linearibus in spinas aciculares persistentes 8–15 mm. longas conversis; foliis secundariis fascicularibus saepe in axillis foliorum primariorum; capitulis paucis, in apicibus ramorum foliosorum confertis; phyllaribus 5, aequalibus, 6–8 mm. longis, ca. 1.5 mm. latis, rigidis, obtusis, argenteis, lanosis; floribus 5; corollis ca. 8 mm. longis, luteis cum lobis oblongo-linearibus, 3 mm. longis; stigmatibus fuscis, oblongis, ca. 1 mm. longis; acheniis glabris, ca. 4.5 mm. longis; pappo copioso, eburneo, 7–8 mm. longo.

Type, from dry rocky slopes, north side of Kingston Mts., Mojave Desert, northeastern San Bernardino County, California, where it grew at about 6,300 ft., with *Garrya flavescens*, *Pinus monophylla*, *Erigeron Breweri* var. *porphyreticus*, *Eriogonum sulcatum*, etc., Sept. 2, 1949, *J. C. Roos & R. Weatherby 3574*, Rancho Santa Ana Botanic Garden herbarium number 48,171; isotypes at Bureau of Plant Industry and University of California at Berkeley. Other collections are: rocky ridge northeast of Kingston Peak, at 7,000 ft., Sept. 2, 1949, *Roos & Weatherby 3573* (CAS, RSA, UC); summit of Kingston Peak at 7,320 ft., Sept. 2, 1949, *Roos & Weatherby 3572* (RSA); south slope below Coliseum Mine, Clark Mts., eastern San Bernardino County, at 5,400 ft., May 29, 1949, the heads still in bud, *John & Lucille Roos 4376* (RSA); rocky southern slope, Coliseum Mine, Clark Mts., at 5,300 ft., June 25, 1949, *J. C. Roos*

3560 (CAS, RSA); southeast slope of Clark Mt., Nov. 1, 1931, *E. C. Jaeger* (POM); east slope of Clark Mt., Nov. 1, 1931, *E. C. Jaeger* (POM).

The proposed new species is in the group of desert species of *Tetradymia* with the primary leaves becoming spines. These species are:

(1) *T. stenolepis* Greene. Heads terminal; flowers 5, but achenes canescent; spines stouter, 2–3 cm. long and perpendicular to the twigs; tomentum on young twigs complete, not separated into ridges. Western Mojave Desert to southern Sierra Nevada.

(2) *T. spinosa* H. & A. Heads axillary; flowers 5–9; secondary leaves widened upward; achenes hairy; spines spreading or recurved; tomentum complete. Montana to Colorado, Nevada and Oregon.

(3) *T. axillaris* A. Nels. (*T. longispina* M. E. Jones). Heads axillary; flowers 5–9; secondary leaves 2–4 mm. wide; achenes hairy; spines spreading or recurved; tomentum complete. Utah and Arizona to California.

(4) *T. Nuttallii* T. & G. Heads 4-flowered; spines spreading; secondary leaves oblanceolate; achenes white-hoary. Wyoming to Utah.

Our plant seems to be sufficiently distinct from all of the above, so that it cannot be included in any of them.

In the same region with *T. argyraea* is found *T. axillaris*. All specimens seen of both species were of two entirely different series except one, which combined characters of both. This is from Horse Spring, Kingston Mts., at 4,700 ft., Oct. 8, 1935, *C. B. Wolf* 7637 (RSA). It has the heavier stature of *T. axillaris* and rather long spines, but they are ascending as in *T. argyraea* and the tomentum is ridged as in the latter. Hybrids in the genus have been reported (Payson, Univ. Wyoming Pub. Bot. 1:103-108, 1924) and this collection, *Wolf* 7637, looks like a possible hybrid. However, *T. argyraea* is a late summer and early fall bloomer, the June and May specimens cited above being in bud only, while other California species flower mostly in May and June.