

Creek, 1893, *Wilson* (UC); near Tempe, 1897, *Bolton* (UC); Verde Mesa, *Smart 126* (G); Nogales, 1892, *Brandegee* (UC); Benson, 1882, *Dunn* (UC); Patagonia Mts., 1902, *Orcutt* (UC); Clifton, *Rusby 285* (UC); Clifton, *Davidson 174a* (UC); mesas near Camp Lowell, 1881, *Pringle* (G); Tucson, 1894, *Toumey* (UC); Sabino Canyon, 1894, *Toumey* (UC); Tucson Mts., *Thornber 532* (UC); Tucson, 1907, *Lloyd* (G); Yucca, 1912, *Wootton* (G); without locality, 1876, *Palmer* (G). LOWER CALIFORNIA: San Telmo, 1893, *Brandegee* (UC); San Esteban, 1889, *Brandegee* (UC); Lagoon Head, *Palmer 780* (G, UC); San Luis, 1889, *Brandegee* (UC); San Sebastian, 1889, *Brandegee*.

When Gray originally described *Eritrichium barbigerum* he had before him material now referred to *C. barbigerum*, *C. nevadensis* and *C. intermedia*. The plant here treated as *C. barbigerum* constituted the bulk of the material first described as *E. barbigerum* and almost wholly that which he later designated as *Krynitzkia barbigerum*. Parry's number 171, which is taken as type, is a large and very fine example of the species, having coarse leaves, and very elongate, apically recurved, long-villous calyx-lobes. In some of its forms the species is scarcely more than a minute-flowered phase of *C. intermedia*. When typically developed it is very characteristic because of its large leaves and conspicuously villous, elongate calyx-lobes.

30. **C. nevadensis** Nels. & Kenn. Slender, strigose herb 1-5 dm. high; stems erect or becoming flexuous, solitary or several, closely short-strigose and at times sparsely hirsute, closely or laxly branched; leaves linear-oblongate to linear, acute or obtuse, 1-4 cm. long, 1-5(-7) mm. broad, not numerous, appressed-hispid, more or less pustulate; spikes geminate or ternate, occasionally bracted toward the base, congested and somewhat glomerate or elongate and becoming 15 cm. long; corolla inconspicuous, limb 1-2 mm. broad; fruiting calyx oblong-ovate to lanceolate, 5-12 mm. long, ascending, slightly asymmetrical, pedicels ca. 0.5 mm. long; mature calyx-lobes lanceolate or linear, connivent above with the slender tips usually recurving, margins more or less villous, midrib thickened and hirsute; nutlets 4, homomorphous, verrucose or towards the tip muriculate, lance-ovate to lanceolate, 2-2.9 mm. long, back convex, margins somewhat angled, groove open or closed but below dilated into a small areola; gynobase narrow, $\frac{2}{3}$ - $\frac{3}{4}$ length of nutlets; style reaching to or almost to the tips of the nutlets.—Proc. Biol. Soc. Wash. xix. 157 (Nov. 1906).

Var. **genuina**. Stems very slender, usually flexuous, strigose; calyx 8-12 mm. long; nutlets lanceolate, long acuminate, back verrucose but conspicuously muricate towards the apex, ca. 2.5 mm. long.—*C. nevadensis* Nels. & Kenn. l. c. *Krynitzkia barbigerum*, var. *inops* Brandg. Zoe v. 228 (Sept. 1906). *C. barbigerum*, var. *inops* Macbr. Proc. Am. Acad. li. 548 (1916). *C. arenicola* Heller, Muhl. ii. 242

(Dec. 1906). *C. leptophylla* Rydb. Bull. Torr. Bot. Cl. xxxvi. 678 (1909).

Deserts from Utah and Nevada to Arizona and northern Lower California.

UTAH: St. George, *Palmer 350* (NY, TYPE of *C. leptophylla*). NEVADA: Trinity Mts., 1500 m. alt., *Watson 850* (G); stony north slope, Moapa, *Goodding 2201* (G, UC); Rhyolite, 1072 m. alt., *Heller 9657* (G); foot of cliffs, Meadow Valley, *Goodding 2165* (G); open sand, Candelaria, 1800 m. alt., *Shockley 288* (UC). ARIZONA: Grand Canyon, 1888, *Gray* (G); Diamond Creek, 1893, *Wilson* (UC); Yucca, 1912, *Wootton* (G); without locality, 1876, *Palmer* (G). CALIFORNIA: Swansea, *Hall & Chandler 7178* (UC); Panamint Canyon, *Hall & Chandler 7038* (G, UC); sand hills west of Laws, *Heller 8203* (G, UC); Surprise Canyon, 640 m. alt., *Coville & Funston 700* (G); The Needles, 1884, *Jones* (UC); Kramer, 1905, *K. Brandegee* (UC); Tehachapi, 1905, *K. Brandegee* (UC); around and under small bushes, Barstow, *K. Brandegee 157* (G, UC); 16 km. east of Daggett, 600 m. alt., *Munz & Harwood 3672* (UC); Hesperia, 1050 m. alt., *Parish 4850* (UC); sandy places, Mohave Desert, 300 m. alt., *Spencer 438* (G); dry sandy plain, 5 km. east of Warren's Well, 960 m. alt., *Munz & Johnston 5176* (G); deep sand at mouth of Tahquitz Canyon, 210 m. alt., *Spencer 1535* (G); deep sand, Palm Springs, 135 m. alt., *Spencer 848* (G); San Felipe, 1898, *Purpus* (UC); desert sand, Mountain Springs, 678 m. alt., *Spencer 188* and *859* (G); sand, Colorado Desert, *Spencer 184* (G); gravelly hills, Colorado River, 1854, *Bigelow* (G). LOWER CALIFORNIA: mountains of northern Lower California, *Orcutt 1279* (UC).

Var. **rigida**, var. nov., erecta non rariter plus minusve hirsuta; calycibus 5–10 mm. longis; nuculis oblongo-ovatis acutis verrucosis ca. 2 mm. longis.

Western portion of Mohave Desert and neighboring coastal slopes; also in western Arizona.

CALIFORNIA: Bakersfield, *Davy 1875* (UC); Poso Creek, *Hall & Babcock 5014* in pt. (UC); sandy soil, Pampa Station, *Heller 7645* (G, UC); high ridge west of McKittrick, *Heller 7788* (G, UC); Fort Tejon, *Xantus 85* (UC); Mohave, *Davy 2161* (UC); Palmdale to Little Rock, *Davy 2291* (UC); Llano Verde, *Davy 2306* (UC); desert sand, Hesperia 930 m. alt., *Spencer 339*, *403* and *419* (G); sand, Mohave Desert, *Spencer 411* and *555* (G); hills bordering Mohave Desert, 1882, *Pringle* (G, TYPE). ARIZONA: Wickenburg, *Jones 343* (G); Verde Mesa, *Smart* (G).

This species was first described as *Krynitzkia barbiger*a, var. *inops*. If the varietal name is to be accepted it is only after *C. intermedia* has been reduced to a variety of *C. barbiger*a. *Cryptantha nevadensis*, var. *genuina* is a striking plant on account of its wiry, strigose, usually flexuous stems, very elongate calyces and lanceolate attenuate nutlets. Its habit is suggestive of *C. dumetorum*, since it grows in shelter of shrubs and frequently scrambles up through them. The stems are also very brittle. The variety *rigida*, with which the var. *genuina* is confluent, has the habit and nutlets of some forms of *C. intermedia*.

From that species it differs in its small corollas and in invariably having strigose pubescence. The variety intergrades with *C. intermedia* and through it *C. nevadensis*, var. *genuina* is related to *C. intermedia* and eventually to *C. barbigerata*. The axial nutlet of *C. nevadensis*, var. *genuina* is frequently somewhat smoother than the others and usually has a closed groove.

31. *C. scoparia* Nels. Erectly branched stiff usually strigose herb 1-3.5 dm. high; stems closely short-strigose and frequently also sparsely hispid; leaves linear to lance-linear, obtuse, 2-4 cm. long, 1-3 mm. broad, strictly ascending, strigose or appressed-hirsute, finely pustulate; spikes stiff, naked, solitary or geminate, 2-10 cm. long; corolla inconspicuous, tube about equalling calyx, limb ca. 1 mm. broad; fruiting calyx ovate-oblong, 5-6 mm. long, strictly ascending, subsessile, slightly asymmetrical, becoming rather obscurely biserial at maturity and 5-10 mm. distant; mature calyx-lobes lance-linear, stiffish, usually subconnivent above with the herbaceous tips somewhat spreading, midrib thickened and hirsute, margins shortly canescent-villous, axial lobe slightly the longest; nutlets 4, homomorphous, lanceolate to broadly lanceolate, 1.8-2.2 mm. long, antrorsely spinulose-muriculate especially towards apex, margins and base rounded, groove narrow and forked below where occasionally open to form a small triangular areola; gynobase subulate, about $\frac{3}{4}$ height of nutlets; style reaching to tip of nutlets.—Bot. Gaz. liv. 144 (1912); Macbr. Contr. Gray Herb. n. s. xlviii. 48 (1916). *C. muriculata*, var. *montana* Nels. Erythea vii. 69 (1899).

Southwestern Wyoming, southern Idaho and eastern Washington.

WYOMING: Granger, 1898, *Nelson* (G, ISOTYPE of *C. muriculata*, var. *montana*). IDAHO: loose, disturbed soil near road, Challis, 1620 m. alt., *Macbride & Payson 3221* (G); Big Butte Station, *Palmer 204* (G); Aberdeen, *Piper 5030* (G); sagebrush land, Minidoka, *Nelson & Macbride 1801* (G), *1311* (G, ISOTYPE of *C. scoparia*); dry slopes, Castleford, *Nelson & Macbride 2231* (G); Buhl, *Nelson & Macbride 1703* (G). UTAH: Ogden Hot Springs, 1903, *Stokes* (UC). WASHINGTON: plains, Morgan's Ferry, *Suksdorf 405* (G) and *1494* (UC).

In gross habit much suggesting *C. nevadensis*, but differing in its shorter fruiting calyces and particularly in its spinulose nutlets. In addition to these morphological differences the ranges of *C. nevadensis* and *C. scoparia* are separated by the northern half of Nevada.

Ser. VIII. MURICATAE. Nutlets 4, verrucose or coarsely tuberculate, triangular-ovate, decidedly homomorphous, back obtuse and bearing a suggestion of a medial ridge, with sides evidently