A well marked species, probably most related to *C. racemosa*, from which it differs in such developments as smaller and sessile calyces, much smaller nutlets, and narrower leaves. To judge from the description of *C. inaequata* it differs from that species in its denser spikes, and much smaller calyces and nutlets. Except for the very narrowly winged margin, the nutlets of *C. angelica* are very suggestive of those of *C. Grayi*.

4. **C. inaequata** Johnston. Loosely and sparingly branched herb 3–4 dm. high; stems erect or ascending, hispid and strigose or hirsute towards the base; leaves oblanceolate to linear, 2–4 cm. long, acute, not numerous, more or less hispid, pustulate especially underneath; spikes geminate or solitary, 4–12 cm. long, at times sparsely bracted below; corolla inconspicuous, tube shorter than calyx; fruiting calyx ovate-oblong, 2.5–3 mm. long, ascending, pedicels less than 0.5 mm. long; mature calyx-lobes lanceolate, midrib thickened and hirsute, axial lobe most pubescent and thickened; nutlets 4, heteromorphous, triangular-ovate, dark with small pale tuberculations, margins decidedly acute, groove closed above but below gradually dilating into a shallow triangular areola; odd nutlet ca. 1.7 mm. long, somewhat persistent, slightly lighter than the others, next the abaxial calyx-lobe; consimilar nutlets ca. 1.3 mm. long; gynobase equalling the consimilar nutlets but surpassed by odd nutlet; style much surpassing the nutlets.—Univ. Calif. Pub. Bot. vii. 444 (1922). *Johnstonella inaequata* Brand, Fedde Repert. in press.

Southeastern California.

California: among rocks, Pleasant Canyon, Panamint Mts., 600 m. alt., *Hall & Chandler 6925* (UC, type); Baxter, *Parish 9859* (UC).

The status of this species is problematic, since the collections upon which it was based have not neen available to me for several years. The description given above is adapted from a preliminary diagnosis made in 1922. It is possible that the plant is only a form of *C. racemosa*, although it has been noted as differing in its subsessile calyces and less extended duration.

5. **C. pusilla** (T. & G.) Greene. Low plant usually with very numerous prostrate-ascending stems; these very slender, usually strictly branched, 3–15 cm. long, canescent, appressed villous-hirsute; leaves crowded near base of plant but distant above, spathulate-linear to linear, 1–3 cm. long, 1–2 mm. wide, somewhat pustulate and hispid below but less so above; spikes solitary or geminate, 2–8 cm. long, naked or with a few minute bracts; corolla inconspicuous, shorter than calyx, 1.5–2 mm. long, lobes slightly spreading oblong ca. 0.3 mm. long; fruiting calyces 2–2.5 mm. long, broadly ovate, symmetrical, sessile or subsessile, early deciduous; mature calyx-lobes lance-ovate or oblong-lanceolate, hirsute, midrib only slightly thickened; nutlets 4, homomorphous, lucid, ca. 0.8–1.2 mm. long, triangular-ovate, bent, tan-colored with low light-colored tuberculations, margin angled and beveled, groove opened or closed above but expanding below into a shallow open triangular areola; gynobase narrowly pyramidal, about equalling the nutlets; style much surpassing the nutlets, ca. ½ length of gynobase.—Pittonia i. 115 (1887). *Eritrichium pusillum* T. & G. Pacif. R. R. Rep. ii. pt. 2, 171 (1856). *Krynitzkia pusilla* Gray, Proc. Am. Acad. xx. 274 (1885).

Southern Arizona and New Mexico southward to Durango.

Arizona: near Nogales, 1902, *Orcutt* (UC); Douglas, 1907, *Goodding 2264* (UC). New Mexico: without locality, *Wright 1571* (G, NY). Texas: Fort Davis, 1880, *Giard 65* (G); Kent, *Tracy & Earle 105* (UC); El Paso, *Jones 3741* (UC); Llano Estacado, *Pope* (NY, type). Chihuahua: hills and plains near Chihuahua, *Pringle 184* (G, UC); vicinity of Chihuahua, 1300 m. alt., *Palmer 65* (G). Durango: Tepehuanes, *Palmer 28* (G, UC); Durango, *Palmer 139* (G, UC) and *227* in pt. (G).

A very distinct species readily recognized by its beveled, bent, lustrous nutlets that just equal the somewhat basally constricted gynobase. The type is given as coming from "Rio Pecos to Llano Estacado, etc. in sandy soil, March." From a study of the journal in Pope's Report, the locality given is found to be within about 100 kilometers traveled between March 24th and 26th 1854. This would make the type locality lie somewhere near the juncture of Ward, Crane and Ector counties, Texas.

6. **C. costata** Brandg. Coarse stiff few-branched herb 1–2 dm. high; stems (especially younger parts) canescent, densely villous-strigose and usually somewhat hirsute as well; leaves lanceolate to linear, 1–3 cm. long, 2–4 mm. wide, broadest near base, apex acute, above villous-strigose and sparsely hispid, beneath more hispid and frequently also pustulate; spikes rigid, 2–5 cm. long, solitary or geminate, sparsely leafy-bracted; corolla inconspicuous, ca. 2 mm. long, tube shorter than calyx, lobes broad and ascending; fruiting calyces ovate-oblong, 4–6 mm. long, subsymmetrical, spreading, deciduous, subsessile; mature calyx-lobes linear-lanceolate, somewhat connivent above with tips slightly spreading, midrib thickened hirsute, margins strigose; nutlets 4, homomorphous or subheteromorphous with the nutlet next the abaxial calyx-lobe slightly the largest, ca. 1.8 mm. long, triangular oblong-ovate, back strongly convex, inconspicuously rugulose or faintly verrucose, face noticeably flat or even

slightly convex, margins sharp and narrowly winged; groove very shallow, closed above but dilating below and merging into the deltoid shallow areola; gynobase subulate, equalling the nutlets; style not sharply differentiated from the gynobase, much surpassing the nutlets.—Bot. Gaz. xxvii. 453 (1899). *C. seorsa* Macbr. Contr. Gray Herb. n. s. xlviii. 46 (1916).

Deserts of Southern California.

California: Needles, *Jones 3841* (G, type of *C. seorsa;* UC, isotype); gravelly hillside 17 km. west of Needles, 210 m. alt., *Munz & Harwood 3601a* (UC); sandy desert, Blythe Junction, 360 m. alt., *Munz & Harwood 3587* (UC); in desert sand near mouth of Tahquitz Canyon, 210 m. alt., *Spencer 1524* (G); in sand, Palm Canyon, 180 m. alt., *Spencer 1527* (G); margin of wash, Borregos Spring, 1889, *K. Brandegee* (UC); Borregos Spring, 1895, *Brandegee* (UC, type of *C. costata);* Hodges Mts., *Hall 5974* (UC); sand hills near Travertine Terrace, 52 m. below sea-level, *Parish 8429* (UC); in desert sand, Mecca, 57 m. below sea-level, *Spencer 1514* (G); Mecca, 60 m. below sea-level, *Parish 8465* (G).

A very distinct species readily recognized by its peculiar nutlets and by its rather coarse, stiff habit and very canescent herbage.

7. **C. micrantha** (Torr.) Johnston. Slender strigose ascendingly branched dichotomous herb 5–15 cm. high, drying brownish; root and lower parts of stem stained with dye; leaves oblong-oblanceolate, 3–7 mm. long, 0.8–1.4 mm. broad, canescent-strigose and occasionally short villous-hirsute, rounded at apex, uppermost scarcely reduced and extending through the inflorescence; spikes very numerous, solitary or geminate, dense, strongly unilateral, leafy-bracted throughout, 1–4 cm. long; corolla inconspicuous or medium-sized, limb 0.5–2.5 mm. broad, faucal appendages poorly developed; fruiting calyx ovate-oblong, 1.8–2.5 mm. long, slightly asymmetrical, decidedly biseriate, base broadly conical; pedicels 0.5–0.8 mm. long; mature calyx-lobes oblong-lanceolate, broad, erect, hirsute, midrib not particularly thickened; nutlets 4, homomorphous or somewhat heteromorphous, 1–1.3 mm. long, plumbeous or brown, smooth or tuberculate, abaxial one usually a trifle the largest and most persistent; groove extending full length of nutlet, narrow, scarcely broadened at base; gynobase subulate, nearly as long as the calyx, much surpassing the nutlets and bearing at its summit the sessile stigma.—Contr. Gray Herb. n. s. lxviii. 56 (1923).

Var. **genuina.** Corolla inconspicuous, 0.5–1.2 mm. broad.—*Eritrichium micranthum* Torr. Bot. Mex. Bound. 141 (1859). *Krynitzkia micrantha* Gray, Proc. Am. Acad. xx. 275 (1885). *Eremocarya micrantha* Greene, Pittonia i. 59 (1887). *C. micrantha* Johnston, l. c.

Eremocarya muricata Rydb. Bull. Torr. Bot. Cl. xxxvi. 677 (1909); Macbr. Proc. Am. Acad. li. 545 (1916).

Southeastern Oregon to Utah, southward to northern Lower California and Arizona, and eastward along the Mexican boundary to western Texas.

Oregon: without locality, 1898, *Cusick 2020a* (G). Utah: Stansbury Island, 1290 m. alt., *Watson 856* (G); valley of the Virgin near St. George, *Parry 164* (G, isotype of *E. muricatum*). Nevada: Logan, *Kennedy 1832* (G); dry sandy ravines, Moapa, *Goodding 2203* (G); deep sand, Beaver Dam Wash, *Goodding 2144* (G). California: sandy place, Mohave Desert, 300 m. alt., *Spencer 436* (G); Barstow, *Jones 106* (G); Mohave Desert, 1880, *Lemmon* (G); Acton, *Elmer 3682* (G); Los Angeles, 1880, *Nevin* (G); sand in Arroyo Seco, Pasadena, *Allen 18* (G); dry sandy ground, San Gabriel Wash near El Monte, *Johnston 27r* (G); San Bernardino, 1876, *Parry 14* (G); sandy hills, Mesa Grande, 990 m. alt., *Spencer 1304* (G); Agua Caliente, *Parish 771* (G); sandy place near Palm Springs, 120 m. alt., *Spencer 1918* (G); desert sand, Palm Springs, 135 m. alt., *Spencer 844* (G); desert sand, Coyote Wells, *Spencer 194* (G); desert sand, Mecca, 59 m. below sea-level, *Spencer 1515* (G); desert sand, Mountain Springs, 678 m. alt., *Spencer 857* (G). Lower California: San Sebastian, 1889, *Brandegee* (UC); without locality, 1883, *Orcutt* (G). Arizona: near Tucson, *Greene 1112* (G); Wickinburg, *Palmer 371* (G); near Camp Lowell, 1881, *Pringle* (G); Prescott, *Rusby 745* (G). New Mexico: without locality, 1851–2, *Wright 1565* (G). Texas: sands along Rio Grande, El Paso, *Thurber 181* (G); El Paso, *Jones 3703* (G).

Var. **lepida** (Gray) Johnston. Corolla medium-sized, 1.0–1.5 mm. broad; plants usually coarser than in var. *genuina.*—Contr. Gray Herb. n. s. lxviii. 57 (1923). *Eritrichium micranthum,* var. *lepidum* Gray, Synop. Fl. N. Am. ii. pt. 1, 193 (1886). *Krynitzkia micrantha,* var. *lepida* Gray, Proc. Am. Acad. xx. 275 (1885). *Eremocarya lepida* Greene, Pittonia i. 59 (1887). *Eremocarya micrantha,* var. *lepida* Macbr. Proc. Am. Acad. li. 545 (1916).

Southern California, most common in warm montane valleys.

California: Middle Fork, Mt. Pinos, *Hall 6540* (UC); Grayback, 1880, *Wright* (G); near Pine Lake, Bear Valley, *Abrams 2904* (G); Forest Home, 1500 m. alt., 1913, *Mason* (G); Bear Valley, *Parish 771a* (G); sandy hills, Idyllwild, 1590 m. alt., *Spencer 1301* (G); woods, Idyllwild, 1620 m. alt., *Spencer 1347* (G); Warners Hot Springs, *Eastwood 2591a* (G); dry canyon floor near Campo, *Abrams 3594* (G); desert sand, Mountain Springs, 678 m. alt., *Spencer 858* (G); San Diego, 1876, *Cleveland* (G, type of *E. micranthum,* var. *lepidum*). Lower California: San Pedro Martir, 1893, *Brandegee* (UC).

The nutlets of *C. micrantha* are exceptionally variable. Some plants have all the nutlets smooth, others have all of them tuberculate, while still others have the abaxial nutlet of each calyx tuberculate and the remaining ones smooth. *Eremocarya muricata* is described as differing from *C. micrantha* in having tuberculate nutlets, but in the isotype of that species contained in the Gray Herbarium I find that