

NEVADA: Dog Valley Road, 1895, *Hillman* (UC); Clear Creek Canyon, 2000–2615 m. alt., *Baker 1381* (G, UC); Reno, 1884, *Curran* (G); near Reno, 1893, *Hillman* (UC); along railroad above Laughton's, 1894, *Hillman* (UC), Verdi, 1904, *Kennedy 952* (UC, ISOTYPE of *C. densiflora*); Hunter Creek, Washoe Co., 1800 m. alt., *Kennedy 1917* (G); western Nevada, 1884, *Curran* (G, UC, ISOTYPES of *K. denticulata*). ARIZONA: mesas near Camp Lowell, 1881, *Pringle*; Skull Valley, 1290 m. alt., 1903, *Jones 7028* (UC); Yucca; 1884, *Jones 26* (G). CALIFORNIA: Truckee, 1887, *Sonne* (UC); Donner Lake, 1888, *Curran* (UC); Summit Station, Placer Co., 2083 m. alt., *Heller 12886* (G); Mammoth, 1913, *K. Brandegeee* (UC); open pine woods, Mt. Wilson, *Abrams 2590* (G); dry rocky canyon floor, Coldwater Fk. of Lytle Creek, 2100 m. alt., *Johnston 2073* (G, UC); rocky ground under pines near head of N. Fk. Lytle Creek, 2250 m. alt., *Johnston 2077* (G, UC); sunny rocky summit, Telegraph Peak, 2700 m. alt., *Johnston 1542* (G); open place on canyon floor, N. Fk. San Antonio Canyon, 2400 m. alt., *Johnston 1598* (G, UC); dry sunny canyon side, San Antonio Canyon, 1110 m. alt., *Johnston 1950* (G); Little Green Valley, *Hall 12* (UC).

A species readily recognized by its ovate-triangular nutlets, tawny pubescence, and characteristic yellowish-green herbage. It breaks up into three intergrading varieties. The var. *genuina*, characterized by its large corollas, occurs in western California. It varies noticeably in the size of the nutlets and fruiting calyces. The type of *C. muricata* is one of the coarse, large-flowered forms and was probably collected by Douglas somewhere between Monterey and Santa Barbara. The other varieties are small-flowered. The var. *Jonesii* commonly assumes a peculiar erect habit by which it can be distinguished at a glance from all other forms in the genus. The stems are usually single or several and fastigiate, and are erect, producing in the upper half or two-thirds abundant very short floriferous branchlets. Rarely the plant becomes diffusely branched. The distribution of var. *Jonesii* is peculiar. It occurs in the Coast Ranges from Santa Cruz to Glenn County, and in the middle Sierra Nevada. Jumping the several hundred kilometers occupied by the var. *genuina* it reappears in the vicinity of San Bernardino and is frequent from there south into Lower California. The var. *denticulata* is perhaps unworthy of recognition since it is frequently distinguishable from the var. *Jonesii* only with difficulty. It differs chiefly in habit, being sparsely and loosely long-branched. It grows in western Nevada in the general region of Reno, in California about Truckee, in western Arizona and in the pine belt of Southern California. The material from Nevada usually has coarsely granulate nutlets and perhaps might be separable from the southern material that I have associated with it.

Ser. IX. AMBIGUAE. Nutlets 1–4, smooth to papillate or tuberculate, ovate, dorsally low-convex, laterally rounded or obtuse

or occasionally acutish, homomorphous, no particular nutlet always developing; style reaching to $\frac{2}{3}$ - $\frac{3}{3}$ height of nutlets.

Corolla conspicuous.

Plant low, stiff, spreading, widely branched; spikes solitary..33. *C. mariposae*.

Plant erectly branched, less rigid; spikes ternate or geminate.

Pedicels slender, evident, 2-3 mm. long; pedicels and calyx conspicuously long white-villous.....34. *C. crinita*.

Pedicels stout, inconspicuous, less than 1 mm. long; pedicels and calyx more or less hispid.

Nutlets usually single, commonly horizontal, equalling or longer than the short loosely connivent calyx-lobes.....35. *C. excavata*.

Nutlets usually 4, erect, evidently shorter than the decidedly connivent calyx-lobes.....36. *C. Hendersoni*.

Corolla inconspicuous.

Nutlets minute, less than 1.5 mm. long; spikes bracted throughout.....37. *C. Traskae*.

Nutlets usually 2-2.5 mm. long; spikes naked or bracted only at base.

Nutlets smooth, rarely finely granulate; spikes usually geminate; plant commonly 2-4 dm. tall.....38. *C. Torreyana*.

Nutlets somewhat tuberculate, densely granulate or granulate-muricate as well as more coarsely roughened.

Plant closely strigose, pale, usually 2-3 dm. tall; spikes commonly geminate or ternate.....39. *C. simulans*.

Plant spreading-hispid, usually 1-1.5 dm. tall; spikes usually solitary or rarely geminate.

Nutlets with low rounded tubercles.....40. *C. ambigua*.

Nutlets with elongate papillae or spicules.....41. *C. echinella*.

33. ***C. mariposae***, sp. nov., humilis saepe basaliter ramosa 5-15 cm. alta; ramis paucis laxe ascendentibus breviter strigosis; foliis paucis firmis oblanceolatis vel oblongo-oblanceolatis 0.8-1.8 mm. longis 2-5 mm. latis obtusis integerrimis adpresse breviter hispidis inconspicue pustulatis, superioribus paullo reductis, inferioribus oppositis subpersistentibus; spicis solitariis vel geminatis 3-10 cm. longis rigidis ebracteatis vel basem versus pauce folioso-bracteatis; floribus obscure biseriatis, inferioribus 5-10 cm. distantibus; calycibus fructiferis oblongo-ovatis 5-7 mm. longis ascendentibus subsessilibus; lobis calycis lineari-lanceolatis in costa infra medium cum setis flavescensibus horridis et in marginibus adpresse hispidis, supra medium breviter hirsutis et saepe recurvatis; corolla conspicua 3-6 mm. lata; nuculis homomorphis 4 (rare 1-2 abortis) ovatis acuminatis 2-2.5 mm. longis saepe granulatis basi truncatis margine rotundis vel obtusis ventre $\frac{2}{5}$ - $\frac{1}{2}$ longitudinis ad gynobasem quadrangularem columnarem ca. 1 mm. longam affixis; sulcis basem versus paullo gradatim ampliatis ad imam basem divaricato-furcatis et areolam triangularem profundam formantibus; stylo ca. 0.8 mm. longo quam nuculae evidenter breviori.

Known only from Mariposa County, California.

CALIFORNIA: Mariposa, April 27, 1898, *Congdon* (UC); Mariposa, May 1903, *Congdon* (UC); Mariposa County, May 2, 1890, *Congdon C59* (TYPE, Gray Herb.).

A peculiar plant with small, broad, thickish leaves and low, loosely branched, coarse, rigid stems. It has passed as *C. ambigua* and *C. barbiger* but is distinct from both, differing in its large corollas, low stiff habit, strigose stems and in the shape and attachment of the nutlets. In having basally truncate and acuminate nutlets it somewhat suggests *C. muricata*, var. *denticulata*, but is very different in its low habit, strigose pubescence and short style and gynobase. The young spikes are not so tawny as are those of *C. muricata*.

34. **C. crinita** Greene. Erectly branched herb 2–3 dm. high; stems appressed and spreading-hispid, branches numerous; leaves oblanceolate to oblance-linear, 2–4 cm. long, 2–4 mm. broad, obtuse, hirsute, evidently pustulate; racemes ternate or geminate, naked, 3–6 cm. long; corolla conspicuous, 3–5 mm. broad; fruiting calyces 5–6.5 mm. long, spreading, ovate-oblong, obscurely biserial, deciduous, divided, conspicuously villous, hairs very long and white, oldest calyces 5–10 mm. distant; pedicels well developed, 2–3 mm. long, long-villous; calyx-lobes linear, erect, slightly unequal, without a thickened midrib and pungent bristles; ovules 4; nutlet 1, next the axial calyx-lobe, ca. 3 mm. long, 1.3 mm. broad, erect, dull, brownish, ovate-lanceolate, densely muriculate-granulate, frequently coarsely tuberculate especially above the middle, apex attenuate, base obtusish, back convex, margin rounded or obtuse, groove opened towards base to form a small deep triangular areola; gynobase elongate, about half length of nutlet; style reaching to about $\frac{3}{4}$ height of nutlet.—*Erythea* iii. 66 (1895).

Known only from Shasta County, California.

CALIFORNIA: bed of Stillwater Creek at Leightone, 1900, *Baker* (G, UC); Cow Creek, 1894, *Baker & Nutting* (UC); Stillwater, *Nutting* (UC); Shasta County, 1894, *Baker & Nutting* (UC, "Dup. of type").

Distinguished from all other members of the genus by its unusually long white hairs on the calyx and on the well developed pedicels. Very distinct from, but probably most related to, *C. Hendersoni*.

35. **C. excavata** Brandg. Loosely and ascendingly branched herb 1–2 dm. tall; stems short hispid-villous and usually appressedly so; leaves not numerous, 1.5–3 cm. long, 1–2 mm. broad, linear or spathulate-linear, obtuse, appressed-hispid, minutely pustulate, upper ones evidently reduced; spikes ternate or geminate, 3–8 cm. long, naked; corolla conspicuous, ca. 4 mm. broad; fruiting calyx, broadly ovate, 2–2.5 mm. long and nearly as wide, asymmetrical, sessile, spreading,

base rounded or very broadly conic, becoming remote and obscurely biserial; mature calyx-lobes lanceolate, subequal, erect or loosely connivent, frequently one displaced by the tip of the decumbent nutlet which they barely exceed in length, margin short hispid-villous, midrib scarcely thickened and somewhat short-hirsute; ovules 4; nutlet 1 and usually horizontal or infrequently 2-3 and then erect, ovate-triangular, recurved-acuminate, ca. 2.5 mm. long, densely granulate or granulate-muriculate, commonly sparsely tuberculate, base decidedly truncate, sides obtuse or rounded, back convex, groove dilated towards base and forming a broad deep narrowly triangular suprabasal areola; gynobase narrow, ca. 1 mm. long, about $\frac{1}{3}$ - $\frac{1}{2}$ length of nutlet; style reaching to $\frac{2}{3}$ - $\frac{3}{4}$ height of nutlets.—Bot. Gaz. xxvii. 452 (1899).

Inner North Coast Ranges of California; rare.

CALIFORNIA: occasional on shelving slopes of sand, Cache Creek, Yolo Co., Baker 2886 (G, UC); Lake County, April, K. Brandegee (UC).

The solitary, decumbent, triangular nutlet and short calyx are distinctive of this species. It appears to be related to *C. Hendersoni* on one hand, and apparently to *C. decipiens* on the other. No particular nutlet seems to develop, even in the same spike, for adjacent calyces may each develop its nutlet in a very different position relative to the spike-axis.

36. **C. Hendersoni** (Nels.) Piper. Ascendingly branched hispid herb 1.5-5 dm. tall; stems single or numerous, sparsely and loosely branched above, hispid; leaves oblanceolate or linear, 2-5(-7) cm. long, 2-5 mm. broad, acute or obtuse, appressed-hispid, lower ones somewhat persistent and pustulate, upper ones reduced; spikes usually ternate, rarely geminate or quadrate, naked or at times bracted toward very base, 2-8 or rarely even 20 cm. long; corolla conspicuous, tube about equalling calyx, limb 4-7 mm. broad; fruiting calyx ovate-oblong or narrowly ovate, 3-6 mm. long, ascending, slightly asymmetrical, lowermost becoming obscurely biserial and distant, base rounded or broadly conic; pedicels ca. 0.5 mm. long; lobes lance-linear or linear, somewhat connivent above with herbaceous tips usually somewhat spreading, margins densely appressed villous-hispid, midrib obscurely thickened and hispid; nutlets 4 or by abortion rarely fewer, broadly ovate or very rarely lance-ovate, 2-2.8(-3) mm. long, smooth or more or less coarsely granulate, frequently coarsely tuberculate and at times finely papillate-muricate, back low convex, sides rounded or rarely obtuse, base rounded or somewhat truncate; groove

closed or very narrow, broadly forked below; gynobase narrow, ca. 1.3 mm. long, becoming $\frac{1}{2}$ – $\frac{2}{3}$ as high as nutlets; style reaching to about $\frac{4}{5}$ height of nutlets or barely exceeding them.—Piper ex J. C. Nelson, *Torreya* xx. 44 (1920). *Allocarya Hendersoni* A. Nelson, *Erythea* vii. 69 (1899); Piper, *Contr. U. S. Nat. Herb.* xxii. 113 (1920). *C. monosperma* Greene, *Pittonia* v. 53 (1902). *C. incana* Greene, *Leaflets* i. 79 (1904). *C. grisea* Greene, l. c. *C. trifurca* Eastw. *Bull. Torr. Bot. Cl.* xxxii. 203 (1905). *C. grandiflora* Rydb. *Bull. Torr. Bot. Cl.* xxxvi. 679 (1909). *C. Torreyana*, var. *grandiflora* Nels & Macbr. *Bot. Gaz.* lxi. 43 (1916). *A. dichotoma* Brand in Fedde, *Repert.* xviii. 313 (1922). *C. scabrella* Piper, *Proc. Biol. Soc. Wash.* xxxvii. 95 (1924).

Western Idaho to southwestern British Columbia and south to the Sierra Nevada and northern parts of California.

IDAHO: sandy hillsides in open places or amongst trees, Juliaetta, *Henderson 4815* (G); hills about Lewiston, *Henderson 2811* (G); Lewiston, 1895, *Piper* (G); about Lewiston, 450–600 m. alt., *Heller 2998* (UC); Valley of Clearwater River, *Sandberg, MacDougal & Heller 10* (G, ISOTYPE of *C. grandiflora*); Clearwater, *Spalding* (G); abundant all over wooded and unwooded hills, Palouse Country, *Henderson 2811* in pt. (G); lava soil slope, Big Willo, 900 m. alt., *Macbride 109* (G, UC). BRITISH COLUMBIA: Fort Vancouver, *Tolmie* (G). WASHINGTON: Wawawai, *Piper 1941* and *1944* (G); Tacoma, 1894, *Van Renselaer* (G); Steilacoom, *Piper 372* (G); Cape Horn, *Piper 5018* (G); Falcon Valley, *Suksdorf 456* (G) and *3278* (UC); dry hillsides, Columbia River, western Klickitat County, *Suksdorf 180* (UC, ISOTYPE of *C. monosperma*). OREGON: along Hood River, *Heller 10112* (UC); Lone Rock, 890 m. alt., *Leiberg 116* (G, UC); rocky bank, 1.6 km. north of Tonquin, *Nelson 3093* (G); Willamette River below Portland, *Sheldon S10866* (G); dry rocky bank by roadside, Coalca, *Nelson 2109* (G); rocky hillside, 5 km. north of McNary, *Nelson 2083* (G); dry open ground in Bush's Pasture, Salem, *Nelson 3253* (G); dry soil by roadside, 5 km. south of Salem, *Nelson 2166* (G); Bridge Creek, *Howell 501* (G); loose basaltic rock on wall of canyon, Silver Creek Falls, Marion Co., *Nelson 4869* (G); 3.2 km. east of Curry-Douglas county-line on trail from Marial to West Fork, *Peck 3995* (G); dry soil along trail, Marial, *Nelson 1414* (G); rocky woods, Elk Rock, *Nelson 1254* (G); dry soil along trail near mouth of Mule Creek, Curry Co., *Nelson 1369* (G); steep seaward slope, The Heads, Port Oxford, *Peck 8473* (G); Grant Pass, *Piper 5105* and *5106* (G); Grant Pass, *Piper 5043* (G, ISOTYPE of *C. scabrida*); Applegate, *Durden* (UC); near Stinking Water, 1200 m. alt., *Leiberg 2362* (G, UC); Steins Mt., *Howell 500* (G); adobe soil, Steins Mt. opposite Devines Ranch, 1500 m. alt., *Leiberg 2465* (G, UC); without locality, hillsides, 1881, *Howell* (G, part of TYPE of *A. dichotoma*). CALIFORNIA: Hupa Valley, 1900, *Manning* (UC); Hupa Indian Reservation, 150 m. alt., *Chandler 1302* (G, UC); mountain slopes along road between Three Creeks and mouth of Willow Creek, Humboldt Co., 750 m. alt., *Tracy 3335* (UC); in chaparral in hills about Scotts Valley, 420–600 m. alt., *Tracy 1744* (UC); between Mud Flat and Bennet Springs on Newville-Covelo road, *Heller 11928* (G); Hough's Spring, Lake Co., 1882, *Cleveland* (UC); southeast side of Snow Mt. above Bonnie View, *Heller 13236* (G); Rush Creek, Trinity Co., *Yates 402* (UC); Klamathon, *Copeland 3550* (G, ISOTYPE of *C. trifurca*); dry hills near Yreka, *Butler 733*

(UC) and 1416 (G, UC); Edgewood, 1887, *Curran* (UC); Siskiyou County, 1890, *Edmonds* (UC); along streams in meadows, Parker Creek, Warner Mts., 1650 m. alt., 1910, *Taylor & Bryant* (UC); Goose Lake Valley, 1884, *Austin* (UC); Milford, 1892, *Brandege* (UC); Mormon Bar, 1897, *Congdon 50* (G); Salmon Creek, Tulare Co., 2100 m. alt., *Hall & Babcock 5132* (UC); Nine Mile Creek, Tulare Co., *Culbertson 4537* (G, ISOTYPE of *C. incana*); Redrock Meadows, Tulare Co., 2610 m. alt., *Hall 8394* (UC). NEVADA: Reno, 1898, *Purpus* (UC); Dog Valley Road, 1895, *Hillman* (UC).

In northwestern United States, where this plant appears to be rather common, it is almost the only species of *Cryptantha* with conspicuous corollas. In the past it has been much confused with *C. ambigua* and *C. Torreyana*, although in fact it seems to be most closely related to *C. intermedia*. In Idaho it tends to intergrade with *C. Torreyana*, but over most of its range it is readily separated by its conspicuous corollas, commonly ternate spikes and usually tuberculate nutlets. Occasional plants are hard to separate from *C. ambigua* although *C. Hendersoni* is for the most part pretty easily recognized by its large-flowered, ternate spikes projected above the leafy mass of the plant. *Cryptantha intermedia* completely intergrades with *C. Hendersoni* in northern California, although the overwhelming mass of material of *C. Hendersoni* is readily distinguished from its relative by its less stiff and scarcely pungent pubescence, and broader tuberculate nutlets. It has been found expedient to admit considerable range of nutlet-variation in *C. Hendersoni*. Among plants quite similar in gross habit, and commonly from within a small natural region, the nutlets frequently (from plant to plant) vary from entirely smooth and shiny, to simply granulate or decidedly tuberculate. Roughly it can be said, however, that more of the northern than southern material is smooth-fruited. *Cryptantha incana* and *C. grandiflora* are names applied to the phase with smooth and shiny nutlets. The other names cited apply to forms with roughened fruit. *Cryptantha scabrella* was based on a phase of *C. Hendersoni* from southern Oregon in which the nutlets are papillate-muricate. *Cryptantha monosperma* has similar though less abundant and less well developed papillae, and appears to be a form in which only 1 or 2 nutlets develop. The aborted nutlets appear to be the abaxial ones.

37. **C. Traskae**, sp. nov., pumila sparse laxaque ramosa 8-10 cm. alta; caulibus gracilibus strigosis ca. 1 mm. crassis; foliis paucis linearibus 1-2 cm. longis 1-1.5 mm. latis acutis strigosis rare hispidis inconspicue pustulatis; spicis solitariis vel geminatis 1-5 cm. longis cum bracteis linearibus 2-5 mm. longis numerosis ornatis; floribus obscure biseriatis maturitate 5-10 mm. separatis; corolla inconspicua ca. 1.5

mm. lata; calycibus fructiferis ovatis subsessilibus deciduis 2-3 mm. longis; lobis calycis maturi lanceolatis saepe acutis in costa cum setis flavescens brevibus horridis et in marginibus adpresse hispidis; nuculis 4 homomorphis ovatis vel anguste ovatis vix 1.5 mm. longis minutissime granulatis apicem versus plus minusve tuberculatis dorso convexis margine obtusis ventre $\frac{3}{4}$ longitudinis ad gynobasim angustam ca. 0.9 mm. longam adfixis; sulcis clausis basi in areolam minutam deltoideam dilatatis; stylo nuculas vix superante.

Known only from San Nicolas Island off the Californian coast.

CALIFORNIA: one locality, bare windswept cliffs, San Nicolas Island, April, 1901, *Trask* (G, TYPE); infrequent on bare windswept heights, April 1897, *Trask 57* (UC).

This endemic of San Nicolas Island was reported by Eastwood, Proc. Calif. Acad. Sci. ser. 3, i. 109 (1898), as *C. Torreyana*. It is evidently quite distinct from that species in its low habit, pubescence, bracteate inflorescence and small tuberculate nutlets. In habit it somewhat suggests *C. leiocarpa*. Its nutlets are about the same size and shape as those of that species, but differ in being tuberculate and in having a broadly forked groove and a small areola.

38. **C. Torreyana** (Gray) Greene. Commonly scantily and more or less strictly branched hispid herb, 1-4 dm. tall; stems solitary or frequently several, usually inconspicuously short-strigose as well as hispid; leaves oblanceolate or linear, strict or ascending, 2-5(-7) cm. long, 3-6(-8) mm. wide, obtuse or rounded, hispid, inconspicuously pustulate if at all so; spikes usually geminate, naked, 4-8(-15) cm. long, more or less projected from the leafy mass of the plant, very elongate and loosely flowered or congested and glomerate; corolla inconspicuous, ca. 1 mm. broad; fruiting calyces oblong-ovate or ovate-lanceolate, 2-7 mm. long, ascending, asymmetrical, base rounded or broadly conic, pedicels ca. 0.5 mm. long; mature calyxlobes lanceolate to lance-linear, connivent above with tips usually spreading, midrib slightly thickened and hispid-hirsute, margins hispid-strigose; nutlets 4 (occasionally 1 or more aborted), usually broadly ovate, 1.5-2.2(-2.5) mm. long, 0.8-1.3 mm. broad, smooth and polished, usually mottled, rarely finely granulate, back very low-convex, sides rounded or obtuse, groove broadly forked below and closed throughout; gynobase about $\frac{1}{2}$ height of nutlets, ca. 1 mm. tall; style reaching to $\frac{2}{3}$ height of nutlets or rarely even to their tips.—*Pittonia* i. 118 (1887).

Var. **genuina**. Fruiting calyx 3.5-8 mm. long; style clearly surpassed by nutlets; plants usually over 2 dm. tall, not conspicuously

hispid.—*Krynitzkia Torreyana* Gray, Proc. Am. Acad. xx. 271 (1885).
C. Torreyana Greene, l. c. *K. Torreyana*, var. *calycosa* Gray, l. c.
C. Torreyana, var. *calycosa* Greene, l. c. 119. *C. calycosa* Rydb.
 Mem. N. Y. Bot. Gard. i. 331 (1900). *C. affinis*, var. *flexuosa* Nels.
 Bot. Gaz. xxx. 195 (1900). *C. flexuosa* Nels. New Man. Bot. Cen.
 Rocky Mt. 416 (1909).

Extreme western Wyoming and northern Utah, westward to Washington and California, and northward through British Columbia to southern Alaska.

ALASKA: Skagway, *Macoun 78736* and *Eastwood 802* (G). BRITISH COLUMBIA: Lytton, 1885, *Fletcher*; dry ground, Spences Bridge, 1889, *Macoun* (G); Cascade, *Macoun 66580* (G). WYOMING: open dry slopes, Nez Perces Creek, *Nelson 6224* (G); under sagebrush, 32 km. west of Big Piney, *Payson 2628* (G); on cobblestone flat, Jackson Lake, *Nelson 6546* (G, UC, ISOTYPES of *C. affinis*, var. *flexuosa*); Teton Forest Reservation, 1897, *Brandegge* (UC); abandoned field, Alpine, *Payson & Armstrong 3392* (G); dry hillside, hills east of Afton, 1980 m. alt., *Payson & Armstrong 3324* (G). UTAH: waste sandy ground, Juab, *Goodding 1068* (G, UC); dry plains, Red Butte Canyon, *Garrett 1869* (G); Dry Canyon near Salt Lake City, 1908, *Clemens* (G); dry gravelly soil, Peterson, Weber River, 1950 m. alt., *Pammel & Blackwood 3895* (G). IDAHO: slightly moist shady slopes, Salmon, 1350 m. alt., *Payson 1756* in pt. (G); dry soil, St. Anthony, *Merrill & Wilcox 842* in pt. (G); arroyos, Pocatello, *Henderson 4877* (G); dry lands, Montpelier, *Macbride 1690* (G); moist grassy bottoms, Ketchun, 1764 m. alt., *Nelson & Macbride 1215* (G); about Lake Waha, *Heller 3255* (G); moist ground, Moscow, 1899, *Henderson* (G); valley of North Fork of Coeur d'Alene River, 930 m. alt., *Leiberg 1539* (G, UC); near Juliaetta, *Sandberg, MacDougal & Heller 351* (G); lava rock hillside, Tamarack, 1260 m. alt., *Clark 165* (G); Palouse Country, *Henderson 2811* in pt. (G); Snake Country, *Burke* (G); slopes, loose soil, Silver City, 2100 m. alt., *Macbride 373* (G). WASHINGTON: Sprangle, *Piper 4140* (G); Clark Springs, *Kreager 93* (G); Cheney, *Tucker 127* (G); Pullman, *Piper 1945* (G); Kamiak Butte, *Piper 3091* (G); Rock Lake, 540 m. alt., *Sandberg & Leiberg 121* (G, UC); dry stony hillsides, Blue Mts., 1897, *Horner* (G); dry hillsides along Touchet River, Blue Mts., *Horner 380* (G); open woods, Falcon Valley, *Suksdorf 789* (UC); Falcon Valley, *Suksdorf 593* (G); western Klickitat County, 1886, *Suksdorf* (G); Yakima Region, 1882, *Brandegge* (UC). OREGON: hillsides near Snake River, *Cusick 1913* (G, UC); dry ground, Rock Creek, 10 km. west of Haines, *Peck 3609* (G); dry woods on West Fork, *Peck 1369½* and *1416* (G); Pelican Bay, *Copeland 3481* (G); Klamath Falls road, 41 km. east of Ashland, *Peck 9295* (G); dry stony hilltop 3.2 km. southeast of Klamath Falls, *Peck 9447* (G); Grant Pass, *Piper 5044* (G). NEVADA: steep dry hillsides, Bieroth's Ranch, McDonald Creek, 1950 m. alt., *Nelson & Macbride 2151* (G); East Humboldt Mts., 2100 m. alt., *Watson 858* (G, UC); near Carson City, 1866, *Anderson 12* (G); Sprucemont, *Jones 6838* (UC); Incline Road, Lake Tahoe, 1890 m. alt., *Kennedy 1428* (UC); Peavine Foothills, 1895, *Hillman* (UC); foothills near Peterson's Ranch, Truckee Valley, 1894, *Hillman* (UC). CALIFORNIA: Hupa Indian Reservation, 150 m. alt., *Chandler 1303* (G, UC); Supply Creek, Hupa Valley, *Davy & Blasdale 5730* (UC); Kneeland Prairie, 750 m. alt., *Tracy 3071* (UC); High Prairie on Bald Mt., 1650 m. alt., *Tracy 4560* (UC); Afton, 30-90 m. alt., *Tracy 3655* (UC); open places on brushy slopes, 1650 m. alt., *Tracy 3944* (UC); dry hillside at Alder Point on Eel River, 150 m. alt., *Tracy 1879* (UC); Eel

River, 1893, *Blankinship* (UC); Ukiah, *Bolander 3916* (UC); gravelly slope about 16 km. east of Alder Springs, *Heller 11450* (UC); gravelly places, Alder Springs, 1260 m. alt., *Heller 12759* (G); gravel near trees, between Bartlett and Allen Springs, *Heller 12372* (G); Kelsey, 1889, *K. Brandegee* (UC); Camp Badger, 1892, *Holway* (UC); Snow Mt., 1892, *K. Brandegee* (UC); among chaparral, 10 km. northwest of Lakeport, *Tracy 1653* and *1731* (UC); moist shady ground, Lake County, *Rattan 42* (G); Napa Valley, *Torrey 330* (G); brushy places near stream, 13 km. above Ruth, Trinity Co., *Tracy 4301* (UC); Yreka, *Heller 7995* (G, UC); dry land near Yreka, *Butler 762* and *1310* (UC); Sisson, 1887, *Brandegee* (UC); Sisson, 1902, *Setchell & Dobie* (UC); Ager, 1887, *K. Brandegee* (UC); Fort Bidwell, *Manning 160* (UC); red gravelly hillside, Modoc Co., 1893, *Baker* (UC); Montgomery Creek, Shasta Co., *Eastwood 622* (G); Burney, *Eastwood 689* (G); Battle Creek Meadows, Lassen Butte Region, *Eastwood 1894* (G); Pine Creek, Lassen Co., 1894, *Baker & Nutting* (UC); ridge east of Red Clover Valley, Plumas Co., *Heller & Kennedy 8718* (G); Red Clover Valley, *Heller & Kennedy 8754* (G, UC); Prattville, *Heller & Kennedy 8773* (G, UC); open places in the chaparral near Cohasset, *Heller 11912* (G); open places in pine forest, Butte Meadows 1380 m. alt., *Heller 12818* (G); edge of forest about Chico Meadows, 1200 m. alt., *Heller 11642* (G); lower end of Donner Lake, *Heller 6888* (G, UC); Donner, 1889, *Brandegee* (UC); Truckee, 1913, *K. Brandegee* (UC); Placer County, 1892, *Carpenter* (UC); Angel Canyon, Calaveras Co., *Davy 1476* (UC); Yosemite Valley, *Torrey 337* (G); Yosemite Valley, *Bolander 6283* (UC); Yosemite Valley, *Hall 9168* (UC); Mariposa Big Tree Grove, 1893, *Eastwood* (UC); Mt. Bullion, 1889, *Congdon* (G); Sherlock's, *Congdon* (G, UC); Agua Fria Mt., 1898, *Congdon* (UC); Bloody Canyon, Mono Co., 1889, *Chestnut & Drew* (UC); Lost Valley, South Fork of San Joaquin River, 2280 m. alt., *Hall & Chandler 650a* in pt. (UC); Natural Bridge of Volcano Creek, 2250 m. alt., *Hall & Babcock 5439* (G, UC); Volcano Creek, *Culbertson 4327* (G); Old Colony Mill, Tulare Co., 1905, *K. Brandegee* (UC); Poso Creek, Greenhorn Range, *Hall & Babcock 5014* (G).

Var. **calistogae**, var. nov., varietatem genuinam simulans differt stylo nuculis subaequilongo vel rare eis longiore.

Vicinity of Calistoga, California, in the southern part of the North Coast Ranges.

CALIFORNIA: bushy hillside near Calistoga, 120 m. alt., *Tracy 1865* (UC); hills east of Calistoga, 240 m. alt., *Tracy 2094* (TYPE, U. C. Herb. no. 175,784); Santa Rosa Creek Canyon, *Baker 620* (UC); ? La Honda, 1890, *Brandegee* (UC).

Var. **pumila** (Heller), comb. nov. Fruiting calyx 2–3.5 mm. long; style shorter than nutlets; plant usually rather conspicuously hispid-hirsute, usually under 2 dm. tall.—*C. pumila* Heller, Muhl. ii. 242 (1906).

Middle Coast Ranges of California from Marin to Santa Clara County.

CALIFORNIA: Mt. Tamalpais, *Heller 8403* (G, ISOTYPE of *C. pumila*); Mt. Tamalpais, 1894, *Eastwood* (G); Tamalpais, 1893, *Brandegee* (UC); in brush at Sugar Loaf Peak, Berkeley Hills, 300 m. alt., *Tracy 2060* (G, UC); in shade, Strawberry Canyon, 150 m. alt., *Tracy 793* and *2054* (UC); wooded slope,

Smith Creek at foot of Mt. Hamilton, *Heller 8588* (G); foothills west of Los Gatos, *Heller 7458* (G, UC); shady hillside, Searsville, *Bolander 39* (G); without locality, *Kellogg & Harford 770* (G).

This species is at once the most widely distributed and the most northerly ranging of all the North American species. It has been generally accepted and well understood, being readily recognized by its erect loosely branched rather slender habit and broadly ovate smooth nutlets. Although it may intergrade with *C. Hendersoni*, possible intergrades are few and the ranges of the two species are such as to suggest specific difference. *Cryptantha Torreyana* differs from *C. Hendersoni* in having much smaller corollas, prevailingy geminate rather than ternate spikes, and always smooth rather than smooth or tuberculate nutlets. Except in California and Alaska *C. Torreyana* occurs in the dryish interior east of the high mounains, whereas *C. Hendersoni*, while occurring east of the mountains, is very common in the moister valleys of western Oregon and Washington.

Piper, *Contr. U. S. Nat. Herb.* xi. 484 (1906), has given the type locality of *C. Torreyana* as "Grassy hills near San Luis Rey, California," which is a locality quite beyond the known range of the species and in a region in which it is not to be expected. I have been unable to locate in the Gray Herbarium a collection of this species made by Torrey at the locality mentioned. There appear to have been only two of Torrey's collections of this species available to Gray. Gray based his species on a number of specimens and had no "type" in mind. If a type must be selected it seems better to choose either *Torrey 330* from Napa Valley, or preferably *Torrey 337* from Yosemite Valley since the latter is more characteristic of the species.

Most recent botanists, following Gray, have maintained the variety *calycosa*, a variation distinguished by its glomerate spikes and usually elongate calyx-lobes. This variation occurs throughout the range of the species, and although an obvious sort of variety seems to be a trivial one better treated as a mere *forma* or phase of the species worthy of no particular nomenclatorial attention.

In California the typical form of the species pushes southward along the length of the Sierra Nevada, the most southerly undoubted station being in Tulare County. In the herbarium of the University of California there is a specimen of *C. Torreyana* labeled as having been collected by G. F. Reinhardt in the San Jacinto Valley of Riverside County in Southern California. The data accompanying this specimen I doubt, since no other of the numerous collectors visiting the San Jacinto Valley has detected the species, and since the hot plains

and buttes about San Jacinto seem scarcely a likely locality for the southern outpost of a species which over most of its range in California is confined to the mountains and chiefly to the pine belt.

In the Coast Ranges of California the species occurs in its typical form as far south as Lake and Napa counties. Just south of these counties it is replaced by var. *calistogae* and var. *pumila*. Over its extensive range *C. Torreyana* is very constant in having styles evidently shorter than the nutlets. This condition is departed from in the available material from the vicinity of Calistoga, Sonoma County, California; the styles in this material clearly reaching to or slightly beyond the nutlet-tips. To this variation, because of its geographical correlation, the varietal name *calistogae* has been applied. The var. *pumila* is of different character. In the Middle Coast Range the plants representing *C. Torreyana* are more hispid and smaller in all parts. This plant has been confused with *C. leiocarpa* but is quite distinct, for, like the typical *C. Torreyana*, it differs in its broadly ovate nutlets, shorter style, and ebracteate spikes. Macbride, Contr. Gray Herb. n. s. xlviii. 43 (1916), confused the plant with *C. hirsutissima*, a close relative of *C. leiocarpa*. From *C. hirsutissima* the variety differs in its broad nutlets, somewhat shorter style, and different habit. Although the plant was described as a distinct species by Heller it is at most a weak geographical variety of *C. Torreyana* and perhaps not worthy of recognition at all.

39. **C. simulans** Greene. Erect strigose pallid herb with few strictly ascending branches, 1.5–3(–4.5) dm. high; scantily and loosely strigose or below rarely shortly and loosely appressed-hispid; leaves not numerous, oblanceolate or oblance-linear, 2–5(–7.5) cm. long, 2–5(–7) mm. wide, strigose, pustulate (especially the lower ones), frequently extending into the lowermost part of the spikes; cotyledons and early leaves frequently persistent at anthesis; spikes solitary or frequently geminate or ternate, slender, usually elongate and sparsely flowered but at times glomerate; corolla inconspicuous, ca. 2 mm. broad; fruiting calyx 3–8 mm. long, oblong-ovate, slightly asymmetrical, strict or ascending, obscurely biserial, base rounded or broadly conic, pedicels ca. 0.5 mm. long; mature calyx-lobes lance-linear, connivent above with the green tips spreading, midrib slightly thickened and shortly arcuate-hirsute, margins white villous-hispid; nutlets 4, homomorphous, broadly ovate, 2–2.5 mm. long, 1–1.5 mm. broad, densely granulate or granulate-muriculate, sparsely broad-tuberculate, back low-convex, margins rounded, groove broadly forked below and usually closed throughout; gynobase ca. 1–1.5 mm. high; style reaching to about $\frac{3}{4}$ – $\frac{4}{5}$ height of nutlets.—*Pittonia* v. 54 (1902).

In the pine forests from southern Oregon to Southern California, and local in northern Idaho and middle southern Washington.

IDAHO: dry pine woods, Mt. Moscow, *Henderson 2811½* (G). WASHINGTON: open woods, Falcon Valley, *Suksdorf 46* and *595* (G), *181* (UC). OREGON: Klamath Valley, 1260 m. alt., 1864, *Cronkhite* (G); summit of Cascade Mts., along Ashland-Klamath Falls road, *Peck 9264* (G); without locality, 1883, *Howell* (UC). NEVADA: Incline Road, Lake Tahoe, 1890 m. alt., *Kennedy 1446* (UC); Kings Canyon, Ormsby Co., 1700-2000 m. alt., *Baker 1194* (G, UC); Dog Valley Road, 1895, *Hillman* (UC); log railroad north of Verdi, 1590 m. alt., *Heller 10873* (G, UC). CALIFORNIA: in coniferous forests near Sisson, *Heller 8035* (G); Goose Valley, *Eastwood 765* (G); Milford, 1892, *Brandege* (UC); Prattville, *Heller & Kennedy 8776* (G); Prattville, 1892, *Brandege* (UC); American River at Strawberry, 1650 m. alt., *Hall 11388* (G); Truckee, *Heller 7060* (G, UC); Placer County, 1892, *Carpenter* (UC); Jackson, 1892, *Hansen* (UC); beneath pines in vicinity of Hog Ranch, Yosemite Park, *Hall & Babcock 3318* and *3444* (UC); Hog Ranch above Hetch-Hetchy, *Congdon 51* (G); Yosemite Valley, 1200-1350 m. alt., *Abrams 4379* (UC) and *4471* (G, UC); Fortman Mt., Mariposa Co., 1885, *Congdon* (UC); Mt. Buckingham, 1898, *Congdon* (UC); Calaveras Big Tree Groove, 1891, *Brandege* (UC); foothills of Fresno County, 900 m. alt., *Hall & Chandler 56* (UC); Jordan Hot Springs on Nine-mile Creek, 2010 m. alt., *Hall 8393* (UC); Giant Forest, 1905, *Brandege* (UC); Sequoia Mills, 1892, *Brandege* (UC); Sportsman Hall, Fyffe P. O., 20 km. above Placerville, *K. Brandege* (UC); Region of Tehachapi Peak, *Dudley 347* (UC); open pine woods, Mt. Wilson, *Abrams 2578* (G, UC); Swarthout Canyon, 1800 m. alt., 1900, *Hall* (UC); Lytle Creek Canyon, 1725 m. alt., 1899, *Hall* (UC); Lytle Creek Canyon, 1725 m. alt., *Hall 1230* (UC); on dry gravelly canyon-floor, Coldwater Fork of Lytle Creek, 1725 m. alt., *Johnston 2035* (G); dry rocky ground under pines, Icehouse Canyon, 1650 m. alt., *Johnston 2035* (G); San Bernardino Mts., 1800 m. alt., 1899, *Hall* (UC); brushy places, Tahquitz trail above Idyllwild, 2100 m. alt., *Spencer 2117* (G); Onstatt Valley, 1500 m. alt., 1901, *Hall* (UC); Cuyamaca Peak, 1894, *Brandege* (UC); Southern California, 1880, *Wright 11* (G); southeastern California, 1876, *Parry & Lemmon 279½* (G); Southern California, 1888, *Palmer 41* (G).

This readily recognized species, so characteristic of the Yellow Pine forests of California, has passed as *C. ambigua*, although very different from the low hispid plant of the Northwest properly bearing that name. The pallid strigose pubescence and the broad granulate and tuberculate nutlets readily distinguish it from *C. Torreyana* with which it grows and somewhat approaches in habit.

40. **C. ambigua** (Gray) Greene. Ascending hirsute herb 1-2.5 dm. tall; stems usually loosely branched from the base, hirsute and somewhat short-strigose; leaves narrowly lanceolate to linear, 2-3(-5) cm. long, 1-4(-5) mm. broad, obtuse or subacute, usually somewhat appressed hispid-hirsute, commonly inconspicuously pustulate; spikes usually solitary, 5-15 cm. long, naked or with the lowermost flowers bracted, commonly not projected clear of the leafy mass of the plant and usually not sharply differentiated from the leafy peduncular

branches; corolla inconspicuous, 1–2 mm. broad; fruiting calyces ovate-oblong or oblong, 4–7 mm. long, slightly asymmetrical, spreading, crowded or distant and obscurely biserial, base rounded or broadly conic; pedicels 0.5–0.9 mm. long; mature calyx-lobes linear or lance-linear, usually more or less connivent above, midrib slightly thickened and tawny hirsute, margins evidently short strigose-villous, nutlets 4, broadly ovate, 1.6–2 mm. long, granulate and coarsely tuberculate or very rarely tending to be smooth especially towards base, back low convex, sides obtuse and rounded, groove closed or rarely somewhat dilated but always broadly forked at base; gynobase narrow, 1–1.2 mm. long, $\frac{2}{3}$ height of nutlets; style reaching $\frac{4}{5}$ – $\frac{5}{5}$ height of nutlets.—*Pittonia* i. 113 (1887). *Eritrichium muriculatum*, var. *ambiguum* Gray, Synop. Fl. N. Am. ii. pt. 1, 194 (1878). *Krynitzkia ambigua* Gray, Proc. Am. Acad. xx. 273 (1885). *Eritrichium muriculatum* of Torr. Bot. Wilkes Exped. 416, t. 13 (1874). *C. polycarpa* Greene, *Pittonia* i. 114 (1887). *C. multicaulis* Nels. Bot. Gaz. xxx. 194 (1900).

Southern Washington to southwestern Montana and thence southward to northern Colorado, extreme western Nevada and northeastern California.

MONTANA: mountains near Indian Creek, *Rydberg & Bessey 4885* (G); Spanish Basin, *Rydberg & Bessey 4886* and *4887* (G); canyon from Rose Hole to Bitterroot Valley, *Watson 286a* (G, UC); Bridger Mts., *Rydberg & Bessey 4889*. WYOMING: on dry loose soil of a road-grade, Snake River, *Nelson 6440* (G, ISOTYPE of *C. multicaulis*); on steep slopes of river-bank, Yellowstone River near Junction Butte, *Nelson 5761a* (G); under granite cliff, Cow Creek, Albany Co., *Nelson 8888* (G); dry loose soil, Centennial, *Nelson 8731* (G). COLORADO: mountain side near Georgetown, 1885, *Patterson* (G). IDAHO: roadside, Bear Creek below Parker Mt., 1800 m. alt., *Macbride & Payson 3305* (G); sagebrush covered hillside, Corral, 1650 m. alt., *Macbride & Payson 2936* (G); abandoned field, Martin, 1800 m. alt., *Macbride & Payson 3044* (G); dry hills, Castle Rock, 1500 m. alt., *Macbride & Payson 2861* (G); Boise, 1892, *Mulford* (G); dry soil, 1650 m. alt., Twilight Gulch, *Macbride 465* (G); loose dry soil, House Creek, *Nelson & Macbride 1773* (G); dry soil, St. Anthony, *Merrill & Wilcox 842* in pt. (G). UTAH: Thistle, 1590 m. alt., *Jones 5370* (UC). NEVADA: upper end of Star Valley near Deeth, 1680 m. alt., *Heller 9074* (G); Franktown, 1500 m. alt., *Heller 9794* (G); Galena Creek, 2400 m. alt., *Kennedy 1293* (UC); Lake Washoe, *Torrey 335* (G); Palisade, 1903, *Stokes* (UC). WASHINGTON: north of Brickleton, *Suksdorf 406* (G); White Salmon, *Suksdorf 594* (G); Klickitat, *Howell 337* (G); Walla Walla Region, 1883, *Brandegge* (UC); Washington Territory, 1883, *Brandegge 994* (G). OREGON: dry ground, Sisters, *Peck 3607* (G); Bend, *Nelson 851* (G, UC); dry slope along Des Chutes River 8 km. below Bend, *Peck 9710* (G); Stein's Mt., *Howell 498* and *499* (G); in sagebrush, Swan Lake Valley, *Applegate 370* (G). CALIFORNIA: Portola, *K. Brandegge* (UC); lake shore, Modoc Co., *Austin & Bruce 2267* (UC); ice pond below Truckee, 1887, *Sonne* (UC, ISOTYPE of *C. polycarpa*).

In the past this species has been greatly confused and the name has been used in a variety of applications. The plant treated here is that figured and described by Torrey in the Botany of the Wilkes Expedition, 416, t. 13 (1874), since Gray appears to have based his *Eritrichium muriculatum*, var. *ambiguum* largely upon Torrey's plate and description. Torrey gives his plant as from Nisqually, but since it represents a species characteristic of the dry interior of Washington it seems likely that, as with other material collected by the Wilkes Expedition, the data had become confused and the plant was probably collected in the Walla Walla Region of southeastern Washington, cf. Piper, Contr. U. S. Nat. Herb. xi. 15 (1906).

Although usually distinguishable by its habit, *C. ambigua* approaches *C. Kelseyana* and *C. Pattersoni* very closely in Idaho and Wyoming, and is occasionally distinguishable from them only with difficulty. Doubtful intermediate plants with homomorphous or subhomomorphous nutlets I have referred to *C. ambigua* even though some so referred have one nutlet subpersistent and occasionally somewhat less tuberculate than the others. Some plants from Idaho referred to *C. ambigua* have nutlets smooth quite like those of *C. Torreyana*. These plants are so referred because their habit is that of *C. ambigua*. *Cryptantha Hendersoni* usually agrees with *C. ambigua* in the size, shape and roughenings of the nutlets, but has a very different habit and inflorescence.

41. ***C. echinella*** Greene. Usually low and loosely branched hispid herb 5–20 or rarely 40 cm. tall; stems short-hispid, sparsely branched; leaves oblanceolate or oblance-linear, 1–2.5(–4.5) cm. long, 1–4(–6) mm. broad, obtusish, appressed-hispid, minutely pustulate, not numerous; spikes solitary or at times geminate, 1–5 cm. long, slender, commonly leafy-bracted towards base; corolla inconspicuous, 1–1.8 mm. broad; fruiting calyx oblong-ovate, 5–6 mm. long, deciduous, spreading, obscurely biseriate; pedicels 0.1–0.5 mm. long; mature calyx-lobes linear-lanceolate, connivent above and usually recurved, midrib slightly thickened and pale-tawny hirsute, margins appressed short-hispid; nutlets 4, homomorphous, broadly ovate, 2–2.2 mm. long, more or less finely granulate, conspicuously and narrowly papillate, back convex, margin rounded, groove very narrow or closed and widely forked at base; gynobase about $\frac{2}{3}$ height of nutlets; style shortly but definitely surpassed by tips of nutlets.—*Pittonia* i. 115 (1887).

Central Sierra Nevada to the mountains of Southern California and the Charleston Mts. of southern Nevada.

NEVADA: Densmore Camp, Hunte Creek Canyon, 1800 m. alt., *Kennedy 1606* in pt. (UC); Peterson's Ranch near Reno, 1894, *Hillman* (UC); Peavine Foothills, 1895, *Hillman* (UC); Charleston Mts., *Purpus 6077* (UC). CALIFORNIA: Mt. Stanford, 2640 m. alt., 1886, *Sonne* (UC, ISOTYPE); Castle Peak near highest point, *Heller 7079* (G); Tahoe, 1901, *Boring* (UC); Lake Tahoe Region, 1901, *Setchell & Dobie* (UC); Luthers Pass, 2340 m. alt., *Abrams 4759* (G); Yosemite Valley, 1200-1350 m. alt., *Abrams 4379* in pt. (G); dry situations, Yosemite Valley, *Brewer 6284* (UC); Alta Meadows, 1905, *K. Brandegee* (UC); Andrews Camp above Bishop, 1913, *K. Brandegee* (G, UC); sawmill, Mt. Pinos, 2490 m. alt., *Hall 6523* (UC); rocky ground under pines, Prairie Fork of San Gabriel River, 2100 m. alt., *Johnston 2071* (G); on flats, Kelly's Cabin, Ontario Peak, 2460 m. alt., *Johnston 1620* (G, UC); dry ridge east of Ontario Peak, 2520 m. alt., *Munz 6076* (UC); Coldwater Fork of Lytle Creek, 1725 m. alt., *Johnston 2057* in pt. (G); Mare Flat, 2400 m. alt., *Crawford 934* (G); Little Green Valley, 2160 m. alt., *Hall 24* (UC).

This characteristic species has been greatly misunderstood, and repeatedly confused with *C. ambigua* and *C. intermedia*. It grows in dry sunny clearings in the Yellow Pine belt of the California mountains usually in the company of *C. simulans*, *C. affinis* and *C. Torreyana*.

Ser. X. MOHAVENSES. Nutlets 4, smooth, oblong-ovate or lanceolate-ovate or lanceolate, clearly angled at the sides, decidedly homomorphous; style usually equalling height of nutlets or shorter than latter. *

Corolla conspicuous; style clearly surpassing the nutlets, these 2-2.5 mm. long.....42. *C. mohavensis*.
Corolla inconspicuous; style about equalling the nutlets in height or a trifle surpassed by them; nutlets 1.2-2 mm. long.....43. *C. Watsoni*.

42. **C. mohavensis** Greene. Ascendingly branched herb 1-4 dm. tall; stems usually freely branched, short-hispid to hispid strigose; leaves linear or lance-linear, 1-4 cm. long, 1-3 mm. broad, appressed-hispid or strigose, minutely and densely pustulate, obtusish, upper ones reduced; spikes ternate or geminate, usually crowded, 2-6 cm. long, naked; corolla conspicuous, 4-7 mm. broad; fruiting calyces oblong-ovate, 3-5 mm. long, ascending, becoming obscurely biserial, symmetrical, base rounded, deciduous, pedicels ca. 0.5 mm. long; mature calyx-lobes lanceolate, connivent above, midrib somewhat thickened and frequently sparsely hirsute, margins usually more or less silky strigose; nutlets 4, homomorphous, smooth and shiny, rarely obscurely granulate, oblong-ovate or lance-ovate, 2-2.5 mm. long, back low-convex or flattish, margins definitely angled especially towards the apex, groove closed above but forked below and opened at the fork to form a small triangular areola; gynobase columnar-subulate, about $\frac{3}{4}$ height of nutlets; style clearly surpassing tips of