

apex, 2 mm. long, strongly incurved, transverse rugae usually prominent, forming rectangular finely papillate intervals; scar medial, annular, and usually slightly raised.

Plains and hillsides, in gravelly adobe or even alkaline soils, Upper Sonoran Zone; Sierra Nevada foothills, Siskiyou County, Sacramento Valley and the South Coast Ranges from Contra Costa County, southward to San Diego County and the Channel Islands, California. Type locality: "In arenosis vallis Sacramento." Collected by Hartweg on his trip from Sacramento to Chico. March-May.

10. *Plagiobothrys Torreyi* A. Gray. Torrey's Popcorn Flower. Fig. 4261.

Eritrichium Torreyi A. Gray, Proc. Amer. Acad. 10: 58. 1874.

Plagiobothrys Torreyi A. Gray, Proc. Amer. Acad. 20: 284. 1885.

Cryptantha Torreyi Rydb. Mem. N.Y. Bot. Gard. 1: 331. 1900.

Plagiobothrys Torreyi var. *diffusa* I. M. Johnston, Contr. Gray Herb. No. 68: 71. 1923.

Stems slender, 1 to several from the base, sometimes few-branched and erect or ascending but usually diffusely branched and decumbent, 5-20 cm. long, hirsute with spreading hairs. Leaves linear-oblong to oblong or the uppermost oblong-ovate, sessile, 5-20 mm. long, the basal narrowed at base often longer, green, rather sparsely hirsute-hispid on both sides; flowers solitary in the axils of foliaceous bracts; calyx 2.5 mm. long in fruit, hirsute and sparsely hispid; corolla 1.5-2 mm. long, equaling or exceeding the calyx-lobes; nutlets shining, broadly ovoid, abruptly pointed at apex, keeled on the back but faintly so below the middle, the sides with about 7 low ridges with narrow sinuses between them, smooth or with few scattering whitish tubercles.

Usually in moist soils, open woods or edges of mountain meadows, Arid Transition and Canadian Zones; central and southern Sierra Nevada and San Bernardino Mountains, California. Type locality: Yosemite Valley. May-Aug.

11. *Plagiobothrys shastensis* Greene. Shasta Popcorn Flower. Fig. 4262.

Plagiobothrys shastensis Greene ex. A. Gray, Proc. Amer. Acad. 20: 285. 1885.

Stems erect, 1 to few arising from the tuft of basal leaves, simple or branching above, 1-3 dm. high, pilose. Basal leaves linear-oblongate, 1-3 cm. long, rather thinly appressed-hirsute above, or rather densely so near the margin, the hairs pointed at apex, pustulate at base, lower surface glabrous or nearly so; cauline leaves linear, sessile, 5-10 mm. long, rather densely appressed-hirsute; spikes often geminate, loosely flowered, 1-10 cm. long, bracteate throughout; calyx cleft to the middle, about 4 mm. long in flower, 6-7 mm. in fruit, hirsute, often ferruginous when young; corolla 2.5 mm. broad, lobes 1 mm. long, ascending; nutlets broadly ovoid, somewhat 4-angled, abruptly acute, 2-2.5 mm. long, shining, keeled on the back and on the lateral angles, the intervals between the keels marked by broad flat transverse ridges separated by narrow line-like grooves.

Open hillsides and gravelly flats or washes, Upper Sonoran and Arid Transition Zones; a rather uncommon species occurring on both sides of the Cascades, southern Oregon to northern Inner Coast Ranges and Sierra Nevada, foothills to Merced County, California. Type locality: "California, in valley at the base of Mount Shasta, E. L. Greene, coll. 1876." An apparent duplicate of the type in the Dudley Herbarium is labelled in Greene's handwriting "Shasta River, Siskiyou Co. June 10, 1876." May-July.

12. *Plagiobothrys tenellus* (Nutt.) A. Gray. Slender Popcorn Flower. Fig. 4263.

Myosotis tenella Nutt. ex Hook. Kew Journ. Bot. 3: 295. 1851.

Plagiobothrys tenellus A. Gray, Proc. Amer. Acad. 20: 283. 1885.

Plagiobothrys parvulus Greene, Pittonia 3: 261. 1898.

Plagiobothrys asper Greene, op. cit. 262.

Plagiobothrys echinatus Greene, loc. cit.

Plagiobothrys colorans Greene, loc. cit.

Plagiobothrys humifusus M. E. Jones, Contr. West. Bot. No. 13: 7. 1910.

Plagiobothrys tenellus var. *parvulus* subvar. *humifusus* Brand, Pflanzenreich 4²⁶²: 108. 1931.

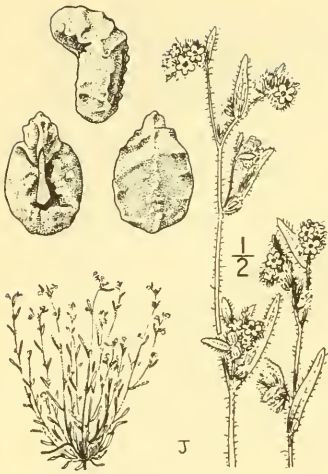
Stems slender, erect, freely branching from the base or sometimes simple, 5-25 cm. high, soft-villous with spreading and reflexed hairs. Leaves of the basal rosette oblong-lanceolate or oblong-oblongate, obtuse or acutish, villous, 1-2.5 cm. long, cauline distinct, the lower ones linear-oblong, the upper becoming lanceolate or ovate-lanceolate, gradually reduced in size; spikes elongated in age and loosely flowered, only the lowest flowers bracteate; calyx densely short-villous with whitish or more often rufous hairs, about 3 mm. high in age; corolla-limb about 2-3 mm. broad; nutlets 1.5-2 mm. long, thick-cruciform, light-colored, sharply ridged dorsally and on the margins, the ridges commonly tuberculate.

Grassy slopes and meadows, Arid Transition and Upper Sonoran Zones; British Columbia and Idaho south to northern Lower California, Utah and Arizona. Type locality: "Sunny rocky slopes of the mountains along the valley of Coeur d'Alaine River," Idaho. March-June.

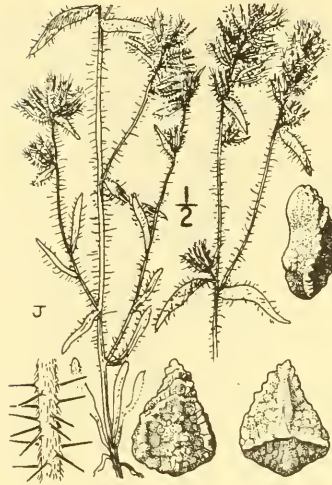
20. *EREMOCARYA* Greene, Pittonia 1: 58. 1887.

Small, hirsute-canescens, densely branched annual, the root imparting a deep purple stain. Leaves forming a rosulate basal tuft, the numerous racemose branches repeatedly dichotomous and leafy-bracted. Flowers in dense leafy-bracted racemes, with short filiform pedicels. Calyx 5-parted to the base, campanulate in fruit and persistent. Corolla white. Style persistent, becoming enlarged in fruit and broader than the capitate stigma. Gynobase columnar and simulating the style. Nutlets 4, erect and uniform, attached their whole length; groove open, little dilated at base. [Name Greek, meaning desert and nutlet.]

A monotypic genus of the arid southwestern United States and northwestern Mexico.



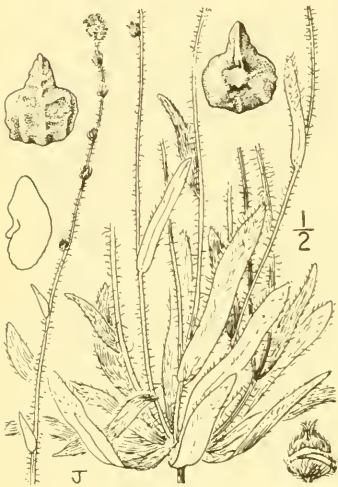
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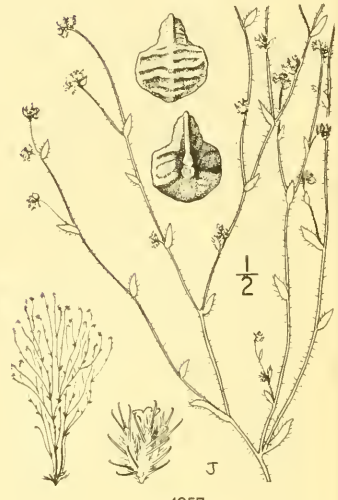
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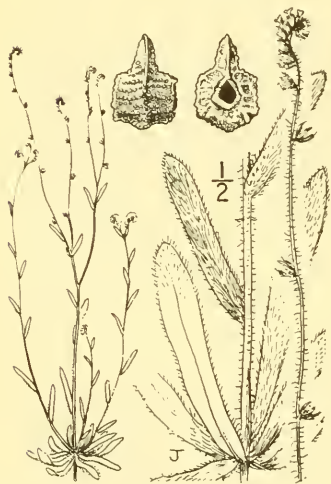
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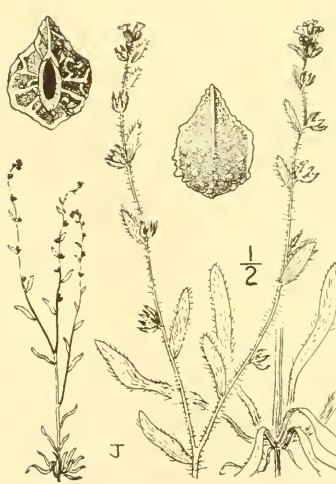
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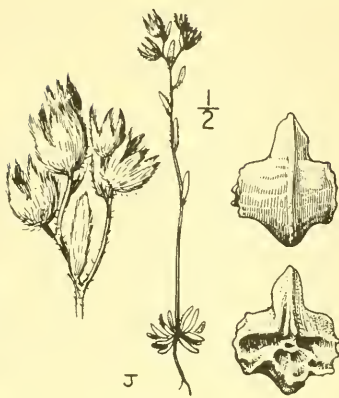
4252. *Plagiobothrys Kingii*
 4253. *Plagiobothrys Jonesii*
 4254. *Plagiobothrys hispidus*

4255. *Plagiobothrys arizonicus*
 4256. *Plagiobothrys nothofulvus*
 4257. *Plagiobothrys uncinatus*

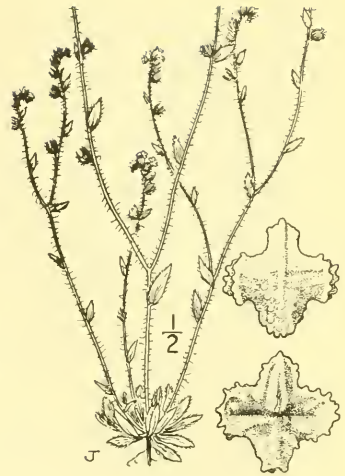
4258. *Plagiobothrys campestris*
 4259. *Plagiobothrys infectivus*
 4260. *Plagiobothrys canescens*



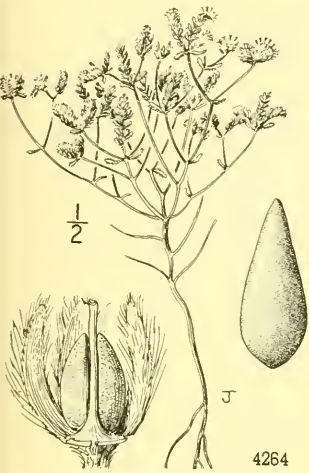
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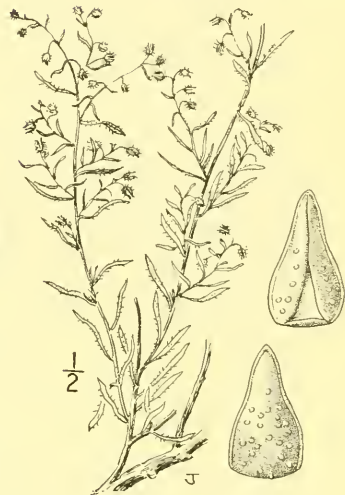
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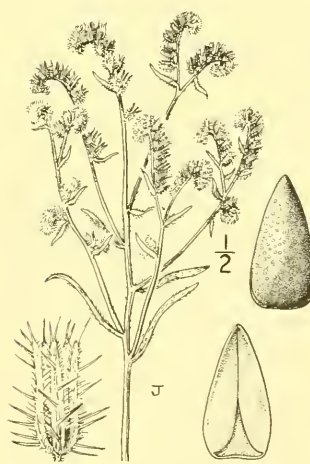
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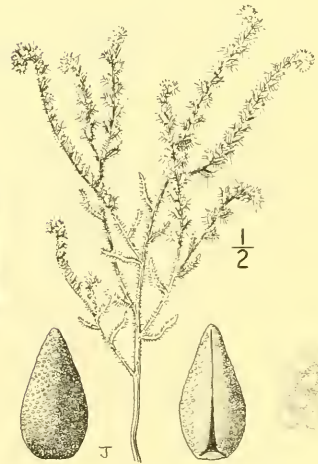
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4261. *Plagiobothrys Torreyi*
 4262. *Plagiobothrys shastensis*
 4263. *Plagiobothrys tenellus*

4264. *Eremocarya micrantha*
 4265. *Cryptantha holoptera*
 4266. *Cryptantha racemosa*

4267. *Cryptantha inaequata*
 4268. *Cryptantha costata*
 4269. *Cryptantha angustifolia*

1. *Eremocarya micrantha* (Torr.) Greene. *Eremocarya*. Fig. 4264.

Eritrichium micranthum Torr. Bot. Mex. Bound. 141. 1859.

Krynitzkia micrantha A. Gray, Proc. Amer. Acad. 20: 275. 1885.

Eremocarya micrantha Greene, Pittonia 1: 59. 1887.

Cryptantha micrantha I. M. Johnston, Contr. Gray Herb. No. 68: 56. 1923.

Annual, the root and usually the lower part of the stems purple-staining, 3–10 cm. high, the branchlets slender and more or less dichotomous, brownish beneath the light gray strigose pubescence. Leaves oblong-oblongate, 3–7 mm. long, whitish-strigose or short-hirsute; spikes numerous, leafy-bracted throughout, densely flowered and unilateral, rarely over 1 cm. long; flowers distinctly biserrate; corolla inconspicuous, the limb 0.5–1 mm. broad; fruiting calyx-lobes about 2 mm. long, oblong-lanceolate, erect, short-hispid; nutlets 4, 1–1.3 mm. long, smooth or tuberculate, 1 nutlet sometimes a little longer and more persistent than the others; groove extending to the apex of the nutlet, scarcely broadened at base; gynobase subulate, nearly as long as the calyx-lobes and bearing the sessile stigma at the apex.

Dry sandy soils, Sonoran Zones; Inyo County, California, south through the Mojave and Colorado Deserts and cismontane southern California to northern Lower California, east to Nevada, southern Utah, Arizona and southwestern Texas. Type locality: "Sand hills, Frontera, Texas, and in other places along the Rio Grande." March–June.

Eremocarya micrantha var. *lepida* (A. Gray) J. F. Macbride, 51: 545. 1916. (*Eritrichium micranthum* var. *lepdatum* A. Gray, Syn. Fl. N. Amer. 2: 193. 1878; *Eremocarya lepida* Greene, Pittonia 1: 59. 1887; *Cryptantha micrantha* var. *lepida* I. M. Johnston, Contr. Gray Herb. No. 68: 57. 1923; *Eremocarya Abramsiana* Brand, Pflanzenreich 42²: 77. 1931.) Plants a little more robust, commonly 8–15 cm. high; corolla 1.5–3.5 mm. broad. Mountain valleys, Arid Transition Zone; Mount Pinos, Ventura County, south through the mountains of southern California to northern Lower California. Type locality: "San Diego Co., D. Cleveland," but probably from the Laguna or Cuyamaca Mountains east of San Diego.

21. *CRYPTÁNTHA* Lehm. ex Fisch. & Mey. Ind. Sem. Hort. Petrop. 2: 35.

1836.

Mostly low, erect, branching, setose or hispid annual herbs with narrow alternate entire leaves and small white flowers in scorpioid bractless or bracteate spikes. Calyx 5-parted or 5-cleft, erect or spreading in fruit, at length deciduous. Corolla small, funnel-form, usually with 5 scales closing the throat. Stamens included; filaments short. Ovary 4-divided; style short; stigma capitate. Nutlets erect, rounded more or less on the back, obtuse, acute or winged on the margins, attached laterally to the conical or elongated receptacle; scar elongated. [Name Greek, meaning hidden flower; the original species had cleistogamous flowers.]

A New World genus of about 60 species, mainly western North America, but some also in western and southern South America. Type species, *Cryptantha glomerata* Lehm.

Surface of nutlets papillate, tuberculate or muricate, or sometimes when heteromorphous the odd nutlet smooth.

Lateral angles of nutlets sharply angled or knife-like or prominently winged.

Nutlets 4, triangular-ovate or triangular-oblong, homomorphic or heteromorphic; odd nutlet abaxial.

I. *Angustifoliae*.

Nutlets 1–4, lanceolate; lateral angles knife-like or distinctly winged; odd nutlet axial.

II. *Pterocaryae*.

Lateral angles of nutlets rounded or obtuse, not winged.

Nutlets heteromorphic, 1–4, the large nutlet axial and sometimes less roughened.

III. *Maritimae*.

Nutlets homomorphic, all alike or nearly so, normally 4, sometimes fewer by abortion even on the same plant.

Nutlets lanceolate to ovate-lanceolate, convex on the dorsal side.

IV. *Barbigerae*.

Nutlets ovate or triangular-ovate.

Dorsal side of nutlets obtuse and with at least a faint median ridge.

V. *Muricatae*.

Dorsal side of nutlets flat or low-convex, without median ridge.

VI. *Ambiguae*.

Surface of nutlets smooth and shining, their lateral angles rounded or obtuse.

Groove of nutlets median.

Hairs of calyx straight or soft and somewhat wavy, not encrusted or hooked; nutlets 1–4.

Dorsal side of nutlets low-convex or flat; nutlets 1–4, homomorphic.

Nutlets ovate to lanceolate, their lateral angles obtuse or rounded.

VI. *Ambiguae*.

Nutlets oblong-ovate to lanceolate, sharply angled on the sides especially toward the apex.

VII. *Mohavenses*.

Dorsal side of nutlets rounded-convex, lateral angles rounded or obtuse.

Nutlets lanceolate, nearly homomorphic, the axial one always present and slightly larger than the others.

Nutlets 1 or rarely 2.

VIII. *Graciles*.

Nutlets 4.

IX. *Ramulosissimae*.

Nutlets ovate or ovate-lanceolate, the abaxial one always present.

X. *Lciocarpae*.

Hairs of calyx-lobes arcuate or uncinat, and with a pallid incrustation; nutlet 1.

XI. *Flaccidae*.

Groove of nutlet eccentric, one side of nutlet on lower surface appearing as if somewhat deformed.

XII. *Affines*.I. *ANGUSTIFOLIAE*.

Lateral angles of nutlets distinctly winged; pedicels slender, 1–4 mm. long.

Nutlets broadly winged, homomorphic.

1. *C. holoptera*.

Nutlets narrowly winged, heteromorphic; plants flowering as an annual, but often persisting several years and suffruticose.

2. *C. racemosa*.

Lateral angles of nutlets knife-like or merely sharply acute; pedicels stout, very short, less than 1 mm. long.

Margins of lateral angles knife-like.

Nutlets heteromorphic.

3. *C. inaequata*.

Nutlets homomorphic.

4. *C. costata*.

Margins of lateral angles merely sharply angled.

5. *C. angustifolia*.

II. PTEROCARYAE.

Mature nutlets 1 or rarely 2, usually with knife-like lateral angles.

6. *C. utahensis*.

Mature nutlets 4, usually distinctly winged.

Corolla conspicuous, 4-7 mm. broad; nutlets homomorphic, narrowly winged.

7. *C. oxygona*.

Corolla inconspicuous, about 1 mm. broad; nutlets heteromorphic; odd one often wingless, the others rather broadly winged.

8. *C. pterocarya*.

III. MARITIMAE.

Fruiting calyx conspicuously recurved or deflexed, the axial lobe longest and most conspicuously hirsute; nutlets bent.

9. *C. recurvata*.

Fruiting calyx spreading or erect, the abaxial lobe most conspicuously hirsute; nutlets straight.

Calyx ascending or spreading, not gibbose at base.

Nutlets triangular-ovate; calyx minute, subglobose, the lobes barely surpassing the nutlets.

10. *C. micromeres*.

Nutlets oblong-lanceolate; calyx oblong, the lobes distinctly surpassing the nutlets.

11. *C. maritima*.

Calyx strictly erect and closely appressed to the rachis, gibbose on the axial side at base.

12. *C. dumetorum*.

IV. BARBIGERAE.

Nutlets 1 or rarely 2; style short, half as long as nutlet or less.

Corolla inconspicuous, less than 1 mm. broad.

13. *C. decipiens*.

Corolla conspicuous, 2-3.5 mm. broad.

14. *C. corollata*.

Nutlets normally 4; style two-thirds as long to longer than the nutlets.

Plants hirsute with spreading hairs.

Corolla conspicuous, commonly 5 mm. broad but varying from 2-8 mm. in width.

15. *C. intermedia*.

Corolla inconspicuous, 1-2 mm. broad.

16. *C. barbigeræ*.

Plants strigose; corolla inconspicuous, 1-2 mm. broad.

Nutlets verrucose or verrucose-muricate.

17. *C. nevadensis*.

Nutlets spinular-muricate.

18. *C. scoparia*.

V. MURICATAE.

A single species.

19. *C. muricata*.

VI. AMBIGUAE.

Dorsal surface of nutlets more or less roughened.

Nutlets usually solitary, more or less roughened.

Nutlets horizontal, bent; pedicels stout, less than 1 mm. long; calyx distinctly bristly on the midrib.

20. *C. excavata*.

Nutlets erect, straight; calyx-lobes not bristly on the midrib.

Pedicels slender, 2-3 mm. long; calyx-lobes villous with long white hairs.

21. *C. crinita*.

Pedicels stout, usually less than 1 mm. long; hairs on calyx-lobes straight and ascending, those on the midribs a little longer but not bristly.

22. *C. Milobakeri*.

Nutlets 4, erect; pedicels stout, about 1 mm. or less in length.

Corolla conspicuous, the limb 4-7 mm. broad.

23. *C. Hendersonii*.

Corolla inconspicuous, the limb 0.5-2 mm. broad.

Flowers in definite spikes.

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

Stems closely strigose; spikes generally geminate or ternate; calyx-lobes armed on midrib with reflexed or arcuate bristles; nutlets broadly ovate, tessellate-papillate.

24. *C. simulans*.

Stems spreading-hirsute; spikes generally solitary; calyx-lobes armed on midrib with straight spreading tawny bristles; nutlets low-convex on the back.

Nutlets grayish, conspicuously echinate on the back.

25. *C. echinella*.

Nutlets with low rounded tubercles on the back or nearly smooth toward the base.

26. *C. ambigua*.

Nutlets minute, 1.5 mm. long; spikes bracted throughout.

27. *C. Traskiae*.

Flowers solitary or in glomerules in the axils of the leaves, forming a thyrsus or panicle.

28. *C. Hooveri*.

Dorsal surface of nutlets smooth, but sometimes faintly tessellate.

Corolla inconspicuous, limb about 1 mm. wide.

29. *C. Torreynae*.

Corolla conspicuous, limb 3-6 mm. wide.

Plants slender, not stiff, stems slender, erect with slender ascending branches; racemes geminate, bractless; fruiting calyx about 2 mm. long.

Corolla-limb 3-4 mm. broad; calyx with the abaxial lobe bearing 1 or more elongated spreading bristles; nutlets grayish-mottled with brown.

30. *C. incana*.

Corolla-limb 5-6 mm. broad; calyx rather uniformly hispid, the abaxial lobe without elongated spreading bristles; nutlets dark colored, not mottled.

31. *C. grandiflora*.

Plants stiff, low and widely branched; spikes mostly solitary, sometimes bracteate below; calyx 5-7 mm. long.

32. *C. mariposae*.

VII. MOHAVENSES.

- Corolla conspicuous, limb 4-7 mm. wide; style distinctly surpassing the nutlets. 33. *C. mohavensis*.
 Corolla inconspicuous, limb about 1 mm. wide; style included or about equaling the nutlets. 34. *C. Watsonii*.

VIII. GRACILES.

- A single species. 35. *C. gracilis*.

IX. RAMULOSISSIMAE.

- A single species. 36. *C. Fendleri*.

X. LEIOCARPAE.

Hairs on upper part of calyx-lobes spreading or ascending.

Styles about two-thirds to nearly as high as nutlets.

- Spikes bracteate, dense, mostly 8-15 mm. long; nutlets usually 4, rarely reduced to 1 by abortion. 37. *C. leiocarpa*.

Spikes naked, or the lowest flowers sometimes bracteate.

Nutlets 1-4, low-rounded on the back, flattened on the ventral side, not circular in cross section.

Fruiting calyx 2-4 mm. long, moderately white-bristly. 38. *C. Clevelandii*.

Fruiting calyx 6-10 mm. long, conspicuously tawny-bristly; spikes stiffly erect, 5-15 cm. long. 39. *C. Ganderi*.

Nutlets 1, lanceolate, rounded on both sides and circular in cross section.

40. *C. hispidula*.

Styles less than half the length of nutlets; fruiting calyx 1.5-2 mm. long; nutlet 1, lanceolate-attenuate or rostellate. 41. *C. microstachys*.

Hairs on the upper part of calyx-lobes decidedly reflexed.

42. *C. nemaclada*.

XI. FLACCIDAE.

Nutlets with an open areole at base of groove; style about two-thirds the height of nutlets; plants often coarse. 43. *C. rostellata*.

Nutlets with closed groove; styles less than one-half as high as nutlets; very slender plants.

Nutlets rounded dorsally and on the margins, only slightly compressed, ovate-lanceolate and rostrate-acuminate. 44. *C. flaccida*.

Nutlets flattened on both surfaces and angled on the margins, ovate, acute or short-acuminate.

45. *C. sparsiflora*.

XII. AFFINES.

Nutlets 4; style at least two-thirds the height of nutlets; plants erect; flowers in spikes 2-8 cm. long. 46. *C. affinis*.

Nutlets 1; style less than one-half the height of nutlets; plants spreading; flowers in axillary glomerules. 47. *C. glomeriflora*.

1. *Cryptantha holóptera* (A. Gray) J. F. Macbride. Winged *Cryptantha*. Fig. 4265.

Eritrichium holoptera A. Gray, Proc. Amer. Acad. 12: 81. 1876.

Krynitzkia holoptera A. Gray, op. cit. 20: 276. 1885.

Cryptantha holoptera J. F. Macbride, Contr. Gray Herb. No. 48: 48. 1916.

Stems erect, 1-6 dm. high, branches usually many along the main stem, ascending, spreading-hispid and strigose. Leaves linear-lanceolate, the upper sessile, the lower petioled, 2.5-6 cm. long, 2-8 or rarely 10 mm. wide, acute or obtuse, conspicuously pustulate and hispid below, somewhat less so above; racemes geminate, naked or with a few bracts below, mostly 4-5 cm. long, sometimes longer; corolla 2 mm. broad, the lobes ascending; fruiting calyx oblong-ovoid, 2.5-3.5 mm. long, the lobes lanceolate, somewhat connivent, hispid on the thickened midrib, strigose on the margins; nutlets 4, similar, 1.5-2.5 mm. long, oblong-ovoid or triangular-ovate, the dorsal side dark with pale tubercles, margins narrowly to broadly winged, groove open or closed above, dilated into an areole at base; style distinctly surpassing the nutlets but shorter than the calyx-lobes.

Gravelly or rocky slopes and ridges, Lower Sonoran Zone; Inyo County south to southern border of Imperial County, California, east to Mohave and Yuma Counties, Arizona. Type locality: Ehrenberg, Arizona. Feb.-April.

2. *Cryptantha racemosa* (S. Wats.) Greene. Bushy *Cryptantha*. Fig. 4266.

Eritrichium racemosum S. Wats. in A. Gray, Proc. Amer. Acad. 17: 226. 1882.

Krynitzkia ramosissima A. Gray, op. cit. 20: 277. 1885.

Cryptantha suffruticosa Piper, Proc. Biol. Soc. Wash. 32: 42. 1919.

Cryptantha racemosa var. *lignosa* I. M. Johnston, Univ. Calif. Pub. Bot. 7: 445. 1922.

Johnstonella racemosa Brand, Rep. Spec. Nov. 21: 249. 1925.

Flowering as an annual but commonly persisting several years and the stem becoming distinctly woody below, mostly bushy-branched, forming clumps 3-7 dm. high, ultimate branchlets very slender, strigose, epidermis at length exfoliating, leaving the older woody stems glabrous and brown. Leaves linear-subulate to narrowly oblanceolate, 0.5-4 cm. long; racemes slender, loosely flowered, terminating the spreading or ascending paniculately disposed branchlets, 2-4 cm. long, minutely bracteate; pedicels slender, often recurved; fruiting calyx 2 mm. high; lobes narrowly linear-lanceolate, slightly keeled on the back, armed with stiff spreading bristles and strigose; corolla slightly exerted, limb about 1 mm. broad; nutlets 4, triangular-ovoid, acute at apex and slightly curved outward, groove open or closed above broadening below into a triangular areola, heteromorphous, the odd nutlet 1-2 mm. long, finely muricate or tuberculate, light

or dark with pale tubercles; gynobase subulate, about equaling the 3 consimilar nutlets; style much surpassing the nutlets.

Sandy flats or rocky ridges, Lower Sonoran Zone; Inyo County, California, south to northeastern Lower California and east to southern Nevada and Mohave and Yuma Counties, Arizona. Type locality: Mesquite Station, Imperial County, California. March–June.

3. *Cryptantha inaequata* I. M. Johnston. Panamint Cryptantha. Fig. 4267.

Cryptantha inaequata I. M. Johnston, Univ. Calif. Pub. Bot. 7: 444. 1922.

Johnstonella inaequata Brand, Rep. Spec. Nov. 21: 250. 1925.

Stems erect or ascending, 3–4 dm. high, branched throughout or sometimes the basal branches elongated and simple or nearly so, strigose and bristly with slender spreading hairs. Leaves linear or the lower narrowly oblanceolate, 1.5–4 cm. long, 1–4 mm. wide, hispid or strigose, pustulate, especially underneath; spikes mostly geminate, 4–8 cm. long, loosely or rather densely flowered, bractless or rarely with 1 or 2 small bracts; corolla minute, tube 1–2 mm. long, limb 1.5–2.5 mm. broad; fruiting calyx stiffly ascending, ovoid-oblong, 3–4 cm. long, distinctly biseriate, sessile or nearly so; calyx-lobes rigid, slightly connivent, hispid on the thickened midrib, villous-ciliate on the margins; nutlets 4, heteromorphous, brown with pale tubercles, about 1 mm. long, odd one similar in color but a little longer and more persistent; gynobase columnar, equaling the 3 consimilar nutlets; style a little exceeding or equaling the odd nutlet.

Desert slopes, Sonoran Zones; eastern Mojave Desert, Inyo and San Bernardino Counties, California. Type locality: Pleasant Canyon, Panamint Mountains, Inyo County, California. March–May.

Cryptantha saxorum Jepson, Fl. Calif. 3: 345. 1943. Stem widely branching from the base, 5–7 cm. high, spreading-hispid. Leaves lanceolate, 8–24 mm. long, the hairs on the upper surface pustulate at base; spikes dense, 1–2 cm. long, conspicuously bracteate; calyx short-bristly, densely tufted with white hairs at base; corolla-limb 1 mm. wide; nutlets 4, equal, ovoid, light brown, thinly papillate both sides, the ventral side convexly 2-planed, ventral groove closed with forked areole at base. Known only from the type collection: "lava hill 1 mile sw. of Bicycle Lake, near Tiefert Mt., Mohave Desert."

4. *Cryptantha costata* Brandg. Ribbed Cryptantha. Fig. 4268.

Cryptantha costata Brandg. Bot. Gaz. 27: 453. 1899.

Cryptantha seorsa J. F. Macbride, Contr. Gray Herb. No. 48: 46. 1916.

Annual, stems stout, branched throughout, 1–2 dm. high, whitish-canescens with strigose-villous pubescence, and somewhat hispid, especially on the branches. Leaves linear to narrowly lanceolate, 1–3 cm. long, often becoming more or less convolute, villous-strigose above, short-hispid and pustulate beneath; racemes spike-like, rather rigid, 2–5 cm. long, sparsely bracteate, rather densely flowered; corolla about 2 mm. long, lobes broad and ascending; fruiting calyx 4–6 mm. long, oblong-ovoid, its lobes linear-lanceolate, somewhat connivent above the nutlets but the tips slightly spreading, hispid on the thickened midrib; nutlets 4, similar or 1 slightly larger than the others, barely 2 mm. long, narrowly triangular, strongly convex on the back, inconspicuously rugulose or verrucose, the margins sharp or narrowly winged; groove dilated below into a deltoid shallow areola; gynobase subulate, equaling the nutlets; style much surpassing the nutlets.

Sandy washes and benches, Lower Sonoran Zone; Inyo County to San Diego County, California, eastward to adjacent Arizona. Type locality; Borrego Springs, San Diego County, California. Feb.–May.

5. *Cryptantha angustifolia* (Torr.) Greene. Narrow-leaved Cryptantha. Fig. 4269.

Eriptrichium angustifolium Torr. Pacif. R. Rep. 5: 363. 1858.

Krynitzkia angustifolia A. Gray, Proc. Amer. Acad. 20: 272. 1885.

Cryptantha angustifolia Greene, Pittonia 1: 112. 1887.

Stems diffusely branched from the base, 0.5–3 cm. high, villous-hispid with spreading or ascending, light ashy gray hairs, the lowest branches decumbent or ascending. Leaves narrowly linear, 1.5–4 cm. long, 1–2 or rarely 4 mm. wide, hispid and pustulate; spikes usually geminate, about 3–5 cm. long, bractless or with 1 or 2 bracts near the base; corolla minute, limb 1–2.5 mm. broad; fruiting calyx 3–4 mm. long, stiffly ascending and conspicuously biseriate, subsessile; lobes linear-lanceolate, slightly connivent, hispid on the thickened midrib, short-villous on the margins, lower lobe longest and more conspicuously hispid; nutlets 4, about 1 mm. long, heteromorphous, groove slightly open above broadening at base; gynobase columnar, equaling the 3 similar nutlets but shorter than the odd more persistent one; style usually surpassing the odd nutlet.

Sandy or gravelly washes, Lower Sonoran Zone; Death Valley region, Inyo County, California, south through the Mojave and Colorado Deserts to northeastern Lower California, east to western Texas and Sonora. Type locality: Yuma, Arizona. March–June.

6. *Cryptantha utahensis* (A. Gray) Greene. Scented Cryptantha. Fig. 4270.

Eriptrichium holopterum var. *submolle* A. Gray, Proc. Amer. Acad. 13: 374. 1878.

Krynitzkia utahensis A. Gray, Syn. Fl. N. Amer. ed. 2: 2: 427. 1886.

Cryptantha utahensis Greene, Pittonia 1: 120. 1887.

Cryptantha submollis Coville, Contr. U.S. Nat. Herb. 4: 166. 1893.

Usually with a main erect stem with a few scattered ascending or erect branches, 1–3 dm. high, strigose or appressed short-hispid. Leaves elongated below, mostly linear, 3–5 cm. long,

the upper smaller and spreading, appressed short-hispid and pustulate especially beneath; spikes usually geminate, commonly 1–2 cm. long, dense, bractless; corolla rather conspicuous, 2–3 mm. broad; fruiting calyx ovoid to oblong-ovoid, 2–3 mm. long, sessile, spreading or slightly recurved, densely villous-hispid below with slender, ascending, whitish hairs; mature calyx-lobes connivent, rather sparsely hispid; only 1 or rarely 2 nutlets maturing, broadly lanceolate, granulate or muricate-papillate, nearly flat on the back, sharply angled on the sides; style usually barely equaling the nutlets.

Sandy or rocky places, desert washes and hillsides, Lower Sonoran Zone; deserts of southern California, in Inyo, San Bernardino, and Riverside Counties, east through southern Nevada to southern Utah, and Mohave County, Arizona. Type locality: St. George, Utah. March–May.

7. *Cryptantha oxýgona* (A. Gray) Greene. Sharp-nut *Cryptantha*. Fig. 4271.

Eritrichium oxigonum A. Gray, Proc. Amer. Acad. 19: 89. 1883.

Krynitzkia oxýgona A. Gray, op. cit. 20: 277. 1885.

Cryptantha oxýgona Greene, Pittonia 1: 120. 1887.

Stems usually with several ascending branches from or near the base, 1–4 dm. high, strigose with very slender pointed hairs. Leaves linear to linear-lanceolate, 1–4 cm. long, pubescent on both sides, as on stem but the hairs appressed and more distinctly pustulate; spikes in pairs or more often in threes, 1–3 cm. long, usually densely flowered, bractless; corolla-limb 4–7 mm. broad; fruiting calyx ovoid or oblong-ovoid, ascending, 2.5–4 mm. long, symmetrical; mature calyx-lobes slightly connivent, silky-strigose on the margin, midrib thicker and usually sparsely hispid; nutlets 4, similar, oblong-ovoid, 2–2.5 mm. long, muriculate or tuberculate, narrowly winged on the margin; groove broadly forked below, often forming a triangular areola; style distinctly surpassing the nutlets.

Dry slopes, Upper Sonoran Zone; Inner Coast Ranges bordering the San Joaquin Valley in Fresno and Merced Counties; east side of the Sierra Nevada from Madera County south to the desert slopes of the Santa Rosa Mountains, Riverside County, California. Type locality: "on hills bordering the Mohave Desert." April–May.

8. *Cryptantha pterocàrya* (Torr.) Greene. Wing-nut *Cryptantha*. Fig. 4272.

Eritrichium pterocaryum Torr. Bot. Mex. Bound. 142. 1859.

Eritrichium pterocaryum var. *pectinatum* A. Gray, Proc. Amer. Acad. 10: 61. 1874.

Krynitzkia pterocaryum var. *pectinata* A. Gray, op. cit. 20: 276. 1885.

Cryptantha pterocarya Greene, Pittonia 1: 120. 1887.

Stems erect, branched throughout with ascending branches, 1–5 dm. high, short-hirsute with either appressed or ascending slender pointed hairs. Leaves linear or the reduced uppermost ones lanceolate or oblong, strigose or the hairs ascending, conspicuously pustulate on the lower surface, less so on the upper; spikes usually in pairs, bractless or rarely with 1 or 2 bracts below, 2–6 or rarely 10 cm. long, usually becoming loosely flowered in age; corolla inconspicuous, 0.5–1 mm. or rarely 2 mm. broad; fruiting calyx distinctly accrescent, 3–5 mm. long, symmetrical, ascending on short pedicels; mature calyx-lobes ovate to ovate-lanceolate, somewhat connivent, thin, margins more or less tawny, hirsutulous, midrib slightly thickened and sparsely hispid; nutlets 4, heteromorphous, the body oblong-lanceolate to lanceolate, 2–2.5 or rarely 3 mm. long, muricate or verrucose, axial one not margined, the other three with usually broad wings, these either entire, crenate or lobed; style surpassing the body of nutlets.

Sandy or gravelly places, Upper and Lower Sonoran Zones; east of the Cascades and the Sierra Nevada from southern Washington to the deserts of California and northern Lower California; east to southern Idaho, Utah, Arizona, and northern Sonora. Type locality: Walla Walla, Washington, as designated by I. M. Johnston, Contr. Gray Herb. No. 74: 53. 1925. April–June.

Cryptantha pterocarya var. *Purpusii* Jepson, Man. Fl. Pl. Calif. 849. 1925. Inflorescence denser; calyx smaller; nutlets heteromorphous, one not margined, the other with the wing-margin narrower than in the typical species, and knife-like. Southern California deserts; Argus Mountains, Darwin, and San Bernardino Mountains. Type locality: Argus Mountains, Inyo County, California.

Cryptantha pterocarya var. *cycloptera* (Greene) J. F. Macbride, Contr. Gray Herb. No. 48: 44. 1916. (*Krynitzkia cycloptera* Greene, Bull. Calif. Acad. 1: 207. 1884.) Nutlets all wing-margined, otherwise like the typical material. Deserts of southern California east to southern Utah, Arizona, New Mexico, and southwestern Texas. Type locality: near Tucson, Arizona.

9. *Cryptantha recurvata* Coville. Curved-nut *Cryptantha*. Fig. 4273.

Cryptantha recurvata Coville, Contr. U.S. Nat. Herb. 4: 165. pl. 16. 1893.

Stems branched from the base, slender, ascending or decumbent at base, 1–3 dm. high, strigose, root often dye-staining. Basal leaves oblanceolate or spatulate, 1.5–2 cm. long, those of the stem remote, linear or lanceolate, 5–10 mm. long, rounded or obtuse, rather finely appressed-hispid and minutely pustulate; spikes bractless, solitary or geminate, slender, loose in age, 2–10 cm. long; corolla scarcely exerted, about 2 mm. long, limb 1.5 mm. broad; fruiting calyx slender, distinctly asymmetrical, bent and recurved, 3 mm. long; mature calyx-lobes very narrowly linear, midrib thickened and hispid; ovary 2-parted; mature perfect nutlet oblong-lanceolate, curved inwardly, dull brownish, granulate-papillate, rounded on the angles; gynobase about one-half as long as perfect nutlet, and about as long as the abortive one.

Sandy or gravelly places, Sonoran Zones; Alvord Desert, southeastern Oregon, White and Panamint Mountains, California, east to Nevada and Utah. Type locality: Surprise Canyon, Panamint Mountains, California. April–June.

10. *Cryptantha micromeres* (A. Gray) Greene. Minute-flowered *Cryptantha*.
Fig. 4274.

Eritrichium micromeres A. Gray, Proc. Amer. Acad. 19: 90. 1883.
Krynitzkia micromeres A. Gray, op. cit. 20: 274. 1885.
Cryptantha micromeres Greene, Pittonia 1: 113. 1887.

Stems simple below and erect, or branched from the base and branches ascending, 1–3 dm. high, divaricately short-hispid throughout. Leaves linear or oblong-linear, 1–4 cm. long, short-hispid on both sides with ascending hairs, the upper side rather inconspicuously pustulate; spikes 1–3, very slender, bractless, 2–8 cm. long; corolla minute, nearly tubular, about 0.5 mm. broad; fruiting calyx barely over 1 mm. long, subglobose, early deciduous; mature calyx-lobes ovate, strongly connivent, slenderly hispid, the bristles in the midribs often minutely uncinata; nutlets 4, triangular-ovoid, 0.7–1 mm. long, papillate on the odd slightly larger one, sometimes smooth; style equaling or slightly surpassing the odd nutlet.

Grassy hillsides, Upper Sonoran Zone; Marin and Amador Counties, California, to northwestern Lower California, also on Santa Cruz and Santa Catalina Islands. Type locality: Santa Cruz, California. April–July.

11. *Cryptantha maritima* Greene. Guadalupe *Cryptantha*. Fig. 4275.

Krynitzkia maritima Greene, Bull. Calif. Acad. 1: 204. 1885.
Krynitzkia ramosissima Greene, op. cit. 203. August 1885; not A. Gray, January 1885.
Cryptantha maritima Greene, Pittonia 1: 117. 1887.

Stems loosely branched, 1–3.5 dm. high, rather sparsely strigose or sparsely hispid, brown or reddish. Leaves narrowly linear to linear-lanceolate, acutish, hispid and conspicuously pustulate; spikelets 1–6 cm. long, usually more or less crowded or glomerate at the ends of the lateral branchlets, usually leafy-bracted throughout; corolla minute, tubular, 1.5–2 mm. long, 0.5–1 mm. broad; fruiting calyx asymmetrical, 2–3.5 mm. long; mature calyx-lobes linear-lanceolate, connivent, firm, three of the lobes hispid on the midrib and more or less villous, especially on the margins; ovules 2; nutlets 1–2, heteromorphous, the odd nutlet frequently the only one maturing, smooth, shining, and brownish, oblong-lanceolate, 1–2 mm. long, persistent; consimilar nutlets, when present, grayish and muriculate, readily deciduous; style about equaling consimilar nutlets.

Dry washes and desert slopes, Sonoran Zones; Inyo County, California, south to Lower California, and east to Nevada, Arizona, and Sonora. Type locality: Guadalupe Island, Lower California. April–May.

Cryptantha maritima var. *pilosa* I. M. Johnston, Univ. Calif. Pub. Bot. 7: 445. 1922. Calyx-lobes densely white-villous. Same general range as the species. Type locality: Los Angeles Bay, Lower California.

12. *Cryptantha dumetorum* Greene. Bush-loving *Cryptantha*. Fig. 4276.

Krynitzkia dumetorum Greene ex A. Gray, Proc. Amer. Acad. 20: 272. 1885.
Cryptantha dumetorum Greene, Pittonia 1: 112. 1887.
Cryptantha intermedia var. *dumetorum* Jepson, Man. Fl. Pl. Calif. 849. 1925.

Stems becoming diffusely branched and at length sprawling or scrambling among low bushes, very brittle, sparsely strigose. Leaves lanceolate, 2–4 cm. long, sparsely hispid, and conspicuously pustulate; spikes solitary or geminate, 5–10 cm. long, usually loosely flowered, naked or sometimes with foliaceous bracts toward the base; corolla minute, limb about 1 mm. broad; calyx closely appressed to rachis, 2–3 mm. long, asymmetrical, base very oblique; mature calyx-lobes connivent, the 3 outer deflexed-hispid on the thickened midrib; nutlets 4, granulate and muriculate, heteromorphous, the odd one with base enlarged and distorting the calyx, 2–3 mm. long, with a broad open groove, the 3 consimilar ones a little shorter, lanceolate and the groove closed or very narrow; style shorter or equaling the nutlets.

Sandy valleys or hillsides, Sonoran Zones; western and central Mojave Desert, California, east to southwestern Nevada. Type locality: Tehachapi Pass, Kern County. April–May.

13. *Cryptantha decipiens* (M. E. Jones) Heller. Gravel *Cryptantha*. Fig. 4277.

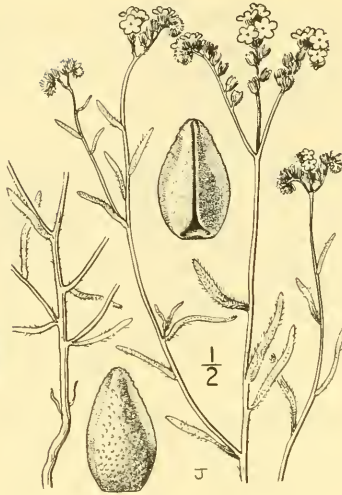
Krynitzkia decipiens M. E. Jones, Contr. West. Bot. No. 13: 6. 1910.
Cryptantha decipiens Heller, Muhlenbergia 8: 48. 1912.

Stems 1–4 dm. high, slender, loosely branched, strigose and sometimes short-hispid. Leaves few, linear, obtuse, 1–3 cm. long, strigose or short-hispid, pustulate; spikes slender, geminate or rarely solitary or ternate, bractless, usually becoming loosely flowered, 4–10 cm. long; corolla inconspicuous, less than 1 mm. broad; fruiting calyx ovoid to ovoid-oblong, strictly ascending, 3–4 mm. long; mature calyx-lobes narrowly linear, connivent, with the tips usually spreading, midrib thickened, usually conspicuously hirsute-hispid, margins strigose, the abaxial lobe longer and more densely hirsute; nutlets 1 or rarely 2, next abaxial calyx-lobe, ovoid-lanceolate, muriculate-granulate to tuberculate, usually brownish, convex on the back, rounded on the sides, groove open or closed, dilated below into a definite areola; gynobase short, half to a third as high as nutlet; style very short, well surpassed by nutlet.

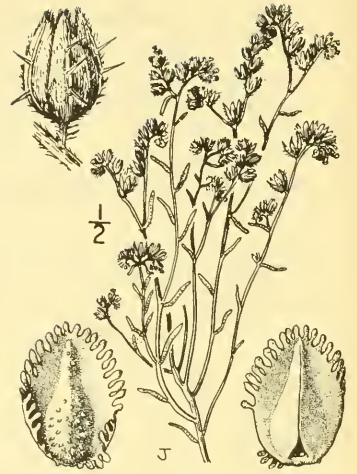
Sandy or gravelly slopes, Lower Sonoran Zone; Mojave Desert, Kern and Inyo Counties, south through the deserts to the southern boundary of the state, east to southwestern Nevada and western Arizona. Type locality: Yucca, Arizona. March–May.



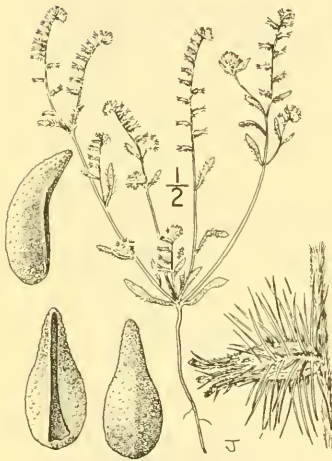
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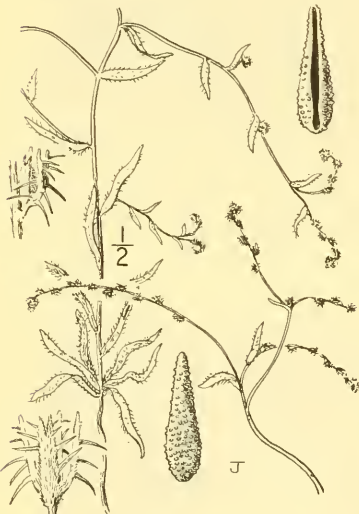
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4270. *Cryptantha utahensis*
 4271. *Cryptantha oxygona*
 4272. *Cryptantha pterocarya*

4273. *Cryptantha recurvata*
 4274. *Cryptantha micromeres*
 4275. *Cryptantha maritima*

4276. *Cryptantha dumetorum*
 4277. *Cryptantha decipiens*
 4278. *Cryptantha corollata*

14. *Cryptantha corollata* I. M. Johnston. Coast Range Cryptantha. Fig. 4278.

Cryptantha decipiens var. *corollata* I. M. Johnston, Contr. Gray Herb. No. 74: 61. 1925.

Cryptantha corollata I. M. Johnston, Journ. Arnold Arb. 18: 24. 1937.

Stems slender, erect, 2-3 dm. high, with few ascending branches from the middle or above, or sometimes more abundantly branched throughout, appressed-hispidulous throughout, sometimes also hirsute-hispid with spreading hairs, especially toward the base. Leaves mostly narrowly linear, acute, strigose, bristly hispid on the margins and midvein; spikes naked, geminate or ternate, 4-12 cm. long; corolla 2-3.5 mm. broad; fruiting calyx ascending, about 3 mm. long, white-strigose, the outer lobes also bristly with spreading often slightly subulate bristles; nutlet 1, ovoid-lanceolate, acuminate, 2 mm. long, brownish, granulate and papillate-muriculate on both sides, low-convex on the back but with a low broadish ridge toward the base; groove closed throughout and raised into a narrow keel, dilated at base into a small areola.

Canyons and hillsides, Upper Sonoran Zone; California Coast Ranges from San Benito and Monterey Counties to Riverside County. Type locality: "towards foothills, Ojai Valley," Ventura County. March-June.

Cryptantha corollata subsp. *Rattánii* (Greene) Abrams. (*Cryptantha Rattánii* Greene, Pittonia 1: 160. 1888.) Habit of the typical species, but stems hirsute-hispid with spreading hairs as well as strigose; corolla usually larger, 3-5 mm.; nutlets usually 2 or 3 maturing. Open slopes and flats, Upper Sonoran Zone; watershed of the Salinas and Carmel Rivers, Monterey County, California. Type locality: "Monterey County," Johnston (Journ. Arnold Arb. 20: 390. 1939.) designated the Hickman specimens in Greene's herbarium the type. Dr. Greene definitely stated that he described the taxonomically important fruit character from Hickman's plant, and that Rattan's specimens from San Jose "were young and only beginning to flower."

15. *Cryptantha intermedia* (A. Gray) Greene. Common Cryptantha. Fig. 4279.

Eritrichium intermedium A. Gray, Proc. Amer. Acad. 17: 225. 1882.

Krynitzkia intermedia A. Gray, op. cit. 20: 273. 1885.

Cryptantha intermedia var. *Johnstonii* J. F. Macbride, Contr. Gray Herb. No. 56: 59. 1918.

Cryptantha Hansenii Brand, Rep. Spec. Nov. 24: 58. 1927.

Cryptantha Hansenii var. *pulchella* Brand, loc. cit.

Stems diffusely branched from the base or more commonly stiffly erect and branching above, 1.5-5 dm. high, hispid with spreading or sometimes appressed hairs. Leaves lanceolate to linear, acute or obtuse, hispid or strigose; spikes geminate or ternate, bractless, 5-15 cm. long; corolla commonly varying from 2-8 mm. but commonly about 5 mm. broad; fruiting calyx 2-7 mm. long, ascending or strict; mature calyx-lobes linear-lanceolate, connivent above with spreading tips, short-villous or appressed-hirsute, midrib pungently hispid, especially on the abaxial lobe; nutlets usually 4, homomorphous, ovoid-lanceolate, about 2 mm. long, coarsely and densely tuberculate on both surfaces, grayish or somewhat brownish, margins slightly angled; groove closed or narrow, gradually dilated below into a small areola; styles about equaling to slightly surpassing the nutlets.

Dry sandy or gravelly flats on hillsides, Upper Sonoran Zone; western Siskiyou County, California, southward west of the Sierra Nevada to cismontane southern California and northern Lower California. Type locality: Los Angeles, California. March-July.

16. *Cryptantha barbiger* (A. Gray) Greene. Bearded Cryptantha. Fig. 4280.

Eritrichium barbigerum A. Gray, Syn. Fl. N. Amer. 2: 194. 1878.

Krynitzkia barbiger A. Gray, Proc. Amer. Acad. 20: 273. 1885.

Cryptantha barbiger Greene, Pittonia 1: 114. 1887.

Stems erect, solitary or several from the base, branches strictly ascending or spreading, very bristly hispid, sparsely or not at all strigose except in the inflorescence. Leaves broadly oblong to linear, obtuse, more or less pilose and hirsute below on the midrib and margins with rather stiff spreading hairs, more or less pustulate; corolla inconspicuous, limb 1-2 mm. broad; fruiting calyx ascending, 5-10 mm. long, narrowly oblong-ovoid to oblong-lanceolate, spreading or recurved, white-villous, especially on the margins, the midrib with a few pustulate bristles; nutlets 1-4, lanceolate-ovoid, 1.5-2.5 mm. long, strongly verrucose, usually brownish, rounded on the back and obscurely angled or rounded on the margins; groove gradually broadening toward the base with a triangular areola; style equaling or slightly surpassing the nutlets.

Desert regions, Sonoran Zones; Inyo County south through the Mojave and Colorado Deserts, California, to northeastern Lower California, east through southern Nevada to southern Utah, Arizona, New Mexico and Sonora. Type locality: Utah (*Parry*, 171) as designated by I. M. Johnston, Contr. Gray Herb. No. 74: 66. 1925. Feb.-May.

Cryptantha barbiger var. *Fergusoniae* J. F. Macbride, Contr. Gray Herb. No. 56: 59. 1918. (*Cryptantha Fergusoniae* Brand, Rep. Spec. Nov. 24: 58. 1927.) Essentially like the typical species, except corolla larger, the limb 4-6 mm. broad. In the larger corolla this variety shows also close relationship with *Cryptantha intermedia*. Vicinity of Palm Springs, Riverside County, California.

17. *Cryptantha nevadensis* Nels. & Kenn. Nevada Cryptantha. Fig. 4281.

Cryptantha nevadensis Nels. & Kenn. Proc. Biol. Soc. Wash. 19: 157. 1906.

Krynitzkia barbiger var. *inops* Brandg. Zoe 5: 228. (September) 1906.

Cryptantha arenicola Heller, Muhlenbergia 2: 242. (December) 1906.

Cryptantha leptophylla Rydb. Bull. Torrey Club 36: 678. 1909.

Cryptantha barbiger var. *inops* J. F. Macbride, Proc. Amer. Acad. 51: 548. 1916.

Stems slender, 1-5 dm. high, 1 to several, erect or usually flexuous, closely short-strigose, mostly laxly branched. Leaves linear to linear-oblongate, acute or obtuse, 1-6 mm. broad, appressed-short-hispid, more or less pustulate; spikes in pairs or threes, terminal, also scattered

along the stem on short slender axillary branchlets, sometimes bracted, congested, or especially the terminal, elongated; corolla inconspicuous, limb 1–2 mm. broad; fruiting calyx oblong-ovoid to lanceolate, 8–12 mm. long; mature calyx-lobes linear or linear-lanceolate, connivent above with the tips recurved, more or less villous on the margins, and hispid on the midrib; nutlets 4, lanceolate, long-acuminate, about 2.5 mm. long, verrucose, conspicuously muriculate toward the apex; groove open or closed, dilated below into a small areola; style almost or quite equalling the nutlets.

Deserts, Sonoran Zones; Inyo County, California, south to the Colorado Desert and northern Lower California, east to Nevada, Utah, and Arizona. Type locality: Reno, Washoe County, Nevada. April–May.

Cryptantha nevadensis var. *rigida* I. M. Johnston, Contr. Gray Herb. No. 74: 68. 1925. Stems slender, erect, more or less hirsute-hispid with spreading hairs; calyx 5–10 mm. long; nutlets oblong-ovoid, acute, verrucose, about 2 mm. long. Inner Coast Ranges, Stanislaus County, and eastern slopes of the Santa Lucia Mountains, Monterey County, south to southern San Joaquin Valley and the western end of the Mojave Desert, California; also western Arizona. Type locality: "hills bordering Mojave Desert."

18. *Cryptantha scoparia* A. Nels. Desert *Cryptantha*. Fig. 4282.

Cryptantha muriculata var. *montana* A. Nels. Erythra 7: 69. 1899.

Cryptantha scoparia A. Nels. Bot. Gaz. 54: 144. 1912.

Stems with several to many stiffly erect branches, 10–35 cm. high, closely short-strigose and frequently sparsely hispid. Leaves narrowly linear to linear-lanceolate, 2–4 cm. long, strictly ascending, hispidulous with ascending often pustulate hairs; spikes stiffly erect, solitary or geminate, bractless, 2–10 cm. long; corolla inconspicuous, about 1 mm. wide at the tips of the ascending lobes; fruiting calyx oblong-ovoid, 5–6 mm. long, strictly ascending; mature calyx-lobes linear-lanceolate, rather stiff, somewhat connivent above with the tips slightly spreading, midrib costate, armed with stout divaricate whitish bristles, margins ascending-hispidulous; nutlets 4, homomorphous, lanceolate, sometimes broadly so, barely 2 mm. long, brownish and shining, sharply muriculate especially toward the apex, rounded at base and on the margins, groove narrow, forked below into a subulate areola.

Dry sagebrush plains, usually in sandy soils, Upper Sonoran Zone; Yakima County, Washington, and Harney and Malheur Counties, Oregon; also Idaho and Wyoming. Type locality: sagebrush land, Minidoka, Wyoming. May–July.

19. *Cryptantha muricata* (Hook. & Arn.) Nels. & Macbr. Prickly *Cryptantha*. Fig. 4283.

Myosotis muricata Hook. & Arn. Bot. Beechey 369. 1838.

Eritrichium ? *muriculatum* A. DC. Prod. 10: 132. 1846.

Krynitzkia muriculata A. Gray, Proc. Amer. Acad. 20: 273. 1885.

Cryptantha muriculata Greene, Pittonia 1: 113. 1887.

Cryptantha horridula Greene, op. cit. 5: 55. 1902.

Cryptantha muricata Nels. & Macbr. Bot. Gaz. 61: 42. 1916.

Stems erect, usually stout and simple below, several-branched above, 1–8 dm. high, conspicuously hirsute-hispid with spreading hairs, also strigose, especially above. Leaves linear, 1.5–3 cm. long, cinereous short-hirsute; spikes terminating the main branches, in twos or threes or often in fours, 4–10 cm. long in fruit, those of the comparatively few lateral branchlets smaller, geminate or ternate; corolla 2–6 mm. broad; fruiting calyx ovoid, 2–4 cm. long, the lobes lanceolate, connivent, short-hirsute on the sides with ascending hairs, midrib tawny-hispid; nutlets 4, homomorphous, ovoid-triangular, 1.5–2.5 mm. long, dull or somewhat shiny, conspicuously grayish, muriculate or tuberculate on both sides, sometimes somewhat verrucose dorsally, lateral angles usually acute and prominent; ventral groove slightly open or usually closed, broadly forked at base.

Dry gravelly slopes or washes, Upper Sonoran Zone; California Coast Ranges from Contra Costa County to Los Angeles County. Type locality: California. Collected by Douglas. April–July.

Cryptantha muricata var. *denticulata* (Greene) I. M. Johnston, Contr. Gray Herb. No. 74:71. 1925. (*Krynitzkia denticulata* Greene, Bull. Calif. Acad. 1: 205. 1885; *Cryptantha denticulata* Greene, Pittonia 1: 114. 1887; *C. vitrea* Eastw. Proc. Calif. Acad. III. 2: 292. 1902; *C. densiflora* Nels. & Kenn. Proc. Biol. Soc. Wash. 19: 156. 1906.) Stems with a few well-developed lateral branches as in the typical species, but usually more slender; spikes not numerous, mostly geminate or ternate; corolla inconspicuous, 1–2 mm. broad. Gravelly slopes and flats, Arid Transition Zone; central Sierra Nevada, California, and western Nevada, south to the San Gabriel and San Bernardino Mountains, California. Type locality: western Nevada.

Cryptantha muricata var. *Jonesii* (A. Gray) I. M. Johnston, Plant World 22: 114. 1919. (*Krynitzkia Jonesii* A. Gray, Proc. Amer. Acad. 20: 274. 1885; *Cryptantha Jonesii* Greene, Pittonia 1: 113. 1887.) Stems usually stout, commonly solitary and erect or sometimes several and fastigiate, bearing to below the middle many short lateral floriferous branchlets; spikes numerous, those on the ascending lateral branchlets short, grouped along the stem to form an elongated panicle inflorescence. Dry ridges and plains, mostly Upper Sonoran Zone; Coast Ranges (Glenn County) and Sierra Nevada (Nevada County) south to San Diego County, California, and adjacent Lower California, east to Nevada and Arizona. Type locality: Santa Cruz, California.

20. *Cryptantha excavata* Brandg. Deep-scarred *Cryptantha*. Fig. 4284.

Cryptantha excavata Brandg. Bot. Gaz. 27: 452. 1899.

Cryptantha abortiva Greene ex C. F. Baker, West Amer. Pl. 2: 10. 1903. (Nomen nudum.)

Stem simple below, branching above the base, 15–25 cm. high, branches slender, hirsute with more or less appressed hairs. Leaves linear, the lower 1.5–2 cm. long, the lower especially with the hairs conspicuously pustulate; spikes in twos or more often in threes, becoming 3–10 cm. long and loosely flowered; corolla-limb well-exserted, 2–3 mm. broad; fruiting calyx 2–2.5 mm.

long, as broad as long, the lobes often slightly spreading at the tip, villous with ascending hairs and also hispid mostly below the middle with spreading subulate bristles; nutlet solitary, horizontal or nearly so, ovoid-acuminate, obcompressed, the surface finely muriculate-papillose and with scattered tubercles and a few rather obscure rugose ridges, keeled dorsally, ventral side keeled above, the groove below opening with a large triangular deeply excavated scar.

Mostly in gravelly or sandy soils, Upper Sonoran Zone; Inner North Coast Ranges, in eastern Lake County, and Colusa and Yolo Counties, California. Type locality: Sites, Colusa County. April–May.

21. *Cryptantha crinita* Greene. Silky Cryptantha. Fig. 4285.

Cryptantha crinita Greene, *Erythea* 3: 66. 1895.

Stems 15–30 cm. high, branching from near the base, the branches rather strict, strigose and also hirsute. Leaves linear or very narrowly oblanceolate, the lower 2–3 cm. long; spikes usually in pairs on very slender peduncles, dense and conspicuously white-villous when young, elongating to 4–6 cm. in age; pedicels 1–2 mm. long; corolla 3–4 mm. broad; fruiting calyx 5–6 mm. long, densely and conspicuously white-villous-hirsute, the lobes erect; nutlets solitary, ovoid, abruptly attenuate above, 2.5 mm. long, the dorsal side rounded on the back, microscopically papillate and with a few low obscure tubercles.

Gravelly or sandy places in creek bottoms, Upper Sonoran Zone; foothills at the head of the Sacramento Valley, Shasta County, California. Type locality: Cow Creek, Shasta County. April–May.

22. *Cryptantha Milobakeri* I. M. Johnston. Milo Baker's Cryptantha. Fig. 4286.

Cryptantha Milobakeri I. M. Johnston, *Journ. Arnold Arb.* 21: 63. 1940.

Cryptantha Torreyana var. *scrutata* Jepson, *Fl. Calif.* 3: 351. 1943.

Stems erect, 2–4.5 dm. high, with rather strictly ascending branches, moderately pubescent with rather slender appressed hairs and also similar but a little longer spreading hairs. Leaves linear-oblong to linear-lanceolate, 1–3 cm. long, with appressed or ascending hairs; spikes geminate or rarely ternate, 5–15 cm. long, often with a flower in the axil of the geminate ones; fruiting calyx 3–5 mm. long, densely hirsute-pilose with straight ascending whitish hairs, the hairs a little longer on the little enlarged midribs but otherwise similar and not at all retrorse; corolla 2–4 mm. broad; ovules 4; nutlets 1, or rarely 2 or 4, lanceolate-ovoid, 2–2.5 mm. long, smooth or inconspicuously tessellate, low-convex on the back, rounded on the margins; groove closed down to the forked base; style extending to about three-fourths the height of the nutlet.

Gravelly or rocky slopes, Transition Zones; western Siskiyou Mountains, southern Oregon, south in the Coast Ranges to Humboldt and Lake Counties, California. Type locality: between Kelseyville and Lower Lake, Lake County, California. May–July.

23. *Cryptantha Hendersonii* (A. Nels.) Piper. Henderson's Cryptantha. Fig. 4287.

Allocarya Hendersonii A. Nels. *Erythea* 7: 69. 1899.

Cryptantha monosperma Greene, *Pittonia* 5: 53. 1902.

Cryptantha grisea Greene, loc. cit.

Cryptantha trifurca Eastw. *Bull. Torrey Club* 32: 203. 1905.

Cryptantha Hendersonii Piper ex J. C. Nels. *Torreyana* 20: 44. 1920.

Cryptantha scabrella Piper, *Proc. Biol. Soc. Wash.* 37: 95. 1924.

Cryptantha fragilis M. E. Peck, *Torreyana* 32: 152. 1932.

Stems erect with few ascending branches, 1.5–5 dm. high, hirsute. Leaves oblanceolate to linear, acute or obtuse, appressed-hirsute; spikes commonly ternate, naked or rarely with 1 or 2 bracts at base, mostly 5–10, rarely 20 cm. long; corolla conspicuous, 4–7 mm. broad; fruiting calyx 3–6 mm. long, ovoid, or ovoid-oblong, the lower becoming distant; pedicels about 0.5 mm. long; lobes linear to linear-lanceolate, connivent above with the tips spreading, densely appressed-hirsute on the margins, midribs but little thickened, beset with spreading whitish or slightly yellowish bristles; nutlets 4, or sometimes fewer by abortion, pale, ovoid, acute, 2–3 mm. long, very finely muriculate, with a few low rounded papillae interspersed, low-convex on the back, rounded on the margins; groove closed or very narrow, broadly forked at base; style reaching to about four-fifths the height of nutlets.

Usually in sandy or rocky situations, Upper Sonoran and Arid Transition Zones; British Columbia to Idaho, south mainly east of the Cascades to southern Oregon and northeastern California. Type locality: Potlatch River, Idaho. May–July.

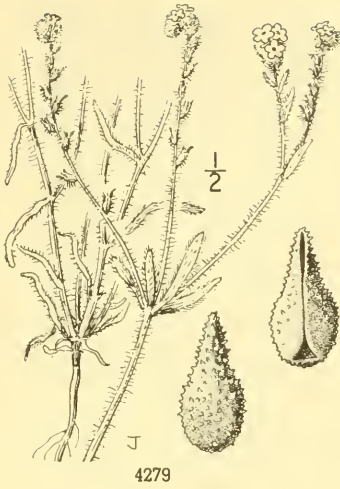
24. *Cryptantha simulans* Greene. Pine Cryptantha. Fig. 4288.

Cryptantha simulans Greene, *Pittonia* 5: 54. 1902.

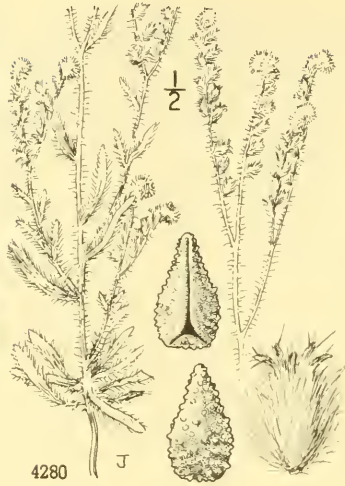
Cryptantha Steubelii Brand, *Rep. Spec. Nov.* 24: 58. 1927.

Cryptantha ambigua f. *simulans* Brand, *Pflanzenreich* 4²⁵²: 68. 1931.

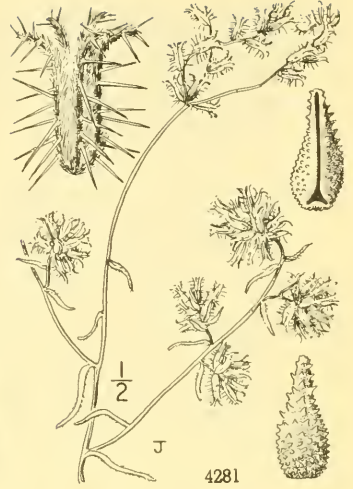
Stems erect with few ascending branches, 1.5–4 dm. high, the surface pallid beneath the strigose whitish hairs. Leaves linear to linear-oblanceolate, 1–3 cm. long, strigose on both sides; spikes solitary or frequently in twos or threes, usually elongate and sparsely flowered, bractless, corolla 0.5–1.5 mm. broad; fruiting calyx-lobes linear-lanceolate, connivent above with the tips spreading, midrib armed with reflexed or spreading-arcuate bristles, margin villous-hirsute with ascending hairs; nutlets 4, all similar, 2–2.5 mm. long, broadly ovoid, tes-



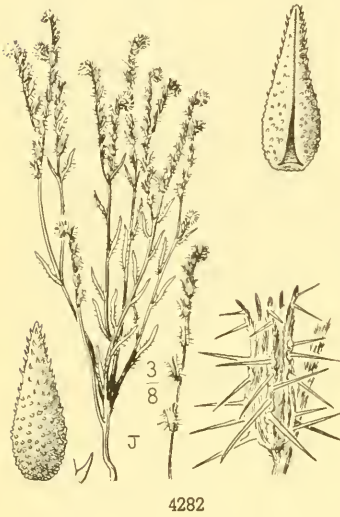
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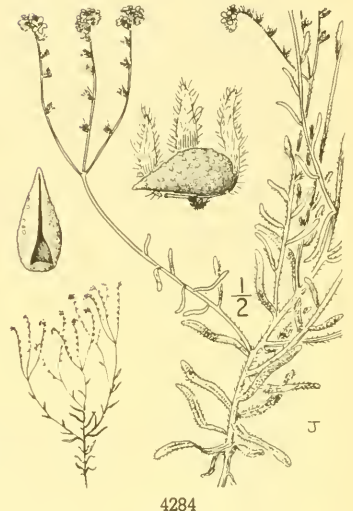
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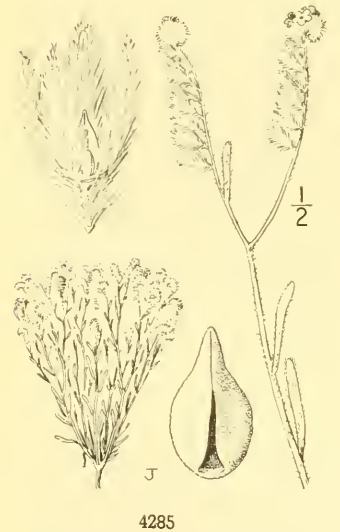
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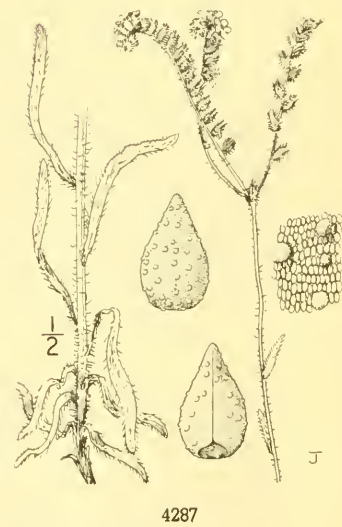
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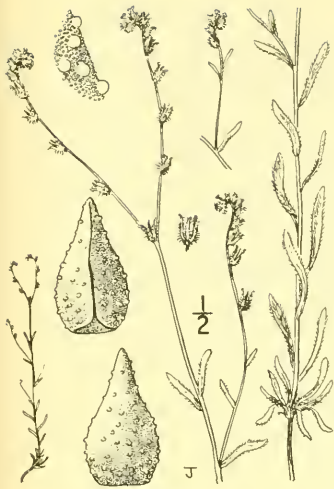


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4279. *Cryptantha intermedia*
 4280. *Cryptantha barbiger*
 4281. *Cryptantha nevadensis*

4282. *Cryptantha scoparia*
 4283. *Cryptantha muricata*
 4284. *Cryptantha excavata*

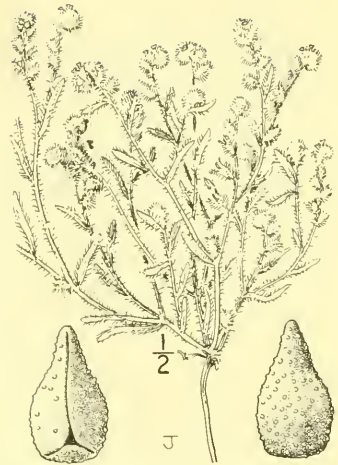
4285. *Cryptantha crinita*
 4286. *Cryptantha Milobakeri*
 4287. *Cryptantha Hendersonii*



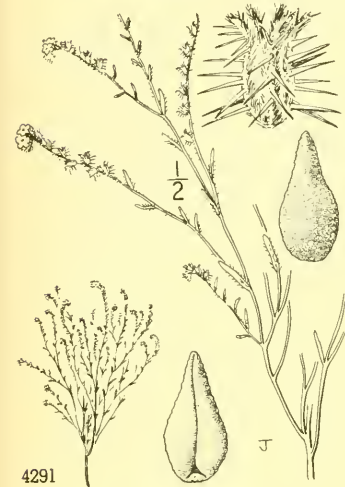
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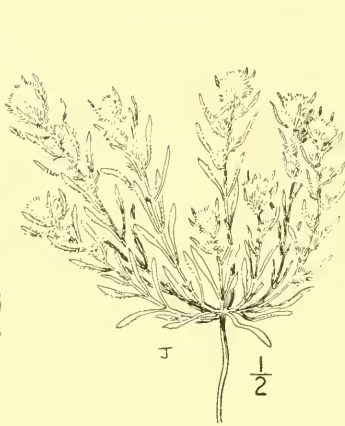
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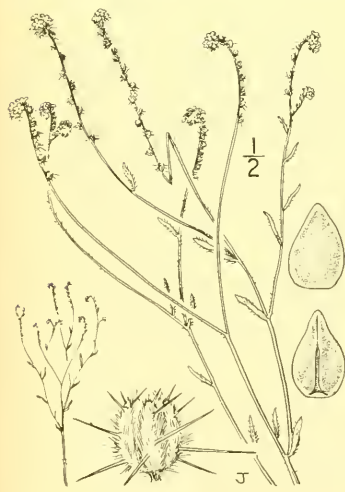
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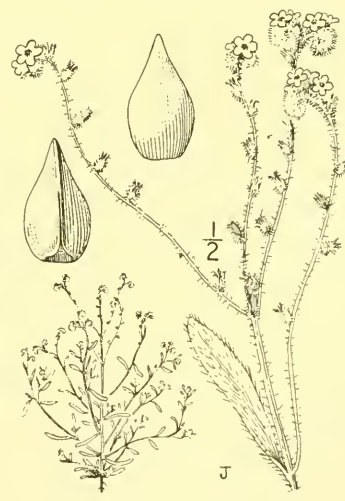
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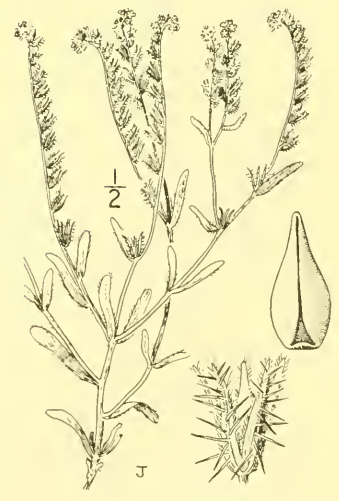
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- 4288. *Cryptantha simulans*
- 4289. *Cryptantha echinella*
- 4290. *Cryptantha ambigua*

- 4291. *Cryptantha Traskiae*
- 4292. *Cryptantha Hooveri*
- 4293. *Cryptantha Torreyana*

- 4294. *Cryptantha incana*
- 4295. *Cryptantha grandiflora*
- 4296. *Cryptantha mariposae*

sellate-papillate, angles rounded, ventral groove broadly forked below and closed throughout; style a little shorter than the nutlets.

Dry sandy or gravelly slopes or flats, in open pine forests, Arid Transition Zone; locally in southern Washington and Western Idaho; generally from Klamath County, southern Oregon, south to the Trinity Mountains, California, and through the Sierra Nevada and southern California ranges to the Cuyamaca Mountains. Type locality: Amador County, California. May–July.

25. *Cryptantha echinella* Greene. Prickly *Cryptantha*. Fig. 4289.

Cryptantha echinella Greene, Pittonia 1: 115. 1887.

Cryptantha ambigua var. *echinella* Jepson & Hoover, Fl. Calif. 3: 336. 1943.

Stems erect, sparsely branched, 0.5–3 or rarely 4 dm. high, short-hirsute to hirsute-hispid. Leaves linear-oblancoolate to oblanceolate, 1–4 cm. long, obtusish, appressed-hispid, minutely pustulate; spikes solitary or geminate, often leafy-bracted below, 1–5 cm. long; corolla inconspicuous, 1–1.5 mm. rarely about 2 mm. broad; fruiting calyx oblong-ovoid, spreading, 5–6 mm. long; mature calyx-lobes linear-lanceolate, connivent above, the tips usually recurved, midrib prominently pale-tawny hispid, margins appressed-hirsutulous; nutlets 4, broadly ovoid, 2 mm. long, grayish and conspicuously papillate-echinate, rounded on the back, groove closed or very narrowly open, widely forked at base; style slightly surpassed by nutlet.

Flats and dry ridges, Canadian and upper Arid Transition Zones; Sierra Nevada, from Nevada County south to the San Bernardino and Panamint Mountains, California, and east to the Charleston Mountains, Nevada. Type locality: Mount Stanford, above Donner Lake, Nevada County, California. July–Aug.

26. *Cryptantha ambigua* (A. Gray) Greene. Wilkes' *Cryptantha*. Fig. 4290.

Eritrichium muriculatum var. *ambiguum* A. Gray, Syn. Fl. N. Amer. 2¹: 194. 1878.

Krynitzkia ambigua A. Gray, Proc. Amer. Acad. 20: 273. 1885.

Cryptantha ambigua Greene, Pittonia 1: 113. 1887.

Cryptantha polycarpa Greene, op. cit. 114.

Cryptantha multicaulis A. Nels. Bot. Gaz. 30: 194. 1900.

Cryptantha ambigua var. *robustior* Brand, Pflanzenreich 4³⁵²: 69. 1931.

Stems usually loosely branched from the base, ascending, 10–25 cm. high, hirsute and somewhat strigose. Leaves linear to narrowly lanceolate, 2–3 cm. or rarely 5 cm. long, 1–4 mm. wide, obtuse to acutish, more or less appressed hispid-hirsute, the hairs usually pustulate at base; spikes often solitary, 5–15 cm. long, bractless or the lowermost flowers sometimes bracteate; corolla 1–2 mm. broad; fruiting calyx 4–7 mm. long, crowded or distant, tube rounded-obconic at base, lobes linear or linear-lanceolate, more or less connivent, midrib thickened, tawny-hispid, margins strigose-hirsute; nutlets 4, broadly ovoid, 1.6–2 mm. long, granulate and tuberculate or rarely nearly smooth toward the base, sides obtuse and rounded, groove closed or somewhat dilated at the always forked base; gynobase two-thirds the length of the nutlet; style reaching to the apex of nutlet or a little shorter.

Dry slopes and ridges, open pine forests and sagebrush, Arid Transition Zone; Klickitat and Walla Walla Counties, Washington, south through eastern Oregon and eastern sides of the Sierra Nevada to Nevada County, California, east to western Montana, Wyoming, and Utah. Type locality: probably in the Walla Walla region of southeastern Washington. Type collected by the Wilkes Expedition. (I. M. Johnston, Contr. Gray Herb. No. 74: 83–85. 1925.) June–July.

27. *Cryptantha Traskiae* I. M. Johnston. Trask's *Cryptantha*. Fig. 4291.

Cryptantha Traskiae I. M. Johnston, Contr. Gray Herb. No. 74: 77. 1925.

Cryptantha Torreyana var. *Traskiae* Jepson, Fl. Calif. 3: 351. 1943.

Stems 8–20 cm. high, with few to rather numerous slender laxly ascending branches, strigose or with also a few spreading hairs. Leaves linear, 0.5–2 cm. long, 1–1.5 mm. broad, acute, strigose or hispidulous; spikes solitary or geminate, 1–5 cm. long; lower flowers subtended by narrowly linear bracts; corolla inconspicuous, limb spreading, 1.5–2 mm. broad; fruiting calyx subsessile, 2–3 mm. long; mature lobes linear-lanceolate, appressed-hirsutulous on the margin, midrib armed with short, divergent, usually yellowish bristles; nutlets 4, homomorphous, 1.5 mm. long, ovoid, finely tuberculate throughout or only toward the apex, more or less mottled gray and brown, dorsal side low-convex, margins rounded; groove narrow, extended to the apex, dilated at base into a narrowly triangular areola.

Gravelly or rocky soils, Upper Sonoran Zone; San Nicolas and San Clemente Islands, southern California. Type locality: bare wind-swept cliffs, San Nicolas Island. April–July.

28. *Cryptantha Hooveri* I. M. Johnston. Hoover's *Cryptantha*. Fig. 4292.

Cryptantha Hooveri I. M. Johnston, Journ. Arnold Arb. 18: 23. 1937.

Stems solitary or branched at the base, branches acute or the outer ones often decumbent at base, 5–15 cm. high, rather densely strigose with whitish hairs, more or less purple-staining at base. Basal leaves narrowly spatulate, 1–2.5 cm. long, obtuse or acutish; cauline leaves ascending, narrowly linear, about 1 mm. wide, acute, revolute on the margins, hispidulous with appressed or ascending hairs, or on the uppermost leaves hirsute-hispidulous; flowers solitary or in glomerules in the axils of the leaves, forming a narrow elongated and rather dense thyrus or panicle; corolla inconspicuous, tubular, 2–2.5 mm. long; fruiting calyx 4–5 mm. long, lobes linear, densely ascending-villous on the margins, midrib with several straight yellowish bristles; nutlets 4, homomorphic, triangular-ovoid, about 1.5 mm. long, acute at the apex,

dorsal side convex, prominently papillate, ventral side sparsely tuberculate; groove very narrow above, abruptly dilated at base into a deltoid areola.

Sandy soil, Sonoran Zones; San Joaquin Valley, from Contra Costa County to Madera County, California. Type locality: eight miles west of Chowchilla, Madera County. April–May.

Cryptantha Clōkeyi I. M. Johnston, Journ. Arnold Arb. 20: 387. 1939. (*Cryptantha muricata* var. *Clōkeyi* Jepson, Fl. Calif. 3: 338. 1943.) Stems 10–15 cm. high, erect, usually with ascending branches from near the middle. Leaves toward the base linear-lanceolate, 2–3 cm. long, 2 mm. broad, pilose, the hairs on the upper surface pectinate at base; spikes solitary or geminate, 3–6 cm. long; fruiting calyx 7–10 mm. long, the lobes long-attenuate; corolla-limb 2 mm. wide; nutlets triangular-ovoid, about 3 mm. long, minutely granulate and conspicuously papillate or tuberculate, the groove closed or open, furcate at base; style distinctly exerted above the nutlet. Type locality: "north of Barstow, San Bernardino Co., 2800 ft." "The plant is probably rare and local since Mr. Clōkey has failed to rediscover it along the road north of Barstow where he originally found it."

29. *Cryptantha Torreyana* (A. Gray) Greene. Torrey's *Cryptantha*. Fig. 4293.

Krynitzkia Torreyana A. Gray, Proc. Amer. Acad. 20: 271. 1885.

Krynitzkia Torreyana var. *calycosa* A. Gray, loc. cit.

Cryptantha Torreyana Greene, Pittonia 1: 118. 1887.

Cryptantha calycosa Rydb. Mem. N.Y. Bot. Gard. 1: 331. 1900.

Cryptantha flexuosa A. Nels. in Coult. & Nels. Man. Bot. Rocky Mts. 416. 1909.

Cryptantha Torreyana var. *calistogae* I. M. Johnston, Contr. Gray Herb. No. 74: 80. 1925.

Stems erect, 1–4 dm. high, solitary or several with erect or more often spreading branches, finely strigose and sparsely hirsutulous. Leaves oblanceolate to linear, erect or spreading, obtuse or rounded at apex, 2–5 cm. long, hirsutulous; spikes commonly geminate, bractless, becoming elongated and loosely flowered or sometimes remaining congested and glomerate; corolla inconspicuous, lobes short, ascending; fruiting calyx ovoid or oblong-ovoid, 3–7 mm. long; mature calyx-lobes linear-lanceolate, connivent above with tips usually spreading, midrib somewhat thickened below, bristly-hispid, margins appressed-hirsute; nutlets usually 4, broadly ovoid, smooth and shiny, often mottled, almost flat on the back, sides rounded or obtuse; groove broadly forked below, closed throughout.

Open slopes or in partial shade, mainly Transition Zones; southern Alaska and British Columbia southward through the Pacific States on both sides of the Cascades to Marin County, California, in the Coast Ranges and to Kern County in the Sierra Nevada, east to Idaho, Nevada, Utah and Wyoming. Type locality: Yosemite Valley (*Torrey 337*), according to I. M. Johnston, Contr. Gray Herb. No. 74: 81. 1925. May–Aug.

Cryptantha Torreyana var. *pumila* (Heller) I. M. Johnston, Contr. Gray Herb. No. 74: 80. 1925. (*Cryptantha pumila* Heller, Muehlenbergia 2: 242. 1906.) Plants 1–2 dm. high, usually conspicuously spreading-hirsute; fruiting calyx 2–3.5 mm. long. Marin, Contra Costa and Santa Clara Counties, California. Type locality: "near the summit of Mt. Tamalpais, Marin County."

30. *Cryptantha incana* Greene. Tulare *Cryptantha*. Fig. 4294.

Cryptantha incana Greene, Leaflets Bot. Obs. 1: 79. 1904.

Cryptantha Torreyana var. *incana* Jepson, Man. Fl. Pl. Calif. 850. 1925.

Stems slender, with several ascending branches, 15–45 cm. high, cinereous-hispidulous and minutely strigose. Leaves linear or sometimes narrowly linear-oblanceolate, appressed-hispidulous; spikes geminate, bractless, elongate and slender in fruit; corolla 4 mm. broad; fruiting calyx more or less ascending, 2–2.5 mm. long, tips of the lobes erect, not attenuate, hirsutulous-hispidulous with ascending hairs, the abaxial lobe especially with 1 or few straight spreading bristles; ovules 4; nutlets 2, ovoid-lanceolate, rounded below, rather abruptly attenuate at apex, 1.5 to nearly 2 mm. long, smooth and polished, grayish mottled with brown.

Dry ground, Arid Transition Zone; southern Sierra Nevada, Tulare County, California. Type locality: Nine-Mile Creek, altitude 5,800 feet. June–Aug.

31. *Cryptantha grandiflora* Rydb. Clearwater *Cryptantha*. Fig. 4295.

Cryptantha grandiflora Rydb. Bull. Torrey Club 36: 679. 1909.

Cryptantha hispidula var. *Elmeri* Brand, Pflanzenreich 4²⁵²: 60. 1931.

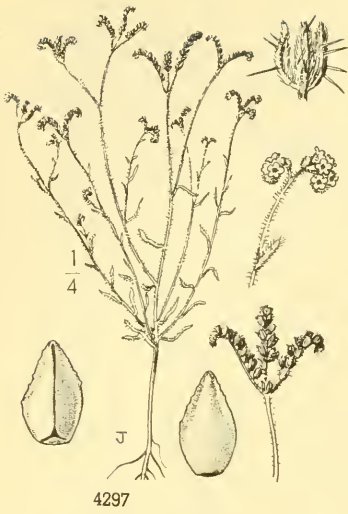
Stems 1.5–4 dm. high, with 2 to several ascending branches, whitish-hirsute. Leaves broadly linear, lanceolate or oblong, 2–5 cm. long, 2–5 mm. wide, hirsute, the hairs with pustulate bases; spikes becoming lax and 5–10 cm. long in fruit; calyx-lobes 2.5–3 mm. long, becoming 4–5 mm. long in fruit, very hispid; corolla white with yellow crests, 3.5–4 mm. long, the limb 5–6 mm. wide; nutlets 1 or 2, ovoid, 2.5 mm. long, dark-colored, smooth and shining, groove narrow, 2-forked at base.

Gravelly or stony ground, Arid Transition Zone; Kittitas and Whitman Counties, Washington, to the Willowa Mountains, northeastern Oregon, and east to western Idaho. Type locality: "Valley of Clearwater River," Nez Perces County, Idaho. April–June.

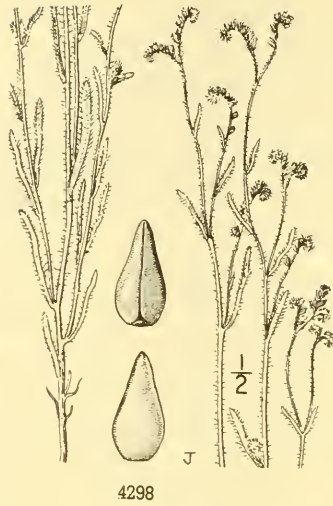
32. *Cryptantha mariposae* I. M. Johnston. Mariposa *Cryptantha*. Fig. 4296.

Cryptantha mariposae I. M. Johnston, Contr. Gray Herb. No. 74: 73. 1925.

Stems erect, with few to several ascending branches, 7–20 cm. high or, in dwarf plants sometimes simple, the larger more or less corymbosely branched, rather finely and closely strigose. Leaves oblong or the upper sometimes oblong-lanceolate, 8–18 mm. long, both sides hirsute with mostly ascending hairs with rather obscurely pustulate bases; spikes solitary or in pairs, bractless or the lowest flower sometimes bracteate; corolla about 2 mm. broad; fruiting calyx 4–5 mm. long and about half as broad, the lobes linear-subulate, erect, with slightly spreading tips, villous on the sides with ascending hairs and conspicuously setose-hispid with



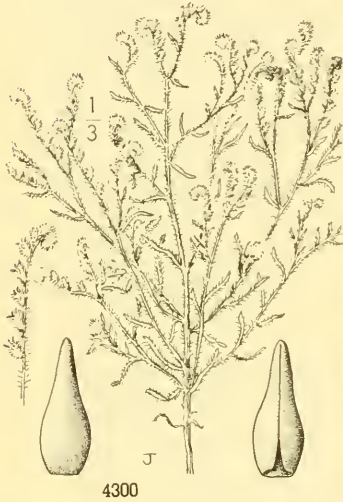
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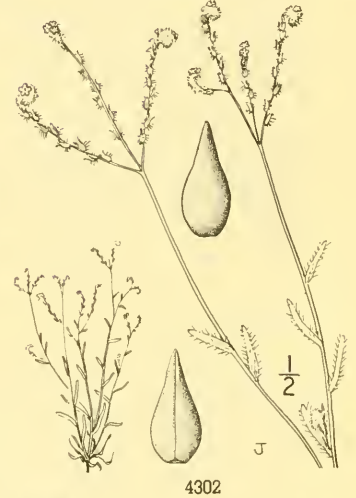
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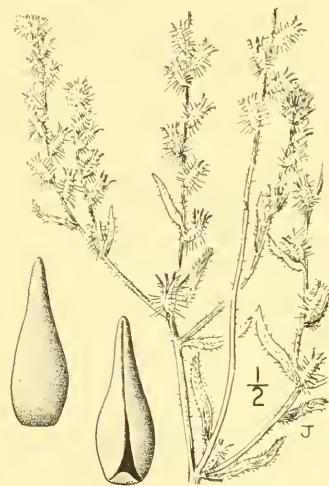
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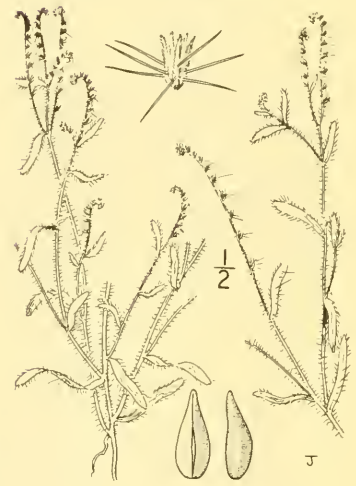
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4297. *Cryptantha mohavensis*
 4298. *Cryptantha Watsonii*
 4299. *Cryptantha gracilis*

4300. *Cryptantha Fendleri*
 4301. *Cryptantha leiocarpa*
 4302. *Cryptantha Clevelandii*

4303. *Cryptantha Ganderi*
 4304. *Cryptantha hispidula*
 4305. *Cryptantha microstachys*

spreading bristles on the prominent midrib; nutlets 4, or rarely 2-3, ovoid below, abruptly narrowed above into an attenuate beak, rounded dorsally on the body but becoming angled upward into the beak, brownish or mottled, shining, thinly or rather thickly muricate-tuberculate; ventral groove narrow, opening into a rounded open scar at base.

Serpentine outcrops, Upper Sonoran Zone; Sierra Nevada foothills from Calaveras County to Mariposa County, California. Type locality: "Mariposa County." April-May.

33. *Cryptantha mohavensis* Greene. Mojave *Cryptantha*. Fig. 4297.

Krynitzkia mohavensis Greene, Bull. Calif. Acad. 1: 207. 1885.

Cryptantha mohavensis Greene, Pittonia 1: 120. 1887.

Cryptantha fallax Greene, op. cit. 5: 54. 1902.

Stems erect and usually well-branched, 1-4 dm. high, short-hirsute with spreading or, especially on the upper parts, ascending hairs. Leaves narrowly linear to linear-lanceolate, hirsute-hispid with rather short more or less ascending hairs, minutely pustulate; spikes in twos or threes, usually crowded, 2-6 cm. long, bractless; corolla 4-7 mm. broad; fruiting calyx oblong-ovoid, 3-5 mm. long; mature calyx-lobes lanceolate, connivent above, margins appressed silky-pubescent, midrib sparsely hispid; nutlets 4, all similar, smooth and shining, rarely obscurely tessellate, oblong-ovoid to lanceolate-ovoid, 2-2.5 mm. long, flattish dorsally, lateral angles obtuse, groove closed above, forked below and often forming a small triangular areola; style distinctly surpassing the nutlets.

Sandy soils, Upper Sonoran Zone; eastern base of the Sierra Nevada near Bishop, Inyo County, California, and Tehachapi Mountains south to the desert slopes of the Sierra Liebre and San Gabriel Mountains, California. Type locality: "Mojave Desert." May-June.

34. *Cryptantha Watsonii* (A. Gray) Greene. Watson's *Cryptantha*. Fig. 4298.

Krynitzkia Watsonii A. Gray, Proc. Amer. Acad. 20: 271. 1885.

Cryptantha Watsonii Greene, Pittonia 1: 120. 1887.

Cryptantha vincens Nels. & Macbr. Bot. Gaz. 62: 143. 1916.

Stems slender, solitary and usually strictly branched, 1-3 dm. high, spreading, short-hirsute. Leaves narrowly linear to narrowly oblanceolate, ascending, hirsute, rarely pustulate; spikes solitary or in pairs, 1-4 cm. long, rarely longer, bractless or rarely bracted below; corolla about 1 mm. broad; fruiting calyx ovoid to oblong-ovoid, 2-3.5 mm. long, the lower becoming distant; mature calyx-lobes lanceolate, the tips connivent, hirsute with ascending hairs, the midrib also with a few spreading bristles; nutlets 4, all similar, lanceolate, 1.5-2 mm. long, smooth and shiny or sometimes dull and minutely tessellate, nearly flat on the dorsal side, distinctly angled on the margins, groove forked at base, closed or nearly so; style equaling or a little shorter than the nutlets.

Slopes and flats, in dry rocky or sandy soils, Arid Transition Zone; east of the Cascades from Okanogan County, Washington, south through Oregon and Nevada to Inyo County, California, east to Montana and Utah. Type locality: Wasatch Mountains, Utah. May-Sept.

35. *Cryptantha gracilis* Osterhout. Slender *Cryptantha*. Fig. 4299.

Cryptantha gracilis Osterhout, Bull. Torrey Club 30: 236. 1903.

Cryptantha Hillmanii Nels. & Kenn. Proc. Biol. Soc. Wash. 19: 157. 1906.

Cryptantha gracilis var. *Hillmanii* Munz & Jtn. Bull. Torrey Club 49: 39. 1922.

Stems slender, simple with ascending branches above or frequently with several elongated branches below, 1-2 dm. high, rather densely hirsute-hispid with rather short spreading hairs. Leaves linear or narrowly oblanceolate, the lower 1.5-3 cm. long, the upper usually much reduced, pubescence similar to that on the stem but usually pustulate; spikelets solitary or in pairs, 1-2 cm. long, usually dense, bractless; corolla 1 mm. or less in width; fruiting calyx ovoid, divaricately spreading, 2-3 mm. long; mature calyx-lobes lanceolate, erect at apex, rather densely tawny hirsute-villous, midrib with a few hirsute-hispid bristles not strongly differentiated from the rest of the pubescence; nutlets 1 or rarely 2-3 and unequally developed, lanceolate, 1.5-2 mm. long, smooth and shiny, nearly flat on dorsal side, sides rounded at least above, groove usually open to above the middle, scarcely forked below; style about three-fourths the height of the nutlet.

Dry, usually brushy slopes, Upper Sonoran Zone; White Mountains, Inyo County and the higher ranges of eastern Mojave Desert, California, east through Nevada and northern Arizona to Snake River, Idaho, and Colorado. Type locality: Glenwood Springs, Colorado. April-July.

36. *Cryptantha Fendleri* (A. Gray) Greene. Fendler's *Cryptantha*. Fig. 4300.

Krynitzkia Fendleri A. Gray, Proc. Amer. Acad. 20: 268. 1885.

Eriochrysum hispidum var. *leiocarpum* Kuntze, Rev. Gen. Pl. 2: 437. 1891.

Cryptantha ramulosissima A. Nels. Erythea 7: 68. 1899.

Cryptantha wyomingensis Gandoger, Bull. Soc. Bot. Fr. 65: 62. 1918.

Stem erect, usually evident throughout and bearing lateral branches mostly above the middle, sometimes rather bushy-branched from near the base, 1-5 dm. high, rather densely and conspicuously hirsute-hispid with more or less ascending hairs. Leaves narrowly linear to narrowly oblanceolate, acute, appressed-hirsute, often pustulate on the lower surface; spikes solitary or in pairs, 2-12 cm. long, loosely flowered, bractless or rarely bracted below; corolla about 1 mm. broad; fruiting calyx ovate-oblong, 4-5 or rarely 6-7 mm. long, ascending; mature calyx-lobes loosely connivent with the tips somewhat spreading, margins white-hirsute with

ascending hairs, midrib hispid; nutlets 4, all similar, or sometimes reduced to 1-3, smooth and somewhat shiny, lanceolate, acuminate, convex on dorsal face, rounded or obtuse on the sides, groove closed above, opening below into a deltoid areola; style equaling or slightly surpassing the nutlets.

Usually on sagebrush plains, Upper Sonoran and Arid Transition Zones; southeastern Washington and northeastern Oregon, east to Saskatchewan and western Nebraska, and south to northern Arizona and New Mexico. Type locality: New Mexico. June-Aug.

37. *Cryptantha leiocarpa* (Fisch. & Mey.) Greene. Coast *Cryptantha*. Fig. 4301.

Echinosperrum leiocarpum Fisch. & Mey. Ind. Sem. Hort. Petrop. 2: 36. 1835.

Krynitzkia leiocarpa Fisch. & Mey. op. cit. 7: 52. 1841.

Eritrichium leiocarpum S. Wats. Bot. King Expl. 244. 1871.

Cryptantha leiocarpa Greene, Pittonia 1: 117. 1887.

Cryptantha leiocarpa var. *eremocaryoides* Brand, Pflanzenreich 4²²: 53. 1931.

Stems at first erect, later commonly widely branched from the base and more or less decumbent, 1-3 dm. long, more or less densely hirsute-hispid, with white appressed or ascending hairs. Leaves linear or sometimes oblanceolate, usually narrowly so, ascending, acute or obtuse, appressed pilose-hispid on both sides; spikes usually numerous, those on the short lateral branchlets usually short and congested, those terminating the principal branches often in pairs and becoming 2-4 cm. or rarely 6 cm. long and conspicuously leafy-bracted; corolla 1-2.5 mm. broad; fruiting calyx ovoid to oblong-ovoid, 2-3 mm. long, crowded or becoming loose below; mature calyx-lobes somewhat connivent above, midrib thickened, conspicuously tawny-hispid with spreading bristles, margins appressed-hirsute; nutlets 4, rarely reduced to 1 by abortion, ovoid-lanceolate, 2 mm. long, smooth, shiny, usually mottled with brown and light gray, rounded on the back, ventral side obtusely rounded, margin obtuse, groove closed to the base, obscurely or commonly not at all forked at base; style equaling or slightly surpassing the nutlets.

Sandy soils along the coast, mainly Humid Transition Zone; Gold Beach, southern Oregon to Surf, Santa Barbara County, California. Type locality: Fort Ross, California. April-June.

38. *Cryptantha Clevelandii* Greene. Cleveland's *Cryptantha*. Fig. 4302.

Cryptantha Clevelandii Greene, Pittonia, 1: 117. 1887.

Cryptantha Brandegei I. M. Johnston, Contr. Gray Herb. No. 68: 53. 1923.

Cryptantha Abramsii I. M. Johnston, op. cit. No. 74: 97. 1925.

Stems erect or sometimes decumbent, 1-5 dm. high, usually with several elongated ascending or spreading branches, hispidulous with appressed or ascending hairs. Leaves usually dense at base, sparsely scattered above and on the branches, linear to linear-lanceolate, mostly acutish, rather thinly appressed-hispidulous and usually with a few stouter bristles on margins; spikes solitary at the ends of the branches or in twos or threes, 4-10 cm. long, slender, bractless with 1 or 2 bracts at base; corolla about 1 mm. broad; fruiting calyx ovoid to ovoid-oblong, 2-3 mm. long; mature calyx-lobes linear or narrowly linear-lanceolate, connivent above with the tips spreading, outer ones conspicuously hispid on the thickened midribs, all the lobes densely whitish appressed-hirsutulous; nutlets 1-4, ovate-oblong to broadly lanceolate, smooth and shining, low-rounded on the back, groove closed, broadly forked at base or rarely with a small areola; style about two-thirds to as long as nutlets or slightly surpassing them.

Hillsides and mountain slopes, Upper Sonoran Zone; cismontane southern California from the vicinity of Los Angeles to northern Lower California. Type locality: San Diego, California. April-June.

Cryptantha Clevelandii var. *florosa* I. M. Johnston, Contr. Gray Herb. No. 74: 95. 1925. (*Cryptantha hispidissima* Greene, Pittonia 1: 118. 1887; *C. Clevelandii* var. *hispidissima* I. M. Johnston in Munz, Man. S. Calif. 427. 1935.) Plants usually stouter, spreading or erect, often conspicuously hispid with spreading hairs; spikes in twos or threes at the ends of leafless or sparingly leafy peduncles, bractless or with a few bracts at base; corolla 2-5 mm. broad. California Coast Ranges from San Luis Obispo to San Diego, but infrequently found as far north as Santa Cruz County. Type locality: Linda Vista, San Diego County.

Cryptantha Clevelandii var. *dissita* (I. M. Johnston) Jepson & Hoover in Jepson, Fl. Calif. 3: 348. 1943. (*Cryptantha dissita* I. M. Johnston, Journ. Arnold Arb. 20: 383. 1939.) Stems rather stout with ascending branches, villous-hirsute; corolla 4-6 mm. broad; fruiting calyx 5-6 mm. long; nutlets 1-3, ovate-lanceolate; style slightly exceeding the nutlets. Tuffaceous and serpentine outcrops in the vicinity of Lakeport, Lake County, California. Type locality: near foot of grade a few miles west of Lakeport on road to Hopland.

39. *Cryptantha Gánderi* I. M. Johnston. Gander's *Cryptantha*. Fig. 4303.

Cryptantha Ganderi I. M. Johnston, Journ. Arnold Arb. 20: 386. 1939.

Stem 1-4 dm. high, branching from the base and more or less dichotomously above, hirsute-hispid with spreading hairs of different length. Leaves linear, acute or obtuse, rather thinly hispidulous, the hairs, especially those on the lower, pubescent at base; spikes solitary, terminal or from the axils of the upper leaves, bractless, 5-15 cm. long and loosely flowered in age; corolla inconspicuous, 2.5 cm. long, lobes narrow, erect; fruiting calyx subsessile, ascending, accrescent, 6-10 mm. long, lobes narrowly linear, erect, margins very narrow, the costate midrib with conspicuous yellowish, spreading or deflexed bristles; ovules 4, usually 1 fertile and 3 abortive; nutlets lanceolate, acuminate, 2-2.5 mm. long, smooth or faintly rugulose, shiny, grayish brown and rather obscurely mottled, convex on the back, margins rounded, ventral side broadly obtuse; groove closed above, forked at base into a narrow triangular areola.

Desert washes and hills, Lower Sonoran Zone; Colorado Desert, San Diego County, California, and northern Lower California. Type locality: "Borego Valley, Larrea-Franseria association, 500 ft. alt." San Diego County. Feb.-May.

40. *Cryptantha hispídula* Greene. Napa Cryptantha. Fig. 4304.

Cryptantha hispídula Greene ex Baker, West. Amer. Pl. 2: 10. 1903. Nomen nudum.

Cryptantha hispídula Greene ex Brand, Pflanzenreich 4²²: 60. 1931.

Stems erect, slender, 1-4 dm. high, widely branched above the base, strigose and spreading-hirsutulous. Leaves linear or the lower narrowly oblanceolate, 0.7-1.5 cm. long, spreading-hispidulous, more or less pustulate; spikes geminate or ternate or occasionally solitary, becoming loosely flowered and often 5-7 cm. long; corolla 2-2.5 mm. broad; fruiting calyx 2-2.5 mm. ascending, connivent with the tips spreading; mature calyx-lobes linear, conspicuously hispid on the midrib, the tips and margins appressed-hispidulous; nutlet 1, smooth and polished, ovate or lanceolate, narrowed above into a slender beak, well-rounded on both sides; groove open, shortly forked at base; style shorter than the nutlet.

Serpentine outcrops, Upper Sonoran Zone; Inner Coast Ranges, Lake and Napa Counties, California. Type locality: Knoxville, Napa County. April-June.

41. *Cryptantha microstàchys* Greene. Tejon Cryptantha. Fig. 4305.

Krynitzkia microstachys Greene ex A. Gray, Proc. Amer. Acad. 20: 269. 1885.

Cryptantha microstachys Greene, Pittonia 1: 116. 1887.

Stems erect, slender-branched from the base or above, 8-30 cm. high, hirsute-hispidulous with spreading or more or less ascending hairs. Leaves spreading, linear to linear-lanceolate, 1-4 cm. long, obtuse, hirsute-hispidulous or rarely strigose, sparsely ciliate-hispid on the margins and the midrib beneath; spikes geminate or ternate, in age loosely flowered and very slender, 2.5-8 cm. long; corolla 0.5-1 mm. broad; fruiting calyx ascending, 1-2 mm. long, oblong or slightly connivent and tips slightly spreading; calyx-lobes narrowly linear-lanceolate, thinly strigose and greenish with a few spreading bristles on the midrib and usually 1 or 2 erect ones at the tip; nutlet 1, lanceolate or ovate-attenuate, 1.5 mm. long, smooth and polished, rounded on the dorsal side, the ventral side rounded or slightly 2-planed; groove closed, simple or shortly forked at very base.

Common in chaparral, Upper Sonoran Zone; Coast Ranges from Glenn County south to San Diego County, also Sierra Nevada in Kern County, California. Type locality: Fort Tejon, Kern County. April-June.

42. *Cryptantha nemáclada* Greene. Colusa Cryptantha. Fig. 4306.

Cryptantha nemaclada Greene, Pittonia 1: 118. 1887.

Stems slender, erect and usually much-branched, 1-3 dm. high, sparsely strigose, and more or less short-hirsute. Leaves narrowly linear, 1-3 cm. long, obtuse, ascending or somewhat appressed, appressed-hirsutulous, minutely pustulate; spikes solitary or geminate, bractless, slender, becoming loosely flowered and 2-9 cm. long; corolla minute, less than 1 mm. broad; fruiting calyx oblong-ovoid, strictly ascending, 2-4 mm. long; mature calyx-lobes linear, connivent above with tips spreading, midrib thickened, conspicuously hispid toward the base, retrorsely setulose toward the apex, margins sparsely strigose; nutlets 1-4, lanceolate to ovoid-lanceolate, 1.7-2 mm. long, smooth, convex on the back, obtuse on the sides, groove opened or closed above, broadly forked below; style reaching to about three-fourths the length of the nutlet.

Hillsides and shaded banks, Upper Sonoran Zone; Inner Coast Ranges and bordering valleys, Colusa County south to San Luis Obispo County and the Tehachapi Mountains, California. Type locality: "Colusa County." April-May.

43. *Cryptantha rostelläta* Greene. Beaked Cryptantha. Fig. 4307.

Krynitzkia rostellata Greene, Bull. Calif. Acad. 1: 203. 1885.

Cryptantha rostellata Greene, Pittonia 1: 116. 1887.

Krynitzkia Suksdorfii Greenm. Bot. Gaz. 40: 146. 1905.

Cryptantha Suksdorfii Piper, Contr. U.S. Nat. Herb. 11: 484. 1906.

Stems stiffly erect, branched below or more often simple below with a few ascending branches toward the top, rather finely strigose and canescent. Leaves rather abundant along main stem, ascending, firm and persistent, usually opposite below the middle, narrowly linear but more often oblanceolate and 2-3 mm. wide; spikes solitary or geminate, rather stiff, naked, 2-4 cm. long; corolla minute, 1 mm. or less broad; fruiting calyx oblong-ovate, 3-4 mm. long, spreading or ascending, fairly persistent; mature calyx-lobes with midrib on all lobes armed with stout, encrusted uncinatate or arcuate hairs, margins sparsely ciliate or strigose; only 1 nutlet maturing, smooth, compressed ovate-lanceolate to lanceolate, 2-3 mm. long, convex dorsally, rounded on the sides, truncate at base; groove closed above, forked at base into a distinct areola; gynobase very short and stout; style one-half to one-third height of nutlet.

Foothills, Upper Sonoran Zone; Klickitat County, Washington, south to central California. Type locality: "Lake and Colusa Counties," California. Collected by Mrs. Curran. April-May.

Cryptantha rostellata var. *spithamea* (I. M. Johnston) Jepson, Fl. Calif. 3: 354. 1943. (*Cryptantha spithamea* I. M. Johnston, Journ. Arnold Arb. 20: 385. 1939.) The reflexed bristles on the lower part of the calyx are few or wanting. Foothills, Upper Sonoran Zone; Mariposa County, California. Type locality: Coulterville.

44. *Cryptantha flaccida* (Dougl.) Greene. Flaccid *Cryptantha*. Fig. 4308.

Myosotis flaccida Dougl. ex Lehm. Stirp. Pug. 2: 22. 1830.

Eritrichium oxycaryum A. Gray, Proc. Amer. Acad. 10: 58. 1874.

Krynitzkia oxycarya A. Gray, op. cit. 20: 269. 1885.

Cryptantha flaccida Greene, Pittonia 1: 115. 1887.

Cryptantha multicaule Howell, Fl. N.W. Amer. 487. 1901. Not A. Nels. 1900.

Cryptantha Howellii A. Nels. Bot. Gaz. 34: 30. 1902.

Cryptantha Lyallii Brand, Rep. Spec. Nov. 24: 57. 1927.

Stem strictly erect, ascendingly branched above, or sometimes from the base, 2-5 dm. high, strigose with encrusted hairs. Leaves very narrowly linear to linear-oblong, 2-6 cm. long, 1-2 or rarely 3 mm. wide, strict or ascending, rather densely and finely strigose; spikes solitary to quinate, naked, usually rather stiff, 4-8 cm. or as much as 16 cm. long; corolla 1-4 mm. broad; fruiting calyx oblong-ovoid, 2-5 mm. long, strictly and closely erect; mature calyx-lobes linear-lanceolate, closely connivent above with the tips spreading, midrib armed with spreading, coarse, encrusted, arcuate or uncinat bristles, margins ciliate or strigose, outer lobe longest and most conspicuously bristly; only 1 nutlet maturing, ovate-lanceolate and rostrate-acuminate, only slightly compressed, smooth; groove closed above, dilated at base to form a very small areola; gynobase very low and scarcely manifest; style one-third to one-half the height of the nutlet.

Hillslopes, Arid Transition and Upper Sonoran Zones; Washington and adjacent Idaho to southern California. Type locality: east of the Cascades in the Columbia River Basin. Collected by Douglas. April-June.

45. *Cryptantha sparsiflora* Greene. Slender *Cryptantha*. Fig. 4309.

Krynitzkia sparsiflora Greene, Bull. Calif. Acad. 1: 203. 1885.

Cryptantha sparsiflora Greene, Pittonia 1: 116. 1887.

Stem very slender, with usually few ascending branches, 1-3 dm. high, sparsely strigose. Leaves narrowly linear, 1-3 cm. long, about 1 mm. wide, strigose, the lower often opposite; spikes solitary or geminate, slender, becoming loosely flowered and 2-6 cm. long, bractless or sometimes with 1 or 2 bracts near the base; corolla minute, less than 1 mm. broad; fruiting calyx 2-3 mm. long, ovate to ovate-oblong, ascending, early deciduous; mature calyx-lobes linear-lanceolate, somewhat connivent, midrib armed with short, stout, uncinat hairs, margins sparsely ciliate; ovules 4, only 1 maturing; nutlet 1, ovate, acute or short-acuminate, decidedly compressed, smooth, 2 mm. long, low-convex dorsally, angled on the margin; groove closed and broadly forked near the base; gynobase low; style one-third to one-half the height of nutlet.

Rocky slopes, Upper Sonoran Zone; Inner Coast Ranges, Stanislaus and San Benito Counties and the foothills of the Sierra Nevada from Mariposa County to Kern County, California. Type locality: possibly in the Tehachapi Mountains. Collected by Mrs. Curran, but collecting data uncertain. April-May.

46. *Cryptantha affinis* (A. Gray) Greene. Common *Cryptantha*. Fig. 4310.

Krynitzkia affinis A. Gray, Proc. Amer. Acad. 20: 270. 1885.

Cryptantha affinis Greene, Pittonia 1: 119. 1887.

Cryptantha geminata Greene, loc. cit.

Cryptantha Eastwoodiae St. John, Fl. S.E. Washington 342. 1937.

Stems usually with few ascending branches mostly above the middle or sometimes more or less profusely branched from the base, 1-4 dm. high, pubescent throughout with short upwardly curved hairs and also with scattered ascending or spreading hirsute-hispid hairs. Leaves narrowly to broadly oblanceolate, mostly 3-6 mm. broad, obtuse or rounded at apex, rather sparsely short-hispid and minutely pustulate; spikes solitary or geminate, 2-8 cm. long or rarely longer, usually with a few foliaceous bracts below, becoming loosely flowered; corolla minute, about 1.5 mm. broad; fruiting calyx 2.5-4 mm. long, and about as broad, compressed; mature calyx-lobes somewhat connivent, midrib little thickened, on the outer lobe especially sparsely hispid, margins appressed-hirsute; nutlets 4, similar, smooth and polished, ovate, obliquely compressed, often mottled, 2-2.5 mm. long, low-convex on the back, rounded on the sides; groove distinctly eccentric, closed, simple or shortly forked at base; style shorter or nearly as high as the nutlets.

Usually in sandy or rocky soils, Arid Transition Zone; eastern Washington south, mainly east of the Cascades to eastern Oregon, the North Coast Ranges, and in the Siskiyou Mountains, and the Sierra Nevada, south to the Cuimaca Mountains, California, east to Idaho, Nevada, and Wyoming. Type locality: "E. side of the Cascades near lat. 49°." Collected by Lyall. June-Sept.

47. *Cryptantha glomeriflora* Greene. Truckee *Cryptantha*. Fig. 4311.

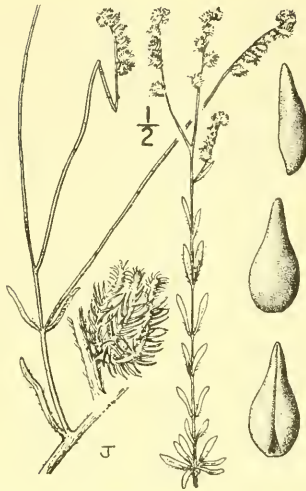
Cryptantha glomeriflora Greene, Pittonia 1: 116. 1887.

Stems erect with a few ascending branches, 3-10 cm. high, or commonly diffusely branched and spreading, whitish strigose. Leaves 5-15 mm. long, linear-oblong to lanceolate-oblong, appressed-hispidulous; flowers in glomerules or 2 or 3 in the axils of the leaves and at the ends of the branchlets; corolla minute, the lobes ascending; mature calyx 1-1.5 mm. long, lobes linear-lanceolate, hispidulous and bristly with stout straight bristles; nutlets solitary, ovate below, more or less abruptly attenuate at apex, smooth, shiny, light gray more or less speckled with brown, 1.5 mm. long, rounded on the back and somewhat keeled on the narrowed apex; ventral groove a little off center, closed, opening at base into the sunken areola.

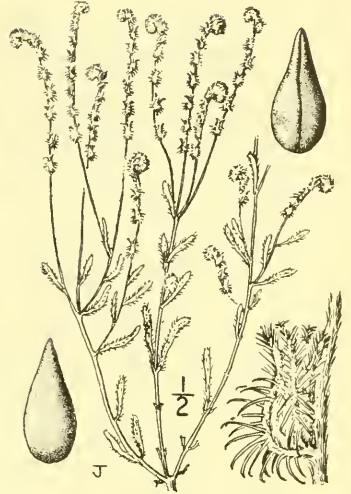
Mountain meadows and slopes, upper Arid Transition and Canadian Zones; Sierra Nevada from Nevada County to Tulare and Inyo Counties, also White Mountains, California. Type locality: "Borders of a pond two miles below Truckee," Nevada County, California. June-Sept.



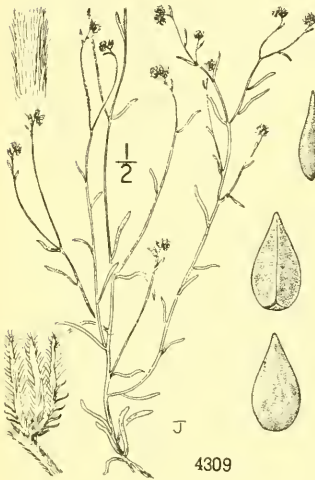
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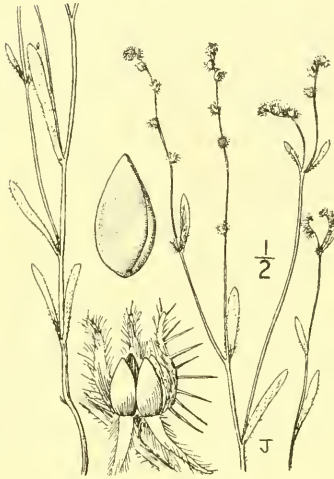
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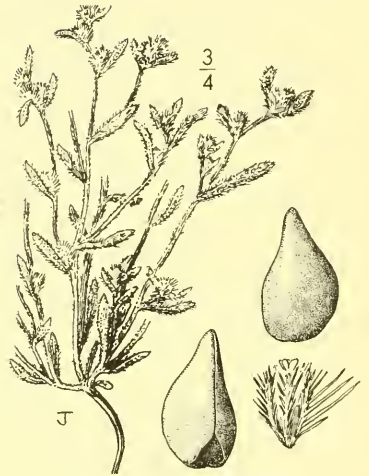
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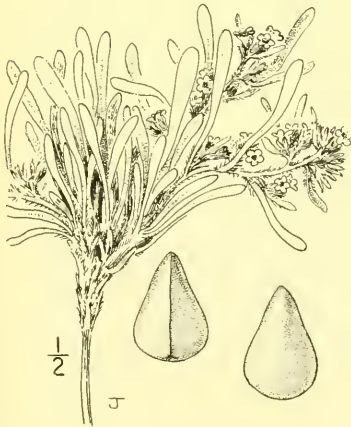
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4310



4311



4312



4313



4314

4306. *Cryptantha nemaclada*
4307. *Cryptantha rostellata*
4308. *Cryptantha flaccida*

4309. *Cryptantha sparsiflora*
4310. *Cryptantha affinis*
4311. *Cryptantha glomeriflora*

4312. *Oreocarya abortiva*
4313. *Oreocarya confertiflora*
4314. *Oreocarya leucophaea*