

22. *OREOCARYA* Greene, Pittonia 1: 57. 1887.

Stout perennial herbs, canescent or pilose-hispid with the leaves mostly basal. Inflorescence leafy-bracteate thyrsoid or racemose-paniculate. Flowers in slender pedicels, persistent. Calyx 5-parted to the base, segments lanceolate. Corolla white or cream-colored with prominent often yellow crests. Nutlets smooth and polished or tuberculate or rugose and dull, the margins acute or sometimes very narrowly winged; groove usually closed, divaricate at base. [Name Greek, meaning mountain, because of the habitat, and nutlet.]

A genus of about 45 species inhabiting western North America. Type species, *Cynoglossum glomeratum* Pursh.

Nutlets smooth and shining on the dorsal surface.

Corolla-tube 3-4 mm. long, barely as long as calyx in anthesis, white.

1. *O. abortiva*.

Corolla-tube 8-12 mm. long, distinctly longer than calyx in anthesis.

Corolla yellow; nutlets broadly ovate in outline, distinctly wing-margined.

2. *O. confertiflora*.

Corolla white; nutlets lanceolate in outline, the margins acute not winged.

3. *O. leucophaea*.

Nutlets more or less roughened or wrinkled on the dorsal surface.

Corolla-tube about equaling or shorter than the calyx in anthesis.

Inner surface of nutlets smooth or nearly smooth; margin of scar not elevated.

Scar of nutlet narrowly subulate, but open at base.

Nutlets with conspicuous transverse rugae on upper surface.

Calyx 5-7 mm. long in fruit.

4. *O. subretusa*.

Calyx 13-15 mm. long in fruit.

5. *O. crymophila*.

Nutlets with distinct tubercles but no conspicuous transverse rugae on upper surface.

6. *O. nubigena*.

Scar of nutlet broader and distinctly cuneate at base.

7. *O. Thompsonii*.

Inner surface of nutlets conspicuously rugose or tuberculate.

Scar of nutlet open and cuneate toward the base, only narrowly so in *O. humilis*.

Margin around scar somewhat elevated.

Cymules elongated and inflorescence broad.

Calyx-lobes 10-12 mm. long in fruit; nutlets 4.5 mm. long, prominently carinate on the dorsal side.

8. *O. virginensis*.

Calyx-lobes 5-7 mm. long in fruit; nutlets 2.5-3 mm. long, with only an indistinct central ridge toward the apex.

9. *O. Hoffmannii*.

Cymules short and inflorescence narrow; nutlets without or with only an indistinct central ridge on the dorsal side.

10. *O. tumulosa*.

Margin around the scar not at all elevated; scar with only narrow opening at base.

11. *O. humilis*.

Scar of nutlet closed and linear or nearly so, without conspicuous triangular opening toward the base.

Leaves uniformly strigose on the upper surface and without pustules.

12. *O. propria*.

Leaves with strigose hairs, also with marginal setae pustulate at base.

Nutlets dark brown and glossy, tuberculate, not rugose but with an occasional pair of tubercles connected by a low vein-like ridge.

13. *O. Sheldonii*.

Nutlets more or less rugose, the ridges and tubercles pallid. (See also *O. humilis*.)

Nutlets 3-4 mm. long; stems slender.

14. *O. spiculifera*.

Nutlets 4-5 mm. long; dorsal ridges conspicuously rugose.

15. *O. celosioides*.

Corolla-tube distinctly longer than the calyx in anthesis; scar of nutlet conspicuously open and its margin distinctly elevated.

16. *O. flavoculata*.

1. *Oreocarya abortiva* Greene. Prostrate *Oreocarya*. Fig. 4312.

Oreocarya abortiva Greene, Pittonia 3: 114. 1896.

Krynitzkia multicaulis var. *abortiva* M. E. Jones, Contr. West. Bot. No. 13: 5. 1910.

Oreocarya suffruticosa var. *abortiva* J. F. Macbride, Proc. Amer. Acad. 51: 547. 1916.

Cryptantha Jamesii var. *abortiva* Payson, Ann. Mo. Bot. Gard. 14: 250. 1927.

Hemisphaerocarya abortiva Brand, Rep. Spec. Nov. 24: 61. 1927.

Stems several from the root crown, decumbent or prostrate, 5-15 cm. long, herbage silver-gray throughout with a fine strigulose pubescence and with few hirsute bristles in the inflorescence especially on the margins of the bracts. Leaves mostly tufted near the base, 5-10 cm. long, oblanceolate, densely strigulose and with scattered appressed bristles pustulate at base; raceme short leafy-bracteate, usually in a thyrsoid panicle 1.5-3 cm. long; calyx-lobes ovate-lanceolate, 3-4 mm. long, densely strigose and setose, the tube very short; corolla white, 3-4 mm. long, the limb about 3 mm. broad; nutlets 1-4, narrowly ovoid, 2-2.5 mm. long, curved on the dorsal side, smooth and glossy, ventral side strongly keeled with sloping sides, the keel grooved about two-thirds the way up and forked at base; scar linear, situated in the groove.

Gravelly flats, mountains, mostly Canadian Zone; Mono and Inyo Counties and to the San Bernardino Mountains, California, east to southern Nevada. Type locality: Bear Valley, San Bernardino Mountains, California. May-Aug.

2. *Oreocarya confertiflora* Greene. Mojave *Oreocarya*. Fig. 4313.

Oreocarya confertiflora Greene, Pittonia 3: 112. 1896.

Oreocarya leucophaea var. *confertiflora* Parish, Erythra 7: 95. 1899.

Oreocarya lutea Greene ex Fedde, Rep. Spec. Nov. 19: 72. 1923.

Cryptantha confertiflora Payson, Ann. Mo. Bot. Gard. 14: 256. 1927.

Perennial with a stout woody root and woody caespitose caudex, the flowering stems simple,

1.5–5 dm. high, densely white silky-villous at base, strigose and sparingly setose above, the bristles appressed or ascending. Leaves rather crowded near the base, their clasping bases often persistent, linear-oblancoolate, acute, 3–10 cm. long, densely strigose and at least all but the lowest with appressed bristles with pustulate bases, lower surface uniformly strigose; inflorescence usually less than one-third the length of the stem, the axis, floral bracts and calyces covered with spreading yellowish bristles, cymules short; sepals linear-lanceolate, acute, 7–10 mm. long in flower, 10–12 mm. in fruit; corolla pale yellow or cream-colored, 12–14 mm. long, the limb 7–9 mm. broad; nutlets broadly ovoid, sharply 3-angled, about 3 mm. long, flat or concave dorsally, acute and narrowly wing-margined at the angles, glossy and smooth; scar straight extending from base to about the middle, the margin not elevated.

Usually on gravelly benches or washes, Upper Sonoran and Arid Transition Zones; desert regions from Mono and Inyo Counties to the northern base of the San Bernardino Mountains, San Bernardino County, California, east to southern Nevada, southwestern Utah and northern Arizona. Type locality: Cushenberry Springs, desert slopes of the San Bernardino Mountains, California. May–July.

3. *Oreocarya leucophaea* (Dougl.) Greene. Gray *Oreocarya*. Fig. 4314.

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

Eritrichium leucophaeum A. DC. Prod. 10: 129. 1846.

Krynitzkia leucophaea A. Gray, Proc. Amer. Acad. 20: 280. 1885.

Oreocarya leucophaea Greene, Pittonia 1: 58. 1887.

Cryptantha leucophaea Payson, Ann. Mo. Bot. Gard. 14: 262. 1927.

Stems arising from a caespitose woody caudex, 2–4 dm. high, densely white-strigose below, bristly-hirsute above. Leaves linear to linear-oblancoolate, acute, 3–6 cm. long or rarely longer, ciliate toward the base and on the winged petioles, strigose on both sides; inflorescence 7–15 cm. long, narrow, congested above, leafy bracted below, densely bristly-hirsute; fruiting calyx 10–15 mm. long, the lobes linear-subulate, white-strigose and densely bristly; corolla white, the tube 8–10 mm. long, limb 8–10 mm. broad; nutlets about 3.5 mm. long, smooth and glossy, the margins acute but not winged; scar as in preceding species.

Usually in sandy soils, associated with sagebrush, Arid Transition Zone; east of the Cascade Mountains from southern British Columbia and eastern Washington at least as far as Walla Walla County, and probably adjacent northern Oregon. Type locality: "arid barrens of the Columbia, and of its northern and southern tributaries." May–July.

4. *Oreocarya subretusa* (I. M. Johnston) Abrams. Crater Lake *Oreocarya*. Fig. 4315.

Cryptantha subretusa I. M. Johnston, Journ. Arnold Arb. 20: 393. 1939.

Cryptantha andina I. M. Johnston ex M. E. Peck, Man. Pl. Oregon 601. 1941.

Cespitose perennial, the woody caudex usually compact and densely leafy. Leaves congested at base, spatulate, subretuse, rounded or obtuse at apex, tomentose; stems 7–20 cm. high, densely yellowish hirsute-bristly, flowers mostly congested in a rather narrow thyrsus, bracts densely yellowish-hispid, the lower longer than the cymes, the upper shorter; sepals 3–4 mm. long in anthesis, 5–7 mm. in age; corolla white, tube 3–4 mm. long, limb 3–6 mm. broad; nutlets oblong-lanceolate, 3–4 mm. long, acute on the angles or narrowly wing-margined, dorsal surface convex, inconspicuously tuberculate or with short low rugae; scar linear or subulate with the base slightly open.

Dry talus slopes, especially in pumice, Boreal Zones; Crater Lake, Oregon to Mount Eddy, Siskiyou County, California, east to Wallowa and Harney Counties, Oregon, and Humboldt County, Nevada. Type locality: "Crater Lake, pumice slope on rim, 7,000 ft." May–Aug.

This species has been confused by some authors with *O. nubigena* and *O. humilis*.

5. *Oreocarya crymophila* (I. M. Johnston) Jepson & Hoover. Alpine *Oreocarya*. Fig. 4316.

Cryptantha crymophila I. M. Johnston, Journ. Arnold Arb. 21: 65. 1940.

Oreocarya crymophila Jepson & Hoover in Jepson, Fl. Calif. 3: 328. 1943.

Perennial, stems erect, several, 1.5–3 dm. high, simple, hirsute and minutely villous below, hispid above. Leaves grayish villous-tomentose and bearing upwardly appressed setae on both surfaces, the setae on the lower surface pustulate at base; lower leaves spatulate-oblancoolate, 5–10 cm. long; upper cauline leaves oblancoolate or narrowly linear, 4–5 cm. long, 4–5 mm. broad; cymes 3–7-flowered, scattered in the axils of the leaves and glomerate at the apex, fruiting inflorescence 2–3 cm. broad; calyx 5 mm. long in flower, 13–15 mm. in fruit; corolla white, 8 mm. long, limb 5 mm. broad; nutlets 4, ovoid, 4.5–5 mm. long, rounded at base, dorsal side irregularly rugose, the rugae interrupted more or less by transverse rugae, ventral side smooth; scar narrow, subulate at base; gynobase subulate.

Rocky slopes, mainly Hudsonian Zone; alpine ridges between the Clark Fork and Middle Fork of the Stanislaus River, Sierra Nevada, Alpine and Tuolumne Counties, California. Type locality: Red Peak, Alpine County, California. July–Aug.

6. *Oreocarya nubigena* Greene. Sierra *Oreocarya*. Fig. 4317.

Oreocarya nubigena Greene, Pittonia 3: 112. 1896.

Cryptantha nubigena Payson, Ann. Mo. Bot. Gard. 14: 265, in part. 1927.

Cryptantha Clemensiae Payson, op. cit. 14: 267.

Stems several to many from rather slender roots, slender, 6–15 cm. high, densely leafy at

base, retrorsely pubescent and setose with spreading bristles. Leaves narrowly oblanceolate or spatulate, 2-3 cm. long, rather thinly hirsute-pubescent and setose with mostly ascending bristles, mostly pustulate on both surfaces; inflorescence short-spicate, often with a few scattered cymules below in the axils of leafy bracts; sepals 3-4 mm. long in flower, about 7 mm. in fruit, setose with slender bristles; corolla white, tube barely 3 mm. long, shorter than the sepals in anthesis, limb 4 mm. broad; nutlets narrowly lanceolate, 3 mm. long, narrowly wing-margined, slightly glossy, dorsal side tuberculate, the tubercles sometimes forming short rugae, ventral surface nearly smooth; scar straight, extending from near the base nearly to the apex, narrow but open, the margin not elevated.

Rocky or sandy slopes and moraines, Arctic-Alpine and Hudsonian Zones; high Sierra Nevada from Mount Conness, Mono County to Mount Whitney, Inyo County, California. Type locality: Cloud's Rest, Yosemite National Park. July-Aug.

7. *Oreocarya Thompsonii* (I. M. Johnston) Abrams. Thompson's *Oreocarya*.
Fig. 4318.

Cryptantha Thompsonii I. M. Johnston, Contr. Arnold Arb. No. 3: 88. 1932.

Cespitose perennial, with a stout woody root and stout-branched woody caudex or root crown, stems 1 to several, 15-25 cm. high, densely bristly-hirsute with slender weak bristles. Basal leaves oblanceolate to spatulate, acutish to rounded at apex, 5-7 cm. long, grayish-tomentose and bearing scattered appressed bristles on both sides; cymules crowded at the apex, scattered below in the axils of the much longer linear or linear-lanceolate foliaceous bracts, loosely and irregularly few-flowered, not scorpioid; sepals about as long as corolla-tube in flower, 8-12 mm. long in fruit, densely setose; corolla white, tube 3-4 mm. long, limb 3-7 mm. broad; nutlets ovate or oblong-ovate, short-acuminate, glossy, dorsal side irregularly rugose and tuberculate, inner surface smooth; scar open and cuneate at base.

Rocky ground, especially talus slopes, Canadian and Arid Transition Zones; east side of the Cascade Mountains in Chelan and Kittitas Counties, Washington. Type locality: "rocky open crest of Iron Mts., Mt. Stuart region, Kittitas Co., 7000 ft." June-Aug.

8. *Oreocarya virginensis* (M. E. Jones) J. F. Macbride. Virgin Valley *Oreocarya*. Fig. 4319.

Krynitzkia glomerata var. *virginensis* M. E. Jones, Contr. West. Bot. No. 13: 5. 1910.

Oreocarya virginensis J. F. Macbride, Proc. Amer. Acad. 51: 547. 1916.

Biennial or short-lived perennial, from a somewhat woody taproot; stems 1 to many from the root crown, stout, 1.5-4 dm. high, conspicuously hispid with divaricate bristles. Leaves oblanceolate to spatulate, rounded or obtuse at apex, 5-10 cm. long, setose-bristly on the margins and petioles, the bristles few, somewhat appressed and usually conspicuously pustulate especially on the lower surface of the leaves; flowers in a large thyrus extending well below the middle of the stem; individual cymes elongated; bracts foliaceous and conspicuous; calyx-lobes lanceolate in anthesis, 4 mm. long, becoming 10-12 mm. long and linear in fruit, setose, the bristles often somewhat fulvous; corolla white, tube 3-4 mm. long, about equaling the calyx, limb 6-8 mm. broad; nutlets usually only 1 or 2 maturing, lanceolate-ovate, obtuse, 4.5 mm. long, dorsal surface distinctly carinate, and both it and the ventral surface somewhat rugose and tuberculate; scar narrowly triangular.

Rocky hills, Upper Transition Zone; Mojave Desert region: Panamint Mountains, hills north of Barstow, Kingston Mountains, California; also Charleston Mountains, Nevada, east to south Utah. Type locality: La Verkin, Virgin River Valley, Utah. March-June.

9. *Oreocarya Hoffmannii* (I. M. Johnston) Abrams. Hoffmann's *Oreocarya*.
Fig. 4320.

Cryptantha Hoffmannii I. M. Johnston, Contr. Arnold Arb. No. 3: 90. 1932.

Stems 1 to several from a biennial or short-lived perennial root, erect, 15-30 cm. high, conspicuously hirsute and retrorsely pubescent. Basal leaves spatulate, 2-4 cm. long, the blade 5-10 mm. broad, tapering or abruptly narrowed to a petiole much longer than the blade, retrorsely hirsutulous, also sparsely bristly, bristles pustulate at base, more or less appressed; stem-leaves distant, the lower with winged petioles, the upper reduced, linear and sessile; inflorescence 6-18 cm. long, 3.5-6 cm. broad, more or less interrupted; cymules ascending, 2.5-4 cm. long; calyx-lobes 3-3.5 mm. long, equaling the corolla-tube, in fruit 5-7 mm. long, narrowly lanceolate, hirsutulous and rather densely bristly, the hairs yellowish; corolla white, tube 3 mm. long, limb 5-6 mm. broad; nutlets ovate, 2.5-3 mm. long, acute, dorsal surface tuberculate and slightly rugose; ventral surface with scar open, extending nearly to the apex, the sides rugose.

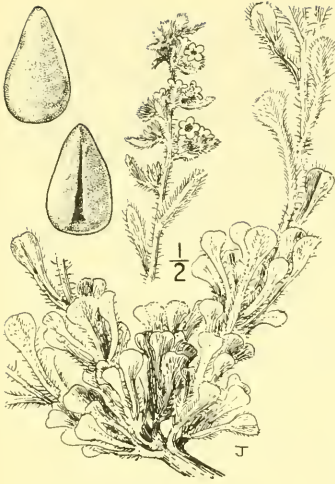
Mountain slopes, Arid Transition Zone; southern Sierra Nevada and White Mountains, Inyo County, California. Type locality: rocky open slope, Westgard Pass, 7,300 feet altitude, northern Inyo County, California. June-July.

10. *Oreocarya tumulosa* Payson. Mojave *Oreocarya*. Fig. 4321.

Oreocarya tumulosa Payson, Univ. Wyo. Pub. Sci. 1: 164. 1926.

Cryptantha tumulosa Payson, Ann. Mo. Bot. Gard. 14: 276. 1927.

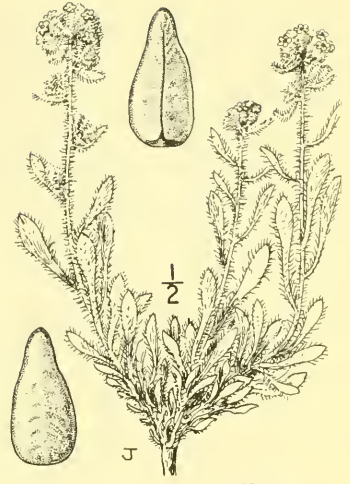
Cespitose perennial with a stout woody root; stems few to many from a branched caudex, 7-25 cm. high, short-villous and setose with divaricate bristles. Leaves crowded near the base,



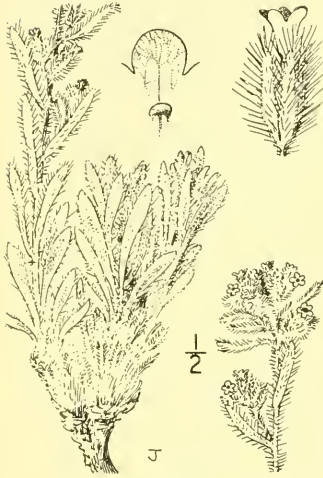
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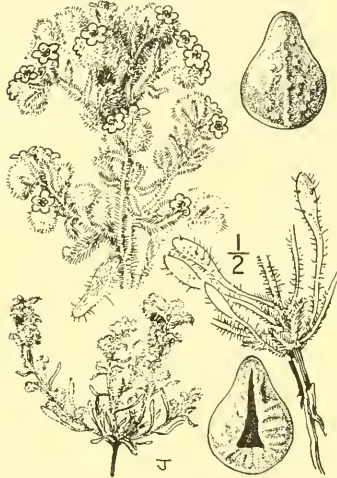
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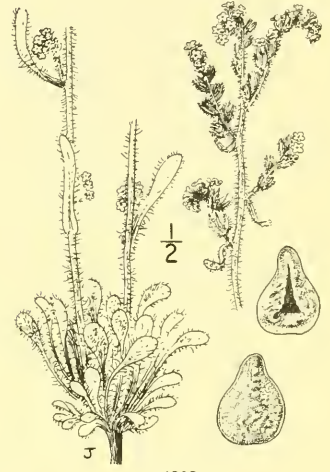
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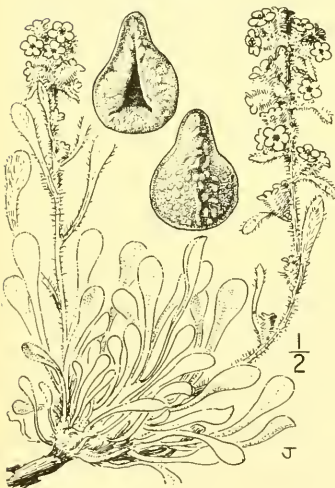
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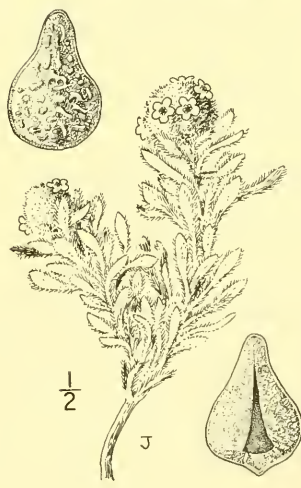
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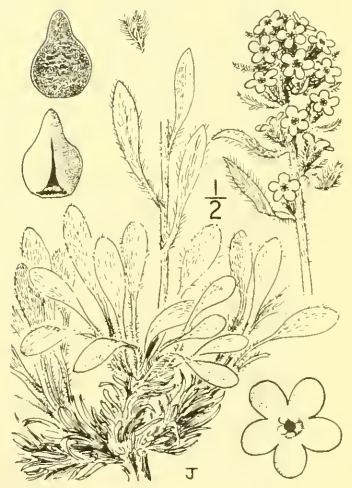
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4315. *Oreocarya subretusa*
 4316. *Oreocarya crymophila*
 4317. *Oreocarya nubigena*

4318. *Oreocarya Thompsonii*
 4319. *Oreocarya virginensis*
 4320. *Oreocarya Hoffmannii*

4321. *Oreocarya tumulosa*
 4322. *Oreocarya humilis*
 4323. *Oreocarya propria*

oblanceolate or spatulate, obtuse or rounded at apex, 3–5 cm. long, gradually narrowed to a long petiole, whitish-tomentulose and with few slender more or less appressed bristles; inflorescence rather narrow, interrupted only below, the cymes short; lowest bracts foliaceous, the upper inconspicuous, becoming reflexed, conspicuously setose with spreading or retrorse yellowish bristles; sepals in anthesis linear-lanceolate, about 4 mm. long, 8–10 mm. in fruit, densely setose-spreading with retrorse bristles; corolla white, tube 3.5–4 mm. long, limb 7 mm. broad; nutlets only 1 or 2 maturing, ovate-lanceolate in outline, 4 mm. long, obtuse and light-colored, dull or only slightly glossy, margin acute, dorsal surface with a low medial ridge, tuberculate and distinctly rugose; scar triangular, short, open.

Gravelly slopes, Upper Sonoran Zone; Providence, New York, Panamint and Ivanpah Ranges in the Mojave Desert, California; Charleston Mountains, Nevada. Type locality: Providence Mountains, California. April–June.

11. *Oreocarya humilis* (A. Gray) Greene. Low *Oreocarya*. Fig. 4322.

Eritrichium glomeratum var. *humile* A. Gray, Proc. Amer. Acad. 10: 61, in part. 1874.

Oreocarya humilis Greene, Pittonia 3: 112. 1896.

Cryptantha humilis Payson, Ann. Mo. Bot. Gard. 14: 278. 1927.

Cespitose perennial, stems 1 to several from a compact short-branched, densely leafy, woody caudex, 5–20 cm. high, hirsute with weak spreading bristles. Leaves densely tufted at base, oblanceolate to broadly spatulate, narrowed to a rather slender petiole, 2–4 cm. long, densely silky-tomentose, and with scattering slender bristles; sepals linear or linear-lanceolate, acute, 4–5 mm. long in anthesis, 8–13 mm. in fruit; corolla white, tube 4–5 mm. long, limb 8–10 mm. broad; nutlets commonly 4 maturing, ovate-lanceolate in outline, acute or obtuse, 3–4.5 mm. long, margins acute, dorsal surface somewhat glossy, densely and finely tuberculate, or the tubercles sometimes united to form short rugae, ventral surface rather indistinctly tuberculate, scar triangular, open at the base or nearly closed.

Alpine ridges, Canadian and Hudsonian Zones; Sierra Nevada, from Nevada County to Mono County, California, east to Malheur County, Oregon, and western Nevada. Type locality: Summit Station (Donner Pass), Nevada County, California, as designated by I. M. Johnston, Contr. Arnold Arb. 3: 87. 1932. June–Aug.

12. *Oreocarya propria* Nels. & Macbr. Malheur *Oreocarya*. Fig. 4323.

Krynitzkia fulvocanescens var. *idahoensis* M. E. Jones, Contr. West. Bot. No. 13: 6. 1910.

Oreocarya propria Nels. & Macbr. Bot. Gaz. 62: 145. 1916.

Cryptantha propria Payson, Ann. Mo. Bot. Gard. 14: 317. 1927.

Cespitose perennial with a woody caudex, densely clothed with the old leaf-bases, stems few to many, 15–25 cm. high, rather slender, sparsely setose. Leaves clustered on the crown of the caudex branches, spatulate, obtuse, 4–8 cm. long, finely strigose and appressed-setulose and on the upper side with pustulate bristles, the lower side densely and finely strigose with a few intermingling pustulate hairs; petioles ciliate near the base with long white hairs; inflorescence rather narrow, little or not at all interrupted, extending to the middle of the stem or a little below, densely but weakly setose and hirsute; sepals in fruit 8–10 mm. long; corolla white, the tube 3–5 mm. long, about equaled by the lobes; nutlets lanceolate, 3–4 mm. long, acute on the margins, dull, dorsal side densely rugulose with somewhat minute narrow ridges, conspicuously muricate near the margins; scar narrow, slightly open, extending nearly to the apex, not elevated on the margins.

Dry hillsides, Upper Sonoran Zone; Malheur County, southwestern Oregon to western Idaho. Type locality: near Harper Ranch, Malheur County, Oregon. May–July.

13. *Oreocarya Sheldonii* Brand. Sheldon's *Oreocarya*. Fig. 4324.

Oreocarya Sheldonii Brand, Rep. Spec. Nov. 19: 73. 1923.

Cryptantha Sheldonii Payson, Ann. Mo. Bot. Gard. 14: 301. 1927.

Perennial with stout root; stems usually several from a branched root crown, stout, 15–25 cm. high, simple, or with 1 or more slender ascending branches from near the base, hirsute-hispid with spreading setae and with a fine somewhat tomentose pubescence of reflexed hairs, densely leafy at base. Leaves, especially the lower, spatulate, 2–3 cm. long, 5–7 mm. broad near the rounded apex, canescent with a more or less appressed pubescence, the upper surface and margins also with scattered ascending slender setae with pustulate bases; upper stem-leaves gradually reduced, oblanceolate to narrowly linear-oblanceolate; cymes several-flowered, in fruit 1–2 cm. long, crowded into a rather dense terminal spike-like inflorescence, 6–10 cm. long, or on some of the slender basal branches sometimes smaller; fruiting calyx-lobes 5–10 mm. long, narrowly linear-lanceolate, bristly with spreading setae; corolla white, 5–6 mm. long, limb 5 mm. broad; nutlets ovate-lanceolate, subacute at apex, 3 mm. long, the margin sharply acute, dorsal side brownish, somewhat glossy, tuberculate, some of the tubercles connected by slender ridges to form a few rather inconspicuous rugae.

Dry rocky slopes and ridges, Arid Transition Zone; Spokane River Valley, eastern Washington to Kootenai and Coeur d'Alene, northern Idaho; also Wallowa County, eastern Oregon. Type locality: Deep Creek, Wallowa County, Oregon. May–July.

14. *Oreocarya spiculifera* Piper. Bristly Oreocarya. Fig. 4325.

Oreocarya spiculifera Piper, Contr. U.S. Nat. Herb. 11: 481. 1906.

Oreocarya cilio-hirsuta Nels. & Macbr. Bot. Gaz. 55: 378. 1913.

Cryptantha spiculifera Payson, Ann. Mo. Bot. Gard. 14: 298. 1927.

Cespitose with a stout woody caudex bearing 1 to several short tufted branches, the herbage pallid. Basal leaves numerous and crowded, spatulate-ob lanceolate, mostly acute, the blades 1.5–2 cm. long, about equaling the margined petioles, densely and finely pubescent on both sides with soft reflexed hairs, also with scattered spreading bristles on both sides and the margins; stem-leaves similar but with shorter petioles; flowering stems simple, erect, 2–3 dm. high, pubescent like the leaves; inflorescence of 8–12 ascending racemes, floriferous throughout or nearly so; bracts linear-lanceolate, shorter than the calyx; pedicels short; calyx-lobes erect, narrowly lanceolate, 6–8 mm. long, pubescent like the leaves but more bristly; corolla white, tube 5 mm. long, limb 8 mm. broad, appendages short, triangular-ovate; nutlets ovoid, 3 mm. long, pale brown, dull, smooth on the narrow margin, bluntly tuberculate on the dorsal side, rugose on the ventral, the groove reaching to the apex; gynobase longer than the nutlet.

Dry hillsides or benches, Arid Transition Zone; eastern Washington to southwestern Idaho. Type locality: "Ritzville [1,600 feet altitude], Adams County," Washington. May–June.

15. *Oreocarya celosioides* Eastw. Cockscomb Oreocarya. Fig. 4326.

Oreocarya celosioides Eastw. Bull. Torrey Club 30: 240. 1903.

Cryptantha celosioides Payson, Ann. Mo. Bot. Gard. 14: 299. 1927.

Perennial from a stout, woody root; branches of the caudex densely clothed with the broad imbricated petioles of old leaves; stems 1 to several, stout, 2–4 dm. high, densely setose with spreading bristles. Basal leaves crowded, spatulate to oblanceolate, usually obtuse, 2–5 cm. long, densely and finely white-tomentose on both sides, also setose with slender appressed bristles; cauline leaves less tomentose and thickly beset by bristles with more or less prominent pustulate bases; inflorescence usually extending to the middle of the stem or below, often rather narrow and dense, densely setose-bristly; bracts foliaceous, lanceolate-linear, shorter than the mature cymules; sepals densely bristly, 5 mm. long in flower, linear-lanceolate and 10–12 mm. long in fruit; corolla white, tube 4–5 mm. long, and equaling the sepals, limb about 8 mm. broad; nutlets 2–4 maturing, ovate-lanceolate, very acute or narrowly margined on the angles; dorsal surface dull or slightly glossy, conspicuously rugose and toward the edges somewhat muriculate; scar closed, extending from the base to near the apex.

Dry slopes and plains, Upper Sonoran and Arid Transition Zones; Columbia River Basin, from Okanagon and Lincoln Counties, Washington, to Wasco and Baker Counties, Oregon. Type locality: "bank of the Columbia River, eastern Washington." May–July.

16. *Oreocarya flavoculata* A. Nels. Yellow-eyed Oreocarya. Fig. 4327.

Oreocarya flavoculata A. Nels. Erythra 7: 66. 1899.

Oreocarya Shockleyi Eastw. Bull. Torrey Club 30: 245. 1903.

Cryptantha flavoculata Payson, Ann. Mo. Bot. Gard. 14: 334. 1927.

Perennial with cespitose, woody caudex; stems 1 to many, rather slender, 1–3 dm. high, pubescent with retrorsely appressed hairs and hispid with slender, spreading bristles. Lower leaves linear-ob lanceolate to spatulate-obtuse or sometimes acute, 3–8 cm. long, appressed-silky-pubescent on both sides with scattering appressed bristles interspersed, upper stem-leaves less appressed-pubescent, and more bristly, the bristles, especially on the margins, spreading; inflorescence a rather narrow spicate-thyrsum, with the upper cymules crowded, the lower scattered; floral bracts linear-lanceolate, at least the lower longer than the cymules; sepals densely bristly with usually yellowish bristles, linear-lanceolate, 4–5 mm. long in anthesis, 10–12 mm. in fruit; corolla white or pale yellow, crests in the throat yellow, tube slender, 7–10 mm. long, limb 7–8 mm. broad; nutlets ovate to lanceolate in outline, usually obtuse at apex, the margin at the angles acutish, dorsal surface somewhat glossy, tuberculate, muriculate and more or less rugose; scar open and conspicuous, surrounded by a high elevated margin.

Rocky hillsides, often associated with sagebrush or junipers, Upper Sonoran and Arid Transition Zones; a Great Basin species, extending from western Colorado and Wyoming to central and southern Nevada, reaching southeastern California where it is found in the Inyo and Panamint Mountains. Type locality: Piedmont, Wyoming. May–July.

23. *AMSINCKIA* Lehm. Del. Sem. Hort. Hamb. 7. 1831.

Hispid or setose annual herbs with erect or spreading, branched stems, alternate linear or lanceolate leaves and yellow flowers in elongated scorpioid spikes. Calyx deeply 5-parted or rarely appearing 4-parted by the union of 2 into 1 broader one. Corolla yellow or orange, funnellform or salverform, the throat open and without crests or processes, sometimes constricted and more or less closed by sac-like processes. Stamens inserted in the throat or in the tube, irregularly or in one plane. Style filiform; stigma capitate, 2-lobed. Nutlets crustaceous, erect or incurved, smooth or rough, triquetrous or ovate-triangular. Cotyledons deeply 2-parted. [Name in honor of William Amsinck, a patron of the Hamburg Botanic Garden.]

A genus of about 20 species natives of western North America and southern South America. Type species, *Amsinckia lycopsoides* Lehm.

The natural limits of the specific entities of *Amsinckia* are not obvious and a satisfactory systematic treat-