

with a definite papilla in the hollow (Portal Ridge, *Jepson* 17,065), or yet again the tubercle may become somewhat crater-like and bearing a distinct papilla in the crater (Portal Ridge, *Jepson* 17,059). In all these cases of crater-like tubercles, the tubercles rise from a brown ground. In the case of var. *clokeyi* (Jtn.) *Jepson* comb. n., the tubercles, likewise crateriform, are set on a whitish or lighter-colored ground and the calyx (3 to 3½ lines long) much surpasses the nutlets (n. of Barstow, Mohave Desert).

Var. *jonesii* Jtn. Stems 1 or few from the base, 5 to 20 inches high, ending in an umbellate cyme, the spikes below the cyme borne on short branches; corollas ¼ to ½ line broad.—Hillslopes, often in chaparral, 1000 to 5500 feet: Coast Ranges from Glenn Co. to Monterey Co.; Sierra Nevada from Nevada Co. to Kern Co.; intramontane and cismontane Southern California. South to Lower California, east to Nevada and Arizona.

Field note.—The most marked habitual or biotypic form of *Cryptantha muricata* var. *jonesii* is developed in colonies which make open stands. The single stem axis of plants in uncrowded situations grows to a height of 1¼ to 2 feet and develops a terminal umbellate-cymose inflorescence of 3 to 9 spikes. Somewhat later, after the terminal cyme is established, the axis below becomes "feathered" with short branches which bear 1, 2, or 3 spikes. The "feathering" may be light or dense, in either case producing a narrow column, the main axis otherwise usually remaining unbranched. Such a growth form is characteristic of gravelly hilltops in Lake County, in Yosemite, in the San Gabriel Mountains, and other semi-arid stations.

Locs.—Coast Ranges: Alder Sprs. (9 mi. e.), w. Glenn Co., *Heller* 11,450; Blue Lakes, nw. Lake Co., *Jepson* 21,098; Cache Creek, n. of Lower Lake, Lake Co., *Jepson* 18,911; Reiff, Knoxville Ridge, se. Lake Co., *Jepson* 18,995; Hood's Peak, e. Sonoma Co., *Bioletti*; Mt. Tamalpais, *K. Brandegee*; Ben Lomond, Santa Cruz Co., *T. Brandegee*; Jamesburg, Monterey Co., *W. I. Follett* 73. Sierra Nevada: Bronco, e. Nevada Co., *Sonne* 396; Lettes sta., near Sonora Pass, *A. L. Grant* 134; South Fork Tuolumne River bridge, *A. L. Grant* 841; Snow Creek, Yosemite, *Jepson* 10,487a; Hospital Rock, Middle Fork Kaweah River, *W. Fry* 332; Kernville, *T. Brandegee*. Intramontane and cismontane S. Cal.: Arrastre Creek, San Gabriel Mts., *Peirson* 2476; Fontana, San Bernardino Valley, *Clokey* 5818; Cajon Cañon, *Jepson* 6097; Strawberry Valley, Mt. San Jacinto, *Jepson* 1298a; Elsinore (5 mi. n.), *Jepson* 12,429; Palomar Mt., San Diego Co., *Jepson* 1505a; Wagon Wash near Sentenac Cañon, e. San Diego Co., *Jepson* 12,487; San Diego, *Spencer* 38.

Refs.—CRYPTANTHA MURICATA Nels. & Mcbr., Bot. Gaz. 61:42 (1916). *Myosotis muricata* H. & A., Bot. Beech. 369 (1840), type from Cal., *Douglas*. *Eritrichium muriculatum* A. DC., Prodr. 10:132 (1846), a renaming (not *Eritrichium muricatum* A. DC., l.c.). *Krynitzkia muriculata* Gray, Proc. Am. Acad. 20:273 (1885). *C. muriculata* Greene, Pitt. 1:113 (1887); *Jepson*, Fl. W. Mid. Cal. 444 (1901), ed. 2, 347 (1911), Man. 848 (1925). *C. horridula* Greene, Pitt. 5:55 (1902), type loc. Salinas Valley. Var. CLOKEYI *Jepson*. *C. clokeyi* Jtn., Jour. Arn. Arb. 20:387 (1939), type loc. Barstow (n. of), *Clokey* 6859. Var. JONESII Jtn., Plant World 22:114 (1919). *Krynitzkia jonesii* Gray, Proc. Am. Acad. 20:274 (1885), type loc. Soledad, Monterey Co., *Jones*. *C. jonesii* Greene, Pitt. 1:113 (1887); *Jepson*, Fl. W. Mid. Cal. 445 (1901), ed. 2, 347 (1911). *C. vitrea* Eastw., Proc. Cal. Acad. ser. 3, 2:292 (1902), type loc. Bubbs Creek, Fresno Co., *Eastwood*. *C. muriculata* var. *vitrea* *Jepson*, Man. 848 (1925). *Krynitzkia denticulata* Greene, Bull. Cal. Acad. 1:205 (1885), type from w. Nev., *Curran*. *C. denticulata* Greene, Pitt. 1:114 (1887). *C. muricata* var. *denticulata* Jtn., Contrib. Gray Herb. 74:71 (1925).

6. **C. intermedia** Greene. Stem erect and branching above, or diffusely branched from base, ½ to 1 foot high; herbage hispid with both appressed and spreading hairs; leaf-blades lanceolate or linear, ½ to 1½ inches long, sessile or narrowed to obscure petioles; spikes usually in 2s or 3s, sometimes 4s or 5s, at first dense, soon loose, and 1 to 3½ inches long; calyx-lobes linear, ¾ to 1 line long, in fruit 1½ to 2½ lines long, densely villous-ciliate and villous inside, the back not villous but set with long scattered spreading bristles; corolla 1½ to 3¼ lines broad; nutlets 4 (3 or 2), ovate-rostrate or lanceolate-attenuate, obtusish at apex, densely and coarsely tuberculate dorsally and also ventrally, the lateral angles obtuse and tuberculate, the ventral groove closed or open, triangular-areolate or forked at base.

Sandy or gravelly valley floors or washes or on foothill slopes or rocky cañon bottoms, 200 to 6000 feet: Coast Ranges from western Siskiyou Co. to San Luis Obispo Co.; upper Sacramento Valley; Sierra Nevada foothills from Shasta Co. to Tuolumne Co.; western Mohave Desert; cismontane Southern California. South into Lower California. Apr.-June.

Locs.—Coast Ranges: Scott River Valley, w. Siskiyou Co., *Gilbert*; Hupa Valley, *Jepson* 2025; Paskenta, sw. Tehama Co., *Jepson* 16,317; Stonyford, w. Glenn Co., *Jepson* 16,291; Bell Cañon, Howell Mt., Napa Range, *Jepson* 18,861; Soledad, Monterey Co., *Congdon*; Templeton,

San Luis Obispo Co., *Davy* 7596. Upper Sacramento Valley: Crane Creek, w. Tehama Co., *Jepson* 21,097; Chico (3 mi. n.), *Hoover* 2234; Marysville Buttes, *Heller* 11,368. Sierra Nevada foothills: Tamarack road at Stalker's, ne. Shasta Co., *M. S. Baker* 341; Willow Springs road sta., Amador Co., *Jepson* 15,226; San Antonio Creek, Calaveras Co., *Davy* 1567; Jacksonville, Tuolumne Co., *Hoover* 1957. Mohave Desert: Barstow, *Jepson* 5515. Cismontane S. Cal.: Santa Barbara, *Jepson* 9153; Ojai Valley, *Thacher* 39; Simi Valley, s. Ventura Co., *Jepson* 8460; San Fernando, *Jepson* 19,220; Arroyo Seco, San Gabriel Mts., *Peirson* 320; Arrastre Creek, San Gabriel Mts., *Peirson* 402; San Timoteo Cañon, *Jepson* 6084; San Gorgonio Pass, *Jepson* 17,079; Strawberry Valley, Mt. San Jacinto, *Jepson* 2267; Riverside, *Jepson* 1212; Anaheim plain, *Alice King*; Elsinore, sw. Riverside Co., *Jepson* 19,156; Aguanga, sw. Riverside Co., *Jepson* 17,159; Cootca, Palomar Mt., *Jepson* 1514; Escondido, *C. V. Meyer* 18; San Pasqual Valley, San Diego Co., *Jepson* 19,175; Mesa Grande, San Diego Co., *E. Ferguson* 31; Del Mar, San Diego Co., *Jepson* 1618; La Mesa near San Diego, *Jepson* 6689.

Var. *rigida* Brand. Corolla minute ($\frac{1}{4}$ to $\frac{1}{2}$ line broad).—San Joaquin Valley and its bordering foothills; southwestern Mohave Desert and bordering ranges.

Locs.—Inner South Coast Range: Tassajara Creek, near Mt. Diablo, *Hoover* 3348; Corral Hollow, Alameda Co., *Hoover* 3041; Tres Piños (4 mi. s.), *Ferris* 8336; Alcalde, sw. Fresno Co., *T. Brandegee*; McKittrick, Kern Co., *Heller* 7788; White Hills, se. San Luis Obispo Co., *Clokey* 5823. San Joaquin Valley: Huron, Fresno Co., *Eastwood*; Tulare, *Davy* 3132; Bakersfield, *Davy* 1875; Pampa sta., Kern Co., *Heller* 7645. Sierra Nevada: Long Barn (ridge above), Tuolumne Co., *Hoover* 2501a (det. R. F. Hoover); Poso Creek, Greenhorn Mts., *C. N. Smith* 62; Bodfish, Kern Co., *Jepson* 19,886. Tehachapi Mts.: Keene, *Jepson* 7159. Southwestern Mohave Desert and its bordering ranges: Palmdale to Little Rock, *Davy* 2291; Victorville (10 mi. s.), *Munz* 12,435; Baldwin Lake, San Bernardino Mts., *Fosberg* 10,689.

Var. *hendersonii* (Piper) *Jepson* & *Hoover* comb. n. Calyx-lobes linear, dark green, densely short-hispid and sparsely yellowish short-bristly, the midrib prominent; corolla $1\frac{1}{2}$ to 3 lines broad; nutlets 1 or 2 (sometimes 3 or 4), ovate to ovate-lanceolate, sparingly and often obscurely tuberculate on a microscopically tessellate ground, or varying to quite smooth (even in the same colony), subflattish on back, the lateral angles obtuse or acute; ventral side convexly 2-planed, the groove closed or open.—Dry slopes or gravelly flats, 2500 to 4500 feet: northern Sierra Nevada (transmontane) from Lassen Co. to Siskiyou Co.: Milford, *T. Brandegee*; Surprise Valley, e. Modoc Co., *Jepson* 7843; Deep Creek, Warner Mts., *L. S. Smith* 1115; Andesite, Siskiyou Co., *Jepson* 20,029. North to Idaho and Washington.

Refs.—CRYPTANTHA INTERMEDIA Greene, Pitt. 1:114 (1887); *Jepson*, Man. 848 (1925). *Eritrichium intermedium* Gray, Proc. Am. Acad. 17:225 (1882), type loc. Los Angeles, *Nevin*. *Krynitzkia intermedia* Gray, l.c. 20:273 (1885). *C. intermedia* var. *johnstonii* Mebr., Contrib. Gray Herb. 56:59 (1918), type loc. Claremont, Los Angeles Co., *Johnston* 1938. (?) *C. hansenii* Brand; Fedde, Repert. Sp. Nov. 24:58 (1927), type loc. Rancheria, Amador Co., *Hansen* 1728 (referred here by I. M. Johnston). *C. hansenii* var. *pulchella* Brand, l.c., type loc. Drytown, Amador Co., *Hansen* 1581. Var. RIGIDA Brand; Engler, Pflzr. 4²⁵²:70 (1931). *C. nevadensis* var. *rigida* Jtn., Contrib. Gray Herb. 74:68 (1925), type loc. "hills bordering Mohave Desert," *Pringle*. Var. HENDERSONII *Jepson* & *Hoover*. *C. hendersonii* Piper; J. C. Nelson, Torreya 20:44 (1920). *Allocarya hendersonii* A. Nelson, Erythea 7:69 (1899), type loc. Potlatch River, Ida., *Henderson*. *C. grisea* Greene, Pitt. 5:53 (1902), type loc. Shasta Co., *Baker* & *Nutting*.

7. **C. barbiger** Greene. Stem freely branched from base, $\frac{1}{2}$ to $1\frac{1}{2}$ feet high; herbage hispid and hirsute; leaves oblong-linear to linear, $\frac{1}{2}$ to $1\frac{1}{2}$ inches long; spikes mostly rather dense, solitary or paniculate, becoming elongated (1 to 5 inches long), the flowers sometimes (at length) remote and less secund; calyx-lobes linear-attenuate, spreading at apex, densely armed (especially below) with long spreading bristles and also bearing on lower part a conspicuous white tuft of long-villous hairs; calyx in fruit 3 to 5 lines long; corolla $\frac{1}{2}$ to 1 line broad; nutlets 4, 3 or 2, ovate, shortly acuminate, 1 line long, grayish-brown, mostly low-rounded dorsally, mostly convexly 2-planed ventrally, densely muriculate-tuberculate, the ventral groove forked at base.

Sandy soil of washes, cañon bottoms and mesas, 500 to 4000 (or 7400) feet: Inyo Co.; eastern Mohave Desert; Colorado Desert. South into Lower California, east to Arizona and Utah. Mar.-Apr.

Note on type locality.—"Santa Barbara Co.," as the locality first cited by Asa Gray (Syn. Fl. 2:194) in the original description of this species, appears to be erroneous. There are no stations known to us in Santa Barbara County. There are, moreover, no specimens of this species in the Gray Herbarium from Santa Barbara County. The specimen on which the original citation rested (doubtless *Brewer*; cf. Bot. Cal. 2:469) is probably now referred elsewhere. In any event this matter is now resolved, since I. M. Johnston (Contrib. Gray Herb. 74:66) has selected "Utah, *Parry* 171," as the type.