

CREPIS OCCIDENTALIS AND ITS ALLIES.

By FREDERICK V. COVILLE.

While examining a recent collection of plants from eastern Washington, Mr. John B. Leiberger came upon an undescribed *Crepis*, which is published below as *Crepis barbiger*. In order to render clear the relation of this plant to *C. occidentalis*, I undertook to make a critical study of the latter, a work which is now completed, with the unexpected result of bringing to light several apparently distinct species. The material used was obtained from the United States National Herbarium, and the herbaria of Harvard University, Columbia College, the Philadelphia Academy of Sciences, the California Academy of Sciences, the University of California, the Catholic University of America, the New York College of Pharmacy, the Delaware Natural History Society, and the Missouri Botanical Garden, in which are contained all the existing type specimens, besides an excellent series of other material.

The related species *C. acuminata* and *C. intermedia* are not considered in the present paper, for, like some of the other species of the genus, they require further work for their proper understanding.

ANALYTICAL KEY TO THE SPECIES.

- a. Bristly hairs, if present, glandular.
 - b. Stem not conspicuously hirsute.
 - c. Plant tomentose throughout; lobes of the leaves acute or acuminate. *C. occidentalis.*
 - cc. Plant almost devoid of tomentum; lobes of the leaves obtuse or broadly acute. *C. bakeri.*
 - bb. Stem conspicuously hirsute. *C. monticola.*
- aa. Bristly hairs present and not glandular.¹
 - b. Plant rarely more than 30 cm. high; basal leaves not exceeding 20 cm. in length.
 - c. Achenia narrower at the apex, but without a distinct beak.
 - d. Achenia brown and striate-costate at maturity. *C. subacaulis.*
 - dd. Achenia usually olive-green and not costate at maturity. *C. scopulorum.*
 - cc. Achenia tapering into a distinct beak. *C. rostrata.*
 - bb. Plant more than 30 cm. high; basal leaves more than 20 cm. long. *C. barbiger*.

¹ Specimens of *C. subacaulis* occasionally have no bristly hairs.

CREPIS OCCIDENTALIS Nutt.

Plant perennial, 8 to 25 (rarely 40) cm. high; stems single or sometimes two or three from a single caudex, corymbosely branching above, rarely from near the base, bearing like the leaves a close tomentum (this often thin and sometimes with a tendency to fall in age), often with glandular bristly hairs above, particularly on the peduncles; leaves from runcinately toothed to deeply pinnatifid (especially the cauline), the lobes in the latter case oblong to linear and often themselves toothed; involucre 12 to 16 mm. long, calyculate, tomentose like the leaves and stem, and often, like the peduncles, bearing a few short glandular bristles; achenia from orange to brown in color, 8 to 10 mm. long, fusiform, truncate at the apex, 10- to 18-costate, minutely strigose, especially toward the apex between the costae. PLATE XXI.

In its normal form *C. occidentalis*, the most widely distributed of the seven species discussed in the present paper, is a tomentose plant with glandular-hirsute inflorescence, 15 to 25 cm. high, but in stature it often varies beyond these limits. It is essentially a plant of the Great Basin region, in drier and more exposed areas becoming more tomentose and less glandular-hirsute (as in Hillman's specimens from Reno, Nevada), and in the western extensions of its range, where it penetrates the Sierra Nevada and Cascade Range toward the milder Pacific Coast climate, losing to some extent its tomentose character, as illustrated by Suksdorf's specimens from western Klickitat County, Washington, and Rattan's plant from the coast ranges of California.

SYNONYMY.

Crepis occidentalis Nutt. Journ. Acad. Phila. vii, 29 (1834). Type specimen in the Harvard University Herbarium, collected "on the borders and in the vicinity of the river Columbia" by Nathaniel B. Wyeth. This single specimen, from which Nuttall drew his description, is without basal leaves and has corollas yet unopened. It furnishes, therefore, no achenium characters. The involucreal bracts and peduncles bear a few glandular bristles scattered through the tomentum. A plant collected by Thomas Howell in "rocky places, eastern Oregon" (No. 140), and distributed as *Malacothrix crepoides*, exactly resembles in size, pubescence, and other characters Nuttall's type specimen, and is from the same region.

Psilochenia occidentalis Nutt. Trans. Amer. Phil. Soc. ser. 2, vii, 437 (1841). Type specimen in the Harvard University Herbarium, collected on the Platte River, probably toward its headwaters in Wyoming. The specimen itself is marked "R. Mts.," i. e., Rocky Mountains; but the name of the collector, presumably Nuttall himself, is not given. Specimens exactly resembling Nuttall's plant in all its characters, but larger and more fully developed, were collected in the year 1864 in Middle Park, Colorado, by C. C. Parry.

Crepis occidentalis costata Gray, Bot. Cal. i, 435 (1876). Type specimen in the Harvard University Herbarium, collected on Stansbury Island, Great Salt Lake, Utah, by Sereno Watson, in June, 1869 (No. 715, King Survey). This is a robust plant, about 20 cm. high, with spreading, stout branches, large leaves, and unusually glandular inflorescence, and bearing mature achenia in which the costae are fully developed. This plant was again collected in 1883, at the same place, by Thomas Meehan.

SPECIMENS EXAMINED.

British Columbia:

Spences Bridge, *James Fletcher*, 1885.

Kamloops, *John Macoun*, 1889.

Washington:

"Columbia River," *N. B. Wyeth*.

Whitman County, Wawawai, *C. V. Piper*, 1894 (No. 1784).

Klickitat County, near Lyle, *W. N. Suksdorf*, 1886 (No. 875); near Cleveland, *W. N. Suksdorf*, 1884 (No. 381). The former possibly *Crepis bakeri*, but with acute leaf-lobes.



CREPIS OCCIDENTALIS Nutt.

Oregon:

"Eastern Oregon," *T. T. Howell*, 1880.

Union County, *W. C. Casick*, 1878 (No. 635, in part).

Josephine County, Grant Pass, *T. T. Howell*, 1884 (No. 172).

Idaho:

Clearwater, *H. H. Spalding*.

Nez Perces County, near Lewiston, *J. H. Sandberg*, 1892 (No. 268); near Lake Waha, *L. F. Henderson*, 1894.

Montana:

Custer, *J. W. Blankinship*, 1890.

Wyoming:

Uinta County, La Barge, *E. Stevenson*, 1894.

Yellowstone National Park, near Mammoth Hot Springs, *F. H. Rurglehaus*, 1893.

Colorado:

Without locality, *Hall and Harbour*, 1862 (No. 353).

Durango, *Alice Eastwood*, 1891.

Gunnison County, *Alice Eastwood*, 1889.

Fremont County, *T. S. Brandegee*, 1874.

Middle Park, *C. C. Parry*, 1864.

"Head waters of Clear Creek," *C. C. Parry*, 1861 (No. 70).

Soda Springs, *T. S. Brandegee*, 1874.

Utah:

Great Salt Lake, *Thomas Meehan*, 1883.

Stansbury Island, altitude 1,300 meters, *Sereno Watson*, 1869 (No. 715, in part).

"Southern Utah, northern Arizona, etc.," *Edward Palmer*, 1877 (No. 291).

Nevada:

Reno, *F. H. Hillman*, 1890, 1894.

Unionville Valley, *Sereno Watson*, 1868 (No. 715, in part).

Carson City, *C. L. Anderson*, 1865.

Washoe and Pleasant valleys, *Stretch*, 1865.

California:

Sierra County, *J. G. Lemmon*, 1874 (No. 131).

San Bernardino Mountains, Bear Valley, *Parish Brothers*, 1882 (No. 1459); *S. B. Parish*, 1894 (No. 3048).

Inyo County, *Julian Rixford*, 1892.

Mendocino County, Elk Ridge, *H. N. Bolander*, 1867 (No. 6498).

Mountains east of Round Valley, *Volney Rattan*, 1884, in part.

Summit of Mount Sanhedrin, *J. W. Blankinship*, 1893.

Mount Hamilton, *W. H. Brewer*, 1860-62 (No. 1304).

Siskiyou County, near Yreka, *E. L. Greene*, 1876 (No. 811).

San Benito County, Cantua Creek, *Alice Eastwood*, 1893. Possibly *Crepis subcaulis*.

Arizona:

Without locality, *Edward Palmer*, 1869.

CREPIS BAKERI Greene.

"Stoutish and low, seldom a foot high, neither woolly nor even cinereous, the pubescence rather scanty and mostly hirsutulous: leaves half as long as the stem, deeply pinnatifid into oblong and spatulate spreading lobes, or merely coarsely toothed, or in small plants quite entire: stem parted from the middle, or below it, into three to six pedunculiform monocephalous branches: involucre three-fourths of an inch high, with both long and short slenderly acuminate bracts: achenes acutely costate, tapering from the middle.

"In pine woods, near Egg Lake, Modoc County, California, June 8, 1894, Milo S. Baker. A member of the group to which *C. occidentalis* belongs, but exhibiting none

of the tomentose pubescence usual to this group; the involucre peculiar." Greene, *Erythea*, iii, 73 (1895).

Type specimen in the herbarium of the University of California. This plant bears on its peduncles and involucre, and sometimes more sparingly on its leaves and stem, the glandular hairs commonly found in *C. occidentalis*, but it lacks the usual tomentum of that species, while the narrow lobes of its deeply pinnatifid leaves are obtuse or at most broadly acute. From *C. monticola* it differs in the scantiness of the glandular-hirsute pubescence and its almost entire absence from the stem, besides the character of the leaf lobes described above.

SPECIMENS EXAMINED.

California:

Modoc County, near Egg Lake, *Baker and Nutting*, 1894.

Mendocino County, mountains east of Round Valley. *Volney Rattan*, 1884, in part.

CREPIS MONTICOLA Coville, sp. nov.

Plant perennial, with a single stem from each caudex, 12 to 25 cm. high; stem striate-angulate, hirsute, the hairs glanduliferous and commonly 2 to 3 mm. long; leaves variable in form, sometimes with merely irregularly dentate margins, sometimes deeply pinnatifid with toothed or even pinnatifid lobes, less densely hirsute and with shorter hairs than the stem, devoid of tomentum; involucre barely calyculate, 15 to 20 or even 23 mm. long, bearing glanduliferous bristles like the stem, and usually with scant tomentum also; mature achenia not seen. PLATE XXII.

Type specimen in the herbarium of the Catholic University, Washington, collected May 26, 1876, near Yreka, Siskiyou County, California, by Edward L. Greene (No. 810).

This plant, which has hitherto been referred erroneously to *Crepis occidentalis crinita*, differs from *C. occidentalis* in its hirsute stem and leaves, its obsolescent tomentum, and its longer involucre; from *C. subcaulis* in the presence of glands on its bristly hairs and in the absence of tomentum on its stem and leaves.

SPECIMENS EXAMINED.

California:

Sierra County, Sierra Nevada, *J. G. Lemmon*, 1874 (No. 462), 1875, and 1880.

Modoc County, Big Valley, *Baker and Nutting*, 1894.

Plumas County, *Mrs. Pulsifer Ames*, 1875.

Lassen County, Susanville, *T. S. Brandegee*, 1892.

Siskiyou County, near Yreka, *E. L. Greene*, 1876 (No. 810).

"Snow Mountains," *T. S. Brandegee*, 1892.

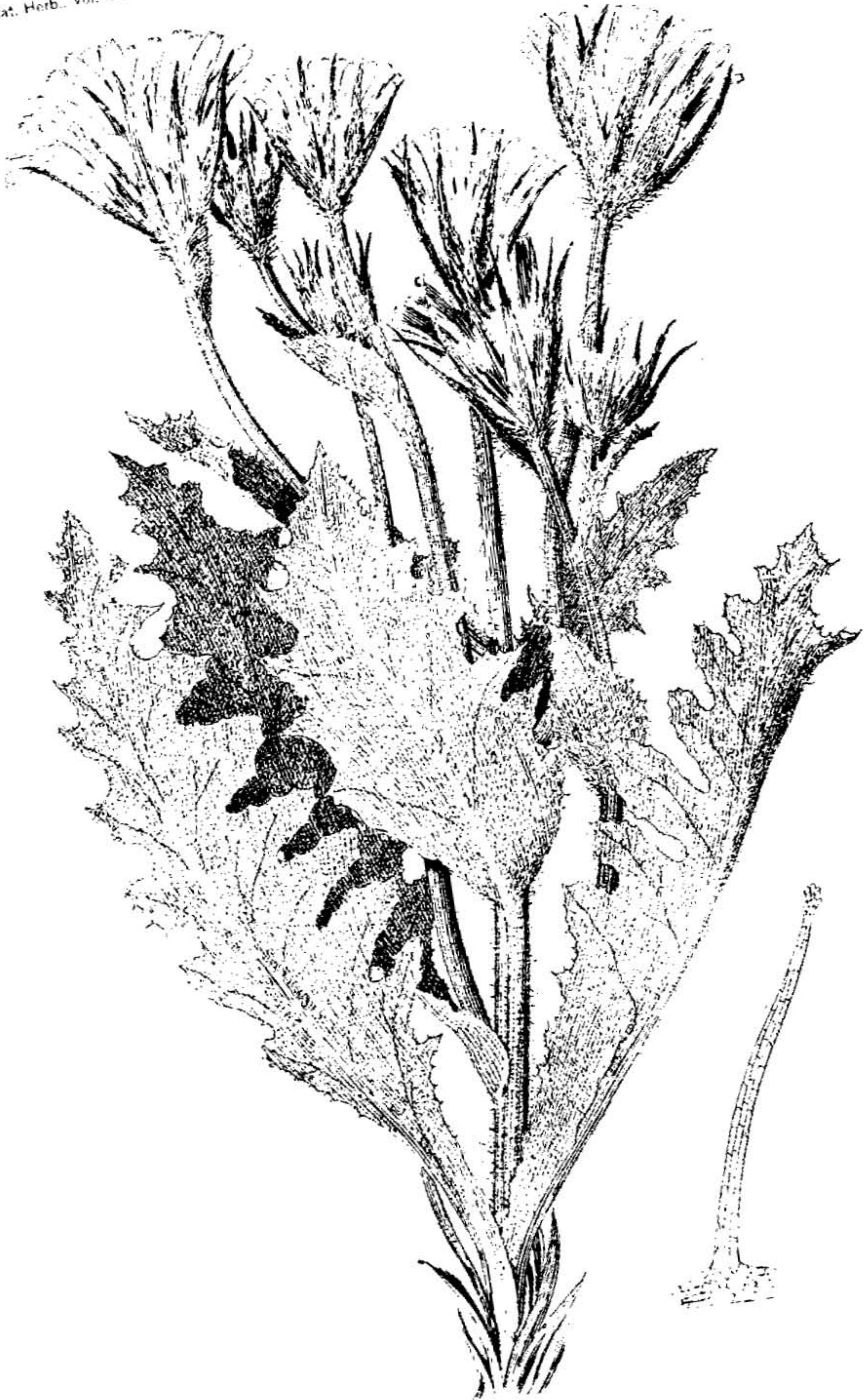
Oregon:

Cascade Mountains, Grant Pass, *T. T. Howell*, 1884 (No. 173).

CREPIS SUBCAULIS (Kellogg).

Plant perennial, with one to three stems from each caudex, commonly 10 to 15 cm. high, in one very large specimen almost 35 cm. and in another depauperate one only 6 cm.; stem striate-angulate, hirsute with glandless divaricate hairs often 2 mm. long, rarely devoid of these hairs, scantily or densely tomentose, cymosely branching, usually from near the base; leaves deeply pinnatifid or bipinnatifid, with the same pubescence as the stem, the long hairs borne particularly upon the petiole and midrib; anthodia variable in height, on stout, usually long, peduncles; involucre 12 to 22 (usually more than 15) mm. long, tomentose like the stem and leaves, and usually provided with a few long glandless bristles, either stramineous or greenish black in color; achenia (not fully mature) about 8 to 10 mm. long, 10- to 15-costate, scabrous toward the apex. PLATE XXIII.

This plant bears a resemblance, in the case of its larger, more hirsute, and less tomentose specimens, to *C. monticola*, in its smaller, nonhirsute, and more tomentose



CREPIS MONTICOLA Cavill.



CREPIS SUBCAULIS (Kellogg) Cov. l.c.



CREPIS SCOPULORUM Coville.

representatives to *C. occidentalis*, but differs from both in bearing no glandular hairs. Dr. Kellogg's *C. occidentalis nevadensis* was subsequently united with his *C. occidentalis subacaulis* by Dr. Gray, and with this view of their relation the writer is inclined to concur, but a good series of specimens may show that the former belongs rather with *C. occidentalis*. *Crepis subacaulis* is closely related to *C. scopulorum*, but it differs from that species in its usually lower stature, stem branching more nearly to the base with the branches more widely spreading, usually more tomentose leaves and stems, commonly broader lobes of the leaf blades, and its costate achenia, which are similar to those of *Crepis occidentalis*. The achenium character appears to constitute the crucial distinction between the two species.

SYNONYMY.

Crepis occidentalis subacaulis Kellogg, Proc. Cal. Acad. v, 50 (1873). Type specimen in the Harvard University Herbarium, collected June 27, 1870, by Albert Kellogg and S. Brannan, jr., in the Sierra Nevada of California, at the altitude of about 2,100 meters, near Cisco, Placer County. The specimen is a depauperate one, rising about 6 cm. above the ground and bearing a single anthodium. Besides its rather dense tomentum, it bears a few nonglandular bristles on its petioles and stem. The small outline figure in plate 23 is a drawing of this type specimen.

Crepis occidentalis nevadensis Kellogg, Proc. Cal. Acad. v, 50 (1873). Type locality, the "summit of the Sierra Nevada," in California. Type specimen, which appears to have been lost, said to have been collected June 16, 1870, in California, "at the summit of the Sierra Nevada, * * * altitude 7,000 or 8,000 feet (2,133 to 2,438 meters)," presumably along the line of the Central Pacific Railway. There is a specimen in the Harvard University Herbarium and another in the herbarium of the California Academy, dated July 10, 1870, from the Sierra Nevada, presumably collected at the type station, and it is probable that these are the specimens upon which, in part, Dr. Kellogg based his description. In this specimen the bristles usually present in the species are entirely wanting. Jones's specimens from Nevada County have the characters of the original *nevadensis*.

Crepis modocensis Greene, Erythraea, iii, 48 (1895). Type specimen in the herbarium of the Catholic University, Washington, collected in June, 1894, on lava beds, under juniper trees, Modoc County, California, by Mrs. R. M. Austin. The plant is doubtfully referred here on account of its pubescence, achenia, and the form of its leaves, notwithstanding its large stature, which gives it a general resemblance to *C. scopulorum*. These specimens and those of Lemmon from Sierra Valley, in neither of which are the achenia mature, render the question of intergradation between this species and *C. scopulorum* uncertain. Both localities are on transition ground geographically, and only fuller series of mature specimens can decide the matter.

SPECIMENS EXAMINED.

California:

- Placer County, Cisco, alt. 2,100 meters, *Kellogg and Brannan*, 1870.
- Emigrant Gap, *M. E. Jones*, 1882 (No. 2784).
- Sierra County (?), *J. G. Lemmon*, 1875-76 (No. 1274).
- Sierra County, Sierra Valley, *J. G. Lemmon*, 1880 (No. 80).
- San Bernardino Mountains, Bear Valley, alt. 1,800 meters, *S. B. Parish*, 1886.
- Nevada County (?), "Summit of Sierra Nevada," *Albert Kellogg*, 1870; "Summit," *Bolander and Kellogg*, 1872.
- Nevada County, Soda Springs, *M. E. Jones*, 1881.
- Modoc County, *Mrs. R. M. Austin*, 1894.

CREPIS SCOPULORUM Coville, sp. nov.

Perennial, 10 to 25 (rarely 40) cm. high; stem single, or rarely two from the same caudex, bearing one to five anthodia cymosely arranged (the lower peduncles sometimes arising near the ground), scantily tomentose, usually glabrate in age, and bear-

ing toward the base scattered eglandulose bristles; leaves similar in pubescence to the stem, the blades cleft almost to the midrib, the divisions linear-lanceolate and sharply toothed or lobed; peduncles slender, usually thicker just beneath the anthodium; involucre 10 to 12 mm. high, scantily tomentose, bearing a few greenish black or green eglandulose hairs usually 2 to 3 mm. long; achenia 7 to 9 mm. long, fusiform, truncate at the apex, olive-green or sometimes reddish brown in color at maturity, not costate but sometimes marked with lines of paler color in place of costæ.

PLATE XXIV.

Type specimen in the United States National Herbarium, collected August 16, 1893, in the Yellowstone National Park, by J. N. Rose.

This plant is distinguishable from *Crepis occidentalis* by its uniformly deeply cut glabrescent leaves, the eglandulose bristly hairs of its stem and involucreal bracts, and its noncostate achenia. Red achenia have been seen only in Hillman's specimens from Reno, Nevada.

SPECIMENS EXAMINED.

Oregon:

Blue Mountains, *T. T. Howell*, 1885.

Idaho:

Boise City, *A. Isabel Mulford*, 1892.

Montana:

Without definite locality, *F. D. Kelsey*, 1887.

Helena, *F. W. Anderson*, 1887.

Near Jefferson River, *F. Lamson-Scribner*, 1883 (No. 126b).

Beaverhead County, *Frank Tweedy*, 1888 (No. 221).

Deer Lodge, *F. W. Traphagen*, 1888.

Wyoming:

Yellowstone National Park, *J. N. Rose*, 1893 (No. 680); *Frank Tweedy* (No. 736).

Wind River Mountains (?), *J. C. Fremont*, 1843 (No. 680).

Uinta County, La Barge, *E. Stevenson*, 1894.

Utah:

Wasatch Mountains, *Sereno Watson*, 1869 (No. 715, in part).

Kane County, *A. L. Siler*.

Sevier County, Glenwood, *Lester F. Ward*, 1875 (No. 107).

Nevada:

West Humboldt Mountains, *E. L. Greene*, 1894.

Near Reno, foothills, *F. H. Hillman*, 1894.

CREPIS ROSTRATA Coville, sp. nov.

Plant perennial, 15 to 30 cm. high, with one to three stems from each caudex; stems striate-angulate, with little or no tomentum, sparingly hirsute, especially below, with glandless hairs; leaves with similar pubescence (the bristles often confined to the midrib and petioles), their blades deeply pinnatifid into linear-lanceolate, toothed or pinnatifid divisions; anthodia one to three on each stem, on long, stout peduncles, these slightly contracted just beneath the anthodium; involucre 12 to 15 mm. high, devoid of tomentum (except in some cases at the very base), either densely clothed or only scantily provided with long glandless hairs (of a milk-white color in our freshly dried specimens); achenia 7 to 11 mm. long, not costate, olive-green at maturity and usually marked with lines of fainter color, the upper part contracted into a distinct beak 2 to 3 mm. long.

PLATE XXV.

Type specimen in the United States National Herbarium, collected June 18, 1893, near Crab Creek, Douglas County, Washington, at the altitude of about 750 meters, by J. H. Sautberg and J. B. Leiberger.

This plant differs from *C. occidentalis* in the same characters as those given under *C. scopulorum*, and is a close relative of that species. Its conspicuously beaked achenia, the milk-white color of the involucreal hairs, and the usual absence of tomentum



CREPIS ROSTRATA Coville.



CREPIS BARBIGERA Leiberg.

on the involueral bracts, together with its more scapose character and the thickness of its peduncles, serve to distinguish it from *C. scopulorum*. It may yet be found that intergradation occurs.

SYNONYMY.

Crepis occidentalis crinita Gray, Bot. Cal. i, 435 (1876), not *Crepis crinita* Solander (1831). Type specimen in the Harvard University Herbarium, collected in the year 1841, on the eastern side of the Cascade Mountains, between the Natches (Spipen) and Wenatchee rivers, by the botanists of the Wilkes Expedition. In the type specimen the involueral hairs are unusually dense, and from lying long on herbarium shelves have changed from a milk-white to a dirty yellow color, while the achenia, although beaked, do not show that character so conspicuously as do the mature specimens now collected.

SPECIMENS EXAMINED.

Washington:

Between the Natches (Spipen) and Wenatchee rivers, *Pickering and Brackenridge*, 1841.

Douglas County, Crab Creek, *Sandberg and Leiberg*, 1893 (No. 225).

Klikitat County, *Joseph Howell*, 1879.

British Columbia:

Spences Bridge, *James Fletcher*, 1885.

CREPIS BARBIGERA Leiberg, sp. nov.

Plant perennial, stout, 40 to 50 cm. high, minutely viscid-pubescent when living, appearing slightly tomentose when dry; basal leaves usually ample, with long petioles, their blades 15 to 30 cm. long, oblong-lanceolate in outline, runcinately toothed to pinnatifid, but seldom deeply parted; cauline leaves mostly small and few, variously pinnatifid or the uppermost even entire; anthodia commonly 10 to 20, fastigiate corymbose; involucre 11 to 15 mm. long, sparingly tomentose, resiniferous; bracts strongly carinately costate from base to apex, the costa setosely barbate with one or two rows of long, stout, yellow or yellowish green, divaricate or even slightly reflexed bristles; corollas more or less deeply and very irregularly five-toothed; achenia acutely 10- to 12-costate, 8 to 10 mm. long, tapering upward, dilated at the apex, olive-green in color when near maturity; pappus rather copious, somewhat shorter than the achenium. PLATE XXVI.

Type specimen in the United States National Herbarium, collected June 25, 1893, near Alkali Lake, Douglas County, Washington, at an altitude of 400 meters, by J. H. Sandberg and John B. Leiberg (No. 313).

This species is a much larger and more robust plant than *Crepis occidentalis*, and is easily distinguishable from it, in addition to other characters, by the conspicuous nonglandular bristles of the involucre and the scant tomentum of the leaves. It has usually been distributed as *C. occidentalis crinita*. In some of Howell's specimens from eastern Oregon the bristles of the involueral bracts are almost wanting, and the plant then bears a close general resemblance to *Crepis intermedia*.

SPECIMENS EXAMINED.

Washington:

Without definite locality, *E. W. Hilgard*, 1882.

Douglas County, near Alkali Lake, *Sandberg and Leiberg*, 1893 (No. 313).

Klikitat County, western part, *W. N. Suksdorf*, 1885 (No. 777).

Klikitat County, *G. R. Vasey*, 1883.

Spokane County, prairies, *W. N. Suksdorf*, 1881 (No. 378).

Kittitass County, Cle Elum, *E. L. Greene*, 1890.

Oregon:

Eastern Oregon, rocky hillsides, *T. T. Howell*, 1881 (No. 139).

Mouth of Hood River, *W. N. Suksdorf*, 1883 (No. 150).