

# NEW PLANTS OF THE PACIFIC SLOPE, WITH SOME REVISIONS

BY CHARLES V. PIPER

The following botanical notes, accumulated by the writer while studying the plants of the State of Washington, relate particularly to the neighboring States. Several new species are described, and there is also included a critical study of the subspecies of *Cassiope mertensiana* and a revision of the species of *Orthocarpus* related to *O. imbricatus*. The types of all the new species are deposited in the United States National Museum.

## CASSIOPE MERTENSIANA AND ITS SUBSPECIES

### CASSIOPE MERTENSIANA (Bong.) G. Don.

*Cassiope mertensiana* (Bong.) G. Don, Hist. Dichl. Pl., 3: 829. 1834.

*Andromeda mertensiana* Bong., Mem. Acad. St. Petersburg, vi, 2: 152. 1832.

*Andromeda cupressina* Hook., Fl. Bor. Am., 2: 38. 1834.

Type from "Rocky Mountains north of the Smoking River, latitude  $46^{\circ}$ .—*Drummond*." This locality is, however, really about latitude  $56^{\circ}$ . The type specimen of *Andromeda mertensiana* is from near Sitka, Alaska.

This beautiful plant, in its typical form, ranges from Alaska south in the Rocky Mountains to about the 49th parallel, and in the Cascade Mountains to the Three Sisters, Oregon. The species is characterized by having, among other traits, minutely puberulent stems and peduncles, leaves not at all ciliate, and entire calyx lobes. Southward from the above-mentioned points, none of the plants heretofore referred to *C. mertensiana* are in agreement with these characters, and this material represents, we believe, three well-marked subspecies.

### CASSIOPE MERTENSIANA GRACILIS Piper, subsp. nov.

Stems and peduncles glabrous; leaves 2 to 3 mm. long, smaller and more densely crowded and less distinctly 4-ranked than in typical *C. mertensiana*; flowers 4 to 5 mm. long, smaller than in *C. mertensiana* and on much longer peduncles, 10 to 20 cm. long.

The following specimens have been examined:

## OREGON:

Wallowa Mountains, *Piper*, 2,472, August, 1896;  
*Cusick*, 235; also 1,723 in 1897.

## IDAHO:

Near Sawtooth, *Evermann*, 657, July 26, 1896;  
 Salmon River Mountains, altitude 3,180 meters, *Henderson*, 3,909,  
 August 20, 1895.

## MONTANA:

Belt Mountains, *Scribner*, July, 1883;  
 Old Hollowtop, altitude 2,400 meters, *Rydberg & Bessey*, 4,659, July  
 7, 1897;  
 Spanish Peaks, altitude 2,700 meters, *J. Vogel*, July 20, 1897.

This subspecies was mistaken by Doctor Gray<sup>1</sup> for *C. lycopodioides* (Pall.) D. Don, an Alaskan species easily distinguished by its scarious-margined smaller leaves. It is owing to its small leaves and long-peduncled flowers that our plant has a superficial resemblance to *C. lycopodioides*.

*Type specimen*.—Sheet no. 529,987, U. S. National Museum (Piper's no. 2472).

**CASSIOPE MERTENSIANA CILIOLATA** Piper, subsp. nov.

Stems and peduncles glabrous; leaves ciliate with delicate white fugacious hairs; calyx lobes entire; otherwise as in *C. mertensiana*.

Apparently confined to Siskiyou County, California, whence the following specimens have been examined:

Cliffs, Castle Lake, *Pringle*, August 5, 1882;  
 North of Mount Shasta, *H. E. Brown*, July, 1897;  
 Mount Eddy, altitude 2,550 meters, *Copeland*, 3,898, August 18, 1903.

*Type specimen*.—Sheet no. 444,503, U. S. National Museum (Copeland's no. 3898).

**CASSIOPE MERTENSIANA CALIFORNICA** Piper, subsp. nov.

Stems and peduncles glabrous; leaves rather large; 3 to 5 mm. long, very minutely glandular-ciliate; calyx lobes and corolla lobes more or less erose-denticulate.

In the Sierra Nevada from Lassens Peak southward. The following specimens have been examined:

## CALIFORNIA:

Mount Lyall, altitude 3,300 meters, *Hall & Babcock*, 3,578, July, 1902;  
 Ridge above Donner Pass, altitude 2,250 meters, *Heller*, 7,131, August  
 10, 1903;  
 Carson Spur, Amador County, altitude 2,550 meters, *Hansen*, 795,  
 July, 1893;

<sup>1</sup> Syn. Fl., 2<sup>1</sup>: 36. 1878.

Mount Stanford, *Sonn*, 205, July 25, 1887;

Above Coldstream, Placer County, altitude 2,400 meters, *Sonn*, July 31, 1892;

Mount Dana, *Bolander*, 6,019 in 1866;

Lassen's Peak, *Leemmon* in 1875;

High Sierras, *Brewer*, 2,805 in 1864, 1,791, 2,124.

*Type specimen*.—Sheet no. 443,928, U. S. National Museum (Hall and Babcock's no. 3578).

## ORTHOCARPUS TENUIFOLIUS AND ITS RELATIVES

*Orthocarpus tenuifolius* (Pursh) Benth. and its near allies compose a group of species in which the bracts are strikingly and abruptly different from the narrow leaves, being broad and more or less colored, while they become papery and closely imbricated in the fruiting spike.

In the Synoptical Flora Doctor Gray recognized but two species, which he increased to three in a revised treatment in the supplement to the same work. Since then four other closely related species have been described, namely, *O. cuspidatus* Greene, *O. barbatus* Cotton, *O. olympicus* Elmer, and *O. copelandii* Eastwood. *O. olympicus* seems indistinguishable from *O. imbricatus* Torr., and *O. copelandii* is the same as *O. cuspidatus*.

A recent examination of the material in the National Herbarium is the basis for the treatment here proposed, in which one new species is described, making six recognized in the group. They may be distinguished by the following synopsis:

### KEY TO SPECIES

Galea uncinatè at the tip; bracts obtuse or some of the lower ones acutish, all more or less purple-tinged.

Corolla 25 to 30 mm. long; galea much exceeding the lip; fruiting calyx firm, not scarious, the subulate-lanceolate teeth as long as the tube; anther cells linear, curved.....*O. pachystachyus*.

Corolla 12 to 15 mm. long; galea little longer than the lip; anther cells oval.

Fruiting calyx not scarious, its narrow teeth as long as the tube; corolla yellow, minutely pubescent; capsule oblong, elliptic; herbage scabrous and sparsely hirsute-ciliate.....*O. tenuifolius*.

Fruiting calyx scarious, its triangular-subulate teeth much shorter than the tube; corolla purplish, glabrous or minutely pruinose; capsule oval; herbage merely puberulent.....*O. imbricatus*.

Galea straight, its tip glandular-pubescent; bracts all acute, yellow or greenish.

Calyx teeth not scarious, conspicuously ciliate; corolla yellow, slender, the tip of the galea very pubescent.....*O. barbatus*.

Calyx teeth scarious-margined, little or not at all ciliate; corolla purple.  
Corolla 15 to 18 mm. long, somewhat funnellform, the lower lip large  
and conspicuously inflated, much broader than the galea.

*O. cuspidatus.*

Corolla 12 mm. long, tubular or nearly so, the small lip not broader  
than the galea.....*O. cryptanthus.*

### ORTHOCARPUS PACHYSTACHYUS Gray

*Orthocarpus pachystachyus* A. GRAY, Syn. Fl., 2<sup>1</sup>: 300. 1878.

This species was discovered near Yreka, Siskiyou County, California, by Dr. E. L. Greene, and seemingly has not since been collected.

### ORTHOCARPUS TENUIFOLIUS (Pursh) Benth.

*Orthocarpus tenuifolius* (PURSH) BENTH., Scroph. Ind., 12. 1835.

*Bartsia tenuifolia* PURSH, Fl. 2: 429. 1814.

The type of this was collected by Lewis "on the banks of Clark's River," the exact locality on the Bitter Root River at the mouth of Lou Lou Fork, Montana. A duplicate type is in the Philadelphia Academy of Sciences. Specimens have been examined as follows:

#### WASHINGTON:

Wilbur, *Henderson*, July 12, 1892;

Spokane County, *Suksdorf*, June 28, 1884;

Clarks Springs, *Krcager*, 18, June 24, 1902;

Pullman, *Piper*, 1,666, July 20, 1903; *Elmer*, 168, July 2, 1896;

Okanogan to Grand Coulee, *Wilkes Expedition*.

#### IDAHO:

Lake Waha, *Heller*, 3,379, July 4, 1896;

Moscow Mountain, *Sandberg, Heller, and MacDougal*, 458, June 20, 1892;

Hatwai Creek, *Henderson*, June 17, 1894.

#### MONTANA:

Battle Ground, mouth of Trail Creek, *Watson*, 322, July 24, 1880;

Bozeman, *Rydberg*, 2,787, July 22, 1895.

#### OREGON:

Without locality, *Kellogg & Harford*, 703;

Wallowa County, *Sheldon*, 8,265, 8,266, 8,404;

"E. Oregon," *Cusick*, 1,702, July, 1897.

### ORTHOCARPUS IMBRICATUS Torr.; S. Wats.

*Orthocarpus olympicus* TORR.; S. WATS., Bot. King Surv., 458. 1871.

*Orthocarpus olympicus* ELMER, Bot. Gaz., 36: 60. 1903.

Type of *O. imbricatus* "collected by Dr. Newberry on Williamson's Expedition in the Cascade Mountains, Oregon." The speci-

men in the National Herbarium is, however, labeled "Hat Creek, California, July 30."

Type of *O. olympicus* collected "in the Olympic Mountains, Clallam County, Washington, at an elevation of 1,000 to 1,500 m." Duplicate in the National Herbarium.

This species seems quite rare, and in addition to the above only the following specimens have been seen:

CALIFORNIA:

Mount Shasta and vicinity, *Palmer*, 2,435, July, 1892.

OREGON:

Hunt's Ranch, *Gorman*, 416, August 13, 1896;

Buck Lake, Klamath County, *Coville & Applegate*, 2, July 24, 1897.

WASHINGTON:

Olympic Mountains, *Flett*, August 27, 1898.

**ORTHOCARPUS BARBATUS** Cotton

*Orthocarpus barbatus* COTTON, Bull. Torr. Club, 29: 574. 1902.

Type collected at the "junction of Crab and Wilson Creeks, Douglas County." Washington, by Sandberg & Leiberger, no. 234, altitude 680 meters, June 19, 1893. It was also collected long ago by the Wilkes Expedition at Fort Okanogan, Washington, no. 1010, and listed by Torrey in the Botany of that expedition as *O. bracteosus* Benth. The species has since been collected in abundance by Griffiths and Cotton at Moses Lake, Douglas County, Washington.

**ORTHOCARPUS CUSPIDATUS** Greene

*Orthocarpus cuspidatus* GREENE, Pittonia, 4: 101. 1899.

*Orthocarpus copelandii* EASTWOOD, Bot. Gaz., 41: 288. 1906.

The type of *O. cuspidatus* was collected on Ashland Butte, near Ashland, Oregon, by Howell (no. 141), July 8, 1887. The type of *O. copelandii* was from Mount Eddy, Siskiyou County, California, altitude 2,130 meters. Various California specimens are to be referred here, namely:

Headwaters Sacramento River, at 2,100 meters altitude, *Pringle*, September 1, 1882;

Twin Lakes, Alpine County, at 2,600 meters altitude, *Hansen*, 455, July 22, 1892;

Mount Shasta, *H. E. Brown*, 499, 2,000 to 2,800 meters altitude;

Diamond Mountain, near Susanville, *Joucs*, June 28, 1887, 2,230 meters altitude.

**ORTHOCARPUS CRYPTANTHUS** Piper, sp. nov.

Annual; stems erect, 10 to 25 cm. high, simple or with a few erect branches, puberulent, leafy to the spikes; leaves ascending, lanceolate, alternate, sessile, acute, 1 to 3 cm. long, puberulent, all entire or the uppermost with a pair of slender lateral lobes; bracts abruptly different from the leaves, firm and papery, closely imbricate, ovate, acute, about 1 cm. long, entire or the lowest with a pair of lobes near the base, glabrous or nearly so, the margins somewhat ciliate, purple-tipped, almost entirely concealing the flowers; calyx 7 to 9 mm. long, cleft anteriorly to the middle and posteriorly nearly to the base, each lobe cleft about half way into two triangular-subulate teeth, the sinuses of these somewhat scarious; corolla purple, 13 mm. long, tubular or very rarely funelform; galea straight, blunt and slightly pubescent at tip; lip about as large as the galea and nearly as long, somewhat triply saccate, ending in three small appendages; capsule broadly elliptic, 6 to 7 mm. long.

A species closely allied to *O. cuspidatus* Greene, but distinguished by its smaller corolla with relatively much smaller lip.

Specimens have been examined as follows:

OREGON:

Stein Mountains, near Wild Horse Creek, *Cusick*, 2,035, July 14.

Stein Mountains, opposite Andrews, altitude 1,850 m., *Leiberg*, 2,531, July 9, 1896.

Warner Range, Lake County, *Coville*, 619, July 26, 1906.

CALIFORNIA:

Lower end of Donner Lake, *Heller*, 6,884, July 8, 1903.

*Type specimen*.—Sheet no. 354,760, U. S. National Museum (*Cusick's* no. 2,035).

NEW SPECIES OF THREE GENERA, WITH A NEW NAME

**SAXIFRAGA ODONTOLOMA** Piper, nom. nov.

*Saxifraga odontophylla* PIPER, Contr. Nat. Herb., 11 : 314. 1906, not Wall. 1834.

**LUPINUS GORMANI** Piper, sp. nov.

A silvery-pubescent perennial about 20 cm. high, the underground portion of the stems and the very large root woody; stems slender, sparsely appressed-pubescent; basal leaves none, the lower cauline represented by bracts; normal leaves 5 to 7-foliolate, the leaflets oblanceolate, obtuse, acute or short-acuminate, 2 to 2.5 cm. long,

pubescent on both sides with rather scanty silvery hairs; petioles shorter than the leaflets; stipules small, subulate-lanceolate; raceme 8 to 12-flowered, 4 to 5 cm. long, on a peduncle less than half its length; bracts lanceolate or subulate, early deciduous, shorter than the buds; pedicels 3 to 4 mm. long; calyx pubescent, bilabiate, the upper lip bidentate, 5 mm. long, the lower entire, somewhat longer; corolla apparently pale violet, 10 mm. long; banner orbicular, smooth on the back; wings obliquely oblong-obovate, smooth within; keel strongly falcate, slightly exceeding the wings, not ciliate; ovary hairy, 6-ovuled; pods not seen.

Type material collected on the middle peak of the Three Sisters, Oregon, at 1,920 meters altitude, by Mr. M. W. Gorman.

*Type specimen*.—Sheet no. 529,988, U. S. National Museum.

The species is nearest related to *L. albicaulis* Dougl.

#### CASTILLEJA ELATA Piper, sp. nov.

Perennial, from slender, creeping rootstocks; stems erect, rather slender, simple or with a few slender branches, 50 to 90 cm. high, glabrous; leaves numerous, all entire, linear-lanceolate, subsessile, attenuate to an acutish apex, 3-nerved, glabrous, mostly 3 to 5 cm. long; spikes dense, 2 to 10 cm. long, the axis pubescent; bracts dull purplish, relatively shorter and broader than the leaves, mostly entire, only the uppermost lobed, more or less puberulent; calyx tubular-campanulate, puberulent, about 12 mm. long, cleft for about half its length before and behind, each lobe cleft to about the middle, thus forming four acutish subequal teeth; corolla 18 to 20 mm. long, dull purple excepting the back of the galea, the latter straight, puberulent, equaling the tube, the lip very small, thick, saccate, protuberant, its slender subequal teeth acute.

Well distinguished by its entire leaves, creeping rootstocks, and dull-purplish spike. The flowers resemble closely those of *C. oreopola subintegra* Fernald, but that has clustered stems.

A characteristic species of the Darlingtonia swamps of Josephine County, Oregon.

*Type specimen*.—Sheet no. 528,817, U. S. National Museum.

Collected 8 miles south of Waldo, June 14, 1904, by C. V. Piper, no. 5097. Cusick's no. 2944, collected in boggy meadows of the Illinois River in Josephine County, is the same species, but with a somewhat more pubescent inflorescence.

**VALERIANA PUBERULA** Piper, sp. nov.

Erect, from stout creeping rootstocks, 30 to 40 cm. high; herbage puberulent throughout; leaves mostly basal, 5 to 8 cm. long, usually lyrate, 3 to 7-lobed, the terminal lobe oblong or obovate, with a few coarse teeth, the lateral lobes narrowly oblong and entire; cauline 2 or 3 pairs, the upper much reduced, the lobes linear-oblong, more conspicuously toothed; cymes contracted, simple, or occasionally two smaller ones from the axils of the bracts; these linear-lanceolate, entire or toothed; bractlets sessile, lanceolate, hooded at base, attenuate-acute; corolla 3 mm. long, white, short-funnelform, slightly gibbous at base, its lobes obtuse, shorter than the tube; stamens protruding, the slender filaments glabrous; ovary oblong-ovate, glabrous, the stigma slightly 3-lobed.

Collected at the base of Castle Crest, Crater Lake, Klamath County, Oregon, August 1, 1897, by Frederick V. Coville and Elmer I. Applegate, no. 340.

*Type specimen*.—Sheet no. 380,552, U. S. National Museum.

Closely related to *V. sitchensis* Bong., but at once distinguished by its puberulence.