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TWO NEW PLANTS FROM MOUNT MAZAMA, OREGON.

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***Arenaria pumicola*, sp. nov.\***

Plant forming a rather loose tuft, commonly 6 to 12 cm. high, from a caudex with a deep tap-root and with naked ascending branches commonly 1 to 2 mm. in thickness; stem erect, smooth below, glandular-hairy above, with commonly 1 to 3 pairs of cauline leaves; basal leaves numerous, about 0.5 to 0.7 mm. wide by 10 to 20 or even 30 mm. long, glabrous, glaucous, entire to remotely or sometimes even closely denticulate on the margin, abruptly and rather bluntly acute at the apex, the cauline leaves similar but about twice as broad and seldom more than 10 or 12 mm. long; inflorescence at the first flowering compact, in age open, the branches of the cyme and often the midribs of the sepals glandular-hairy; bracts ovate, acute to acuminate, scarious, glabrous; sepals 2 to 3 or sometimes even 4 mm. long, ovate, with a sharply defined midrib and broad scarious margins, acute or through the expansion of the margins obtuse; petals about twice as long as the sepals, cuneate-oblongate, emarginate or erose at the usually truncate apex; stamens about as long as the petals, the anthers commonly purple; ovary globose; capsules at maturity probably nearly twice as long as the calyx; mature seeds not seen.

Type specimen in the United States National Herbarium, collected August 13, 1896, at Crater Lake, Oregon, at an altitude of 2180 meters, by Frederick V. Coville and John B. Leiberg, No. 349.

This plant appears to be most closely related to *Arenaria aculeata* Wats., differing in the naked, ascending, subterranean caudex branches bearing the congested foliage in tufts at their

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\* On the ground of euphony the combination of letters *icic*, which in strict etymological practice would occur in this word, has been reduced to *ic*.



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ends; the leaves not very stiff and with only an abrupt, very short, and scarcely pungent horny apex; and the sepals with the green median portion rather narrow, usually abruptly delimited by the broad hyaline margins, and commonly with little tendency to be striate when dry. *Arenaria aculeata* is a plant with spreading, procumbent, matted stems retaining their more scattered widely spreading dead foliage for several years; the leaves stiff, tapering at the apex into an extremely sharp horny spine; and the sepals with a broad midrib not usually sharply delimited and when dry commonly 3 to 5-striate. In the field the plants are at once distinguishable by their strikingly different habit and by the difficulty of handling *aculeata*, the leaves of which readily pierce the skin, a difficulty which was not experienced in the case of *pumicola*.

Our plant is a characteristic species of the open slopes of pulverized pumice-stone about the rim of Crater Lake, Mount Mazama, Oregon, and specimens in the National Herbarium collected by Lemmon in 1875 show that it occurs also in north-eastern California. *Arenaria aculeata* ranges from the plateau of northern Arizona through the mountains of Nevada and Utah to those of southwestern Idaho and eastern Oregon.

Our plant bears considerable resemblance to some herbarium specimens which are referred to *Arenaria congesta subcongesta* Wats., but the type of that complex of forms differs in its spreading instead of erect leaves, slenderer and more persistently leafy branches of the rootstock, longer calyx (about 5 mm.) and glabrous stems and inflorescence.

***Cardamine bellidifolia pachyphylla*, var. nov.**

Plant wholly devoid of pubescence, low, 4 to 8 cm. high, from a branching caudex commonly 2 mm. thick, and with a deep tap-root, the branches usually short, but sometimes long and flexuous; leaves mostly gathered in subrosulate tufts at the ends of the caudex branches, the blades fleshy in texture, even the midrib nearly obliterated, 6 to 12 or even 16 mm. long, obovate to narrowly oblong, rounded at the apex, entire or with an indistinctly defined lobe on either side toward the apex, abruptly or gradually narrowed into petioles 1 to 3 cm. in length and purplish at the base or throughout; flowering stems short, erect, 1 or 2 from each branch of the caudex, 3 to 5 cm. high, leafless or bearing one or two short-petioled oblanceolate or obovate leaflets; inflorescence a short terminal raceme, the flowers seldom more than 10, on pedicels commonly 5 to 10 mm. long; sepals 2 to 3 mm. long; petals a little more than twice as long, spatulate, obtuse, white or rose-colored; siliques about 3 cm. long



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and 1.5 mm. wide, fastigiately erect on the slender ascending pedicels, the styles exceeding the valves by about 2 mm. ; seeds in one row, oblong, flat, not winged, often margined at the distal end, about 2 mm. long by 1 to 1.2 mm. wide, the cotyledons accumbent.

Type specimen in the United States National Herbarium, collected August 15, 1896, at Crater Lake, Mount Mazama, Oregon, at an altitude of 2300 meters, by Frederick V. Coville and John B. Leiberg, No. 426.

The typical form of *Cardamine bellidifolia* is a less robust plant, slenderer throughout, the caudex and its branches commonly about 1 mm. thick ; the leaves of a light green color and thinner texture, with venation clearly evident on the back, at least in dried specimens, and the petioles apparently always green throughout ; the capsules about 2 cm. long, their styles exceeding the valves by about 1 mm. ; the fruiting pedicels seldom exceeding 6 mm., usually less than 5 mm. ; and the seeds commonly 1 by 1.5 mm.

*Cardamine bellidifolia*, a circumpolar plant, is known sparingly in the Western Hemisphere from Greenland to the islands of Bering Sea, southward to the White Mountains of New Hampshire, the Rocky and Selkirk Mountains of British Columbia, and the Cascade Mountains of Washington. As indicated by both American and European specimens, it is a plant of humid habitat, often if not always growing in mossy places and on granitic soil. *C. bellidifolia pachyphylla* occupies geographically a position contiguous to the westernmost arm of southern montane extension of *C. bellidifolia*, namely, the Cascade Mountains of southern Oregon and adjacent isolated peaks in northern California. The soil on which it grows at Crater Lake, where it occurs on the rocky slopes of the Watchman, is a pulverized pumice. This, although in early spring well supplied with moisture from the melting snow, soon becomes very dry at the surface and supports only a scanty vegetation, even mosses being almost entirely wanting. Doubtless on Lassen Peak and Mount Shasta, both of which are volcanic cones, it finds a similar soil. Under these conditions it appears to have differentiated from the typical *C. bellidifolia* by sending down a deeper tap-root for moisture and by developing thicker leaves to accommodate itself to drier surroundings and reduced transpiration.