

ADDITIONS TO THE FLORA OF COLORADO—II*

BY WILLIAM A. WEBER†

The publication of Dr. Harold D. Harrington's *Manual of the Plants of Colorado* (hereinafter referred to as the Manual) in 1953 initiated a new phase of research into the taxonomy and phytogeography of this State. Up to this time, the standard works on the Colorado Flora were Rydberg's *Flora of the Rocky Mountains and Adjacent Plains* (1922), Coulter and Nelson's *New Manual of Botany of the Central Rocky Mountains* (1909), and Rydberg's *Flora of Colorado* (1906), all of which were out of date and dominated by the very narrow taxonomic viewpoint which has been called the "Rydbergian" concept of genera and species. These texts antedated the experimental and cyto-analytical period in American taxonomy. Harrington's work is the first recent attempt to bring the nomenclature of Colorado plants in line with that of other regional floras and to assemble the widely dispersed records pertaining to the Colorado Flora which have accumulated over the past fifty years.

Harrington's task was a formidable one, not only because of the bibliographic research that was necessary, but because new distributional records and additions to the flora were constantly being brought to light as the study progressed. Thus, at the time of publication, Dr. Harrington was able to state that "about one out of every thirty species listed here constitutes a new record for the State, or at least is not credited to Colorado in the monographs and manuals".

This paper includes a number of species which have never been reported for the State of Colorado, some species which were discovered too recently to be included in the Manual, and still other taxa whose status has been uncertain. Certain taxa which were included erroneously are discussed under the heading "Rejected Species". Inasmuch as a number of the additions are new to the United States and have never been treated in a regional flora, complete descriptions are provided. Species new to the Colorado Flora are indicated in the text by an asterisk (*) preceding the name. The specimens cited, unless otherwise indicated, are in the University of Colorado Herbarium.

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†Assistant Professor of Biology

ADDITIONS TO THE COLORADO FLORA

PTERIDOPHYTA

POLYPODIACEAE

* *ADIANTUM PEDATUM* L., Sp. Pl. 1095. 1753. Northern Maidenhair Fern.

Rhizomes 2-5 mm. thick, the scales broadly attached at base, linear-lanceolate, 4-6 mm. long, 1-2 mm. wide, light brown; fronds up to 7 dm. long, the stipes longer than the blades; blades reniform in outline, up to 4 dm. wide, dichotomous at base, the two equal branches recurved, bearing 5-9 pinnae on the upper side only; pinnae up to 35 cm. long and 5 cm. wide, long-stalked, fully pinnate throughout; pinnules up to 25 pairs, slender-petiolulate, spreading about at right angles, subrectangular in outline (the terminal subflabellate), the lower margin nearly straight, the upper deeply lobed in sterile pinnules (the lobes crenate), less deeply lobate in fertile pinnules; midrib parallel and adjacent to the lower margin, the veins twice or thrice forked; indusia oblong, 2-5 mm. long.

Newfoundland, Quebec, n. Vt.; w. Ontario and n. Wisconsin; Alaska south to Utah and California. Probably very rare in Utah (west slope of Wasatch Mountains). New to Colorado.

OURAY CO.: common in one side-canyon just west of Poughkeepsie Gulch, 9.0 road miles s.e. of Ouray, on Red Mountain Pass road, 9600 ft. alt., June 29, 1954, *Margaret Douglass 54-443*.

This material belongs to variety *aleuticum* Ruprecht, which is somewhat glaucous, stiffer than the typical variety, and with the fronds not much curved. *Adiantum pedatum* is easily distinguished from its relative, *A. capillus-veneris*, which is also found in southwestern Colorado, as follows:

Frond dichotomously or palmately forking at the summit of the upright stipe
A. pedatum

Frond with a simple main rachis, the pinnae arising lateral to it
A. capillus-veneris

* *ASPLENIUM RESILIENS* Kunze in *Linnaea* 18: 331. 1844. Rock Spleenwort or Black-stem Spleenwort.

Rhizome short, with rigid, dull blackish scales; fronds erect, not dimorphic, the sterile and fertile similar, broadly linear, once-pinnate, 1.0-2.5 dm. high; pinnae firm, oblong to somewhat triangular because of the basal auricle, most of them opposite or nearly so along the rachis and sessile, the median pinnae 6-13 mm. long, entire, undulate, or very shallowly crenulate; stipe short, black, with only a slight reddish tinge; rachis with two sharp ridges along the upper side; sori up to 4 or 5 pairs, rarely more, on each fertile pinna.

Pennsylvania, West Virginia, Kentucky, Illinois, and Missouri, to Florida, Kansas, Oklahoma, New Mexico, Arizona; West Indies, and along the Cordillera to Argentina.

BACA CO.: in crevices, basalt caprock, confluence of Sand and Gallinas canyons, tributary to Cimarron River, vicinity of Wilson Ranch, 27 miles s. of Pritchett, T. 35 S., R. 48 W., Sec. 5, 8, 4400 ft. alt., Aug. 6, 1948, *Weber 4351*.

Asplenium resiliens is related to *A. platyneuron* and both species occur in the same habitats along the eastern edge of the Mesa de Maya in southeastern Colorado. The treatment of *A. platyneuron* in Harrington and Durrell (1950) is confusing, because the description (p. 26) applies to *A. platyneuron* but the illustration (Figure 15) is *A. resiliens* although labelled *A. platyneuron*. The salient characters by which the two species may be distinguished are tabulated below.

<i>A. platyneuron</i>	<i>A. resiliens</i>
Fronds dimorphic, the sterile ones short, spreading, often appearing brown and withered when fertile fronds are green and well-developed	Fronds alike, all erect
Pinnæ distinctly and usually regularly serrate	Pinnæ entire, undulate, or only irregularly crenulate
Pinnæ distinctly alternate along the rachis	Pinnæ mostly opposite along the rachis
Stipe and rachis red-brown	Stipe and rachis black with little reddish tinge
Sori usually more than 5 pairs on each fertile pinna	Sori up to 4 or 5 pairs on a fertile pinna

CYSTOPTERIS MONTANA (Lam.) Bernh.

SAN JUAN CO.: streamside, spume of waterfall, on duff, $\frac{1}{2}$ mi. south of South Mineral Campground, northwest of Silverton, 10,200 ft. alt., June 28, 1954, *Margaret M. Douglass* 54-432.

With this new station, there are now four known colonies of this exceedingly rare fern in Colorado: "a Chrysolite Mountain," near Mount Antero, *Brandegge*; Monte Cristo Creek, Summit County, *Mrs. G. R. Marriage*; same locality, *Weber & Rollins* 6493; Camp Bird Mine, Ouray Co., *Margaret Mattoon (Douglass)* 85.

CRYPTOGRAMMA STELLERI (S. G. Gmel.) Prantl

SAN JUAN CO.: very scattered fronds on moss and duff, rare, in shade, moist coniferous forest, vicinity of waterfalls, $\frac{1}{2}$ mi. south of South Mineral Campground, northwest of Silverton, 10,200 ft. alt., June 28, 1954, *Margaret M. Douglass* 54-439.

Although this rare fern has been reported from Summit, Gunnison, Ouray, and La Plata counties, the specimen cited above is the first to find its way into a local herbarium. Dr. Harrington based his report of the species on the published notes of Wherry (1938).

PELIAEA ATROPURPUREA (L.) Link

LARIMER CO.: rare and local, in limestone ledges along sides of fairly deep arroyo in *Pinus edulis* woodland, northeast exposure, Owl Canyon, north of Livermore, ca. 6,000 ft. alt., 6 April 1955, *Weber 9020*.

Previous records of this fern have been limited to a few collections from south-eastern Colorado, in Baca and El Paso counties.

EQUISETACEAE

* EQUISETUM PRATENSE Ehrh., Hannov. Mag. 22: 138. 1784. Meadow Horsetail.

More slender than the erect forms of *E. arvense*, with whitish-green, stiff, slender, sterile stems 1.5-5.25 dm. high, and with the 8-20 ridges beset with 3 rows of flat spinules, the centrum about one-sixth the diameter of the stem; sheaths pale, with white-margined slender brown teeth, those of the fertile precocious and fleshy whitish to pink or brown axis 8-15 mm. long, of the sterile firm axes only 3-8 mm. long, cupuliform; branches wide-spreading, whorled, very slender, 3-angled, becoming 4-15 cm. long.

Alluvial woods, thickets, mossy glades, rich slopes, and calcareous meadows, Nfld. to Alaska, s. to N.B., n. and w. N.E., N.J., N.Y., Mich., Wisc., n.e. Ia., N.D., Mont., and s. B.C.

Harrington says this species is "consistently reported for Colorado but no specimens have been located authenticating this record." In the exceedingly rich pocket of boreal vegetation along Monte Cristo Creek, which has already yielded *Parnassia kotzebuei*, *Cystopteris montana*, and *Timmia norvegica*, there are a few glades in which this *Equisetum* is the dominant species. Superficially it resembles *E. arvense*, but the fertile stems of *pratense* are slender, pale green or whitish, with small greenish cones. The teeth are almost colorless, with only a dark center line, and the whorls are very slenderly tubular. Almost invariably the fruiting shoots bear a few sterile branches toward the base.

SUMMIT CO.: openings in wet spruce forest, north slope along Monte Cristo Creek, north base of Hoosier Pass, 10,800 ft. alt., July 11, 1954, *Weber 8756*. CLEAR CREEK CO.: Silver Plume; gravelly roadside by bogs in town, July 4, 1954, *Leon & E. H. Kelso 7206*.

SELAGINELLACEAE

SELAGINELLA WEATHERBIANA Tryon in Amer. Fern Journ. 40 (1): 69. 1950.

Plant 5-15 cm. tall; stems of two kinds, one prostrate, creeping, subterranean, the other erect, aerial, 1-2 mm. in diameter, rooting only at the very base or rarely decumbent at the base and rooting in the basal half, abundantly subdichotomously branched from the base, forming broad fans, brown except for the green portions of the current year's growth; leaves of the erect stems ascending or appressed, wholly concealing the stem, 1.5-2.0 mm. long, up to 0.5 mm. wide, subulate-linear, light olive-green to gray-green, with from few to many dentiform cilia; seta 0.4-0.9 mm. long, yellowish to greenish-white, usually smooth; sporophylls 1.6-2.0 mm. long (ex-

cluding seta), 0.7–0.9 mm. wide, narrowly deltoid-ovate, slightly biauriculate, otherwise similar to the vegetative leaves; megaspores yellow, 0.31–0.49 mm. in diameter, moderately rugose-reticulate on the commissural face, obscurely rugose-reticulate or nearly smooth on the outer face; microspores 43–54 microns in diameter.

Northern New Mexico to northern Colorado, mostly along the eastern base of the frontal ranges, in cool canyons.

ALAMOSA CO.: north slope, trail to Mosca Pass, Great Sand Dunes Nat. Monument, 8200 ft. alt., June 10, 1954, *Shushan*. BOULDER CO.: abundant on north faces of cliffs, Boulder Canyon, 7 mi. west of Boulder, 6500 ft. alt., April 27, 1954, *Weber*; Coal Creek Canyon, s.w. of Eldorado Springs, 6200 ft. alt., June 27, 1942, *Ewan 14370* (more probably Jefferson Co.); Flagstaff Mt., July 19, 1906, *Robbins 2136*. EL PASO CO.: north slope, on rock outcrops, with *S. mulica*, 1 mi. west of Manitou along Fountain Creek, May 21, 1954, *Weber 8676*. JEFFERSON CO.: Clear Creek Canyon 5 mi. west of Golden, 6300 ft. alt., May 16, 1954, *Weber 8674*.

Of the three species of elongate-branched selaginellas found in the Colorado Front Range, *S. mulica*, *S. underwoodii*, and *S. weatherbiana*, the last-mentioned species is at once the most abundant and most conspicuous, forming massive tufted mats often several square feet in area, usually on the steep north slopes of the rocky foothill canyons from 6,000 to 8,000 feet altitude. It is odd that this species should have escaped detection until 1950, for it has been collected often and is abundantly distinct, in both the field and herbarium, from the other two species with which it commonly grows. *S. mulica* is glaucous, with the leaves lacking hair-points; both *S. mulica* and *S. underwoodii* creep extensively, rooting along the whole length of the stem, and their leaves are not so closely overlapping as to obscure the stem. *S. weatherbiana* is erect or spreading, with hair-pointed leaves, does not root along the stem except at the very base, and has closely overlapping leaves which cover the stem completely. Furthermore, the stems of *mulica* and *underwoodii* usually have a single main axis along which the lateral branches are short and clearly secondary; those of *weatherbiana* are repeatedly branched, often without an obvious main stem, the lateral branches commonly of equal rank, forming a fan.

SPERMATOPHYTA — MONOCOTYLEDONEAE NAJADACEAE

POTAMOGETON VAGINATUS Turcz. in Bull. Soc. Nat. Mosc. 1: 102. 1838.

Leaves all linear, submerged, blunt-tipped, 1–2 mm. wide, 10–45 cm. long, with an elongate, firm sheath consisting of the leaf-base and the adnate stipule, the sheaths of the primary leaves loose, subinflated, much thicker than the stem, 2–5 cm. long, open to the base; spike flexuous, moniliform, with from 5 to 12 nearly equidistant whorls, in maturity 3–8 cm. long; fruits 3–3.5 mm. long, 2–2.5 mm. broad, with nearly central wart-like beak.

Deep fresh or brackish water, Lab. to Alaska, s. to w. Nfld., C.B., P.E.I., s. N.B., s. Que., n. N.J., w. N.Y., Mich., Wisc., Minn., N.D., Ida., Wyo., and Ore.; also Eurasia.

JACKSON CO.: South Delaney Lake, northwest of Walden, in North Park, Aug. 11, 1954, *W. Rosine*.

Potamogeton vaginatus is a most distinctive pondweed, resembling *P. pectinatus* and *P. filiformis* in having stipules adnate to the sheath, but differing from both in having greatly enlarged or inflated leaf-sheaths on the primary leaves.

GRAMINEAE

* *BROMUS RIGIDUS* Roth, in *Mag. Bot. Roem. and Ust.* 10: 21. 1790. Ripgut Grass.

Tufted annual; culms 40–70 cm. tall; sheaths and blades pilose; panicle open, nodding, rather few-flowered, 7–15 cm. long, the lower branches 1–2 cm. long; spikelets compressed, usually 5–7-flowered, 3–4 cm. long, excluding awns; first glume 1-nerved, the second 3-nerved; glumes smooth, the first 1.5–2.0 cm. long, the second 2.5–3.0 cm. long; lemmas 5–7-nerved, 2.5–3.0 cm. long, scabrous or puberulent, cleft at the apex, the hyaline teeth 3–4 mm. long; awn stout, 3.5–5.0 cm. long.

Introduced from the Mediterranean region and fairly well distributed through the western United States, rare in the eastern states.

MESA CO.: base of sandstone cliffs along trail to “Coke Ovens”, Colorado National Monument, ca. 6000 ft. alt., June 5, 1954, *Weber*.

Bromus rigidus is a giant species of cheat-grass, related to the common *Bromus tectorum*, but strikingly differing by its very large glumes and long awns.

* *DESCHAMPSIA CAESPITOSA* subsp. *BERINGENSIS* (Hulten) W. E. Lawrence in *Amer. Jour. Bot.* 32: 302. 1945.

Deschampsia beringensis Hult.

On a recent field trip to Mount Evans, Dr. Alan Beetle drew my attention to a form of *Deschampsia caespitosa* which has distinctly larger spikelets than the common tufted hair-grass. Both of these forms occur together around Summit Lake, at 12,800 feet altitude, and both appeared to be unconnected by intergradation. Measurements of the spikelets of herbarium materials from Colorado permit a separation of two races differing in length of second glume as well as more intangible differences such as the shape and width of the glumes. The more typically alpine race, which has glumes 4.5 to 6.5 mm. long, narrow at the base, acuminate at the apex, and lemmas with conspicuously exerted awns, matches well specimens of subspecies *beringensis* from coastal Alaska and northwestern United States. The more widespread plant of wet meadows from the foothills to alpine has glumes up to 3.7 mm. long, broader at the base, often only acute, and lemmas with awns included or exerted.

Lawrence (1945) recognized a long-awned form in the race inhabiting the Rocky Mountains, but stated that length of awn was not correlated with distribution, habitat, or other morphological characters. He did not mention any long-glumed

specimens from the high Rocky Mountains. Since the publication of Lawrence's paper, the subspecies *beringensis* has been reported from the Sierra Nevada (Howell 1948). This race should occur in other high ranges in continental western United States, such as the Uinta, Wind River, and Bighorn Mountains. More intensive study of this race in the Colorado Rockies is needed to verify the claim of Lawrence that the races are connected by complete intergrading series. The following specimens are representative of the long-glumed race in Colorado.

BOULDER CO.: Red Rock Lake, 4 mi. west of Ward, 10,000 ft. alt., *Ramaley & Robbins 3007*. CLEAR CREEK CO.: Berthoud Pass, 11,300 ft. alt., *J. H. Ehlers 8282*; Summit Lake, Mount Evans, *Beelle 6301*. EL PASO CO.: Sheep Mt., Pikes Peak region, *Ewan 14940*. GILPIN CO.: James Peak Lake, *Ramaley 10789*; near Elk Park, 10,000 ft. alt., *Ramaley 9496*. LARIMER CO.: Ethel Peak, *Goodding 1910*.

* *PASPALUM PUBIFLORUM* Rupr. ex Fourn. var. *GLABRUM* Vasey ex Scribn. in Tenn. Agr. Exp. Sta. Bull. 7: 32. 1894.

Culms decumbent at the base, 40-100 cm. tall; sheaths sparsely pilose; blades flat, usually 10-15 cm. long, 6-14 mm. wide, usually with a few stiff hairs at the rounded base; racemes 3 to 5 or more in number, 2-10 or more cm. long, rather thick, erect to spreading, the rachis 1.2-2.0 mm. wide; spikelets obovate, glabrous (pubescent in the species proper), about 3 mm. long.

Moist open low ground, woods and ditch banks, North Carolina, Ohio, and Indiana, to Florida, west to Kansas and Texas; adventive elsewhere.

BOULDER CO.: lawn on south side of Museum Building, University of Colorado campus, Boulder; probably introduced with tree plantings, Sept. 9, 1952, *Weber 7962*.

This species threatens to be a serious lawn pest if it is allowed to spread from the small area where it is evidently very well established. The plant spreads by rooting at the nodes of the decumbent stems. Some of the plants were small clumps no more than four inches in diameter when first detected and now are forming sods four to five feet across. Their decumbent stems enable the plants to set seed even when closely mowed, and the clumps compete very successfully with the original bluegrass cover.

CYPERACEAE

* *CAREX ARCTOGENA* H. Smith in Acta Phytogeographica Suecica 13: 191-200. 1940.

Densely tufted, brown and purple at base, wiry, 0.7-5.0 dm. high (up to 10 cm. in our specimens); leaves filiform, shorter than the slender culms; spike solitary, bractless, subglobose, with a slender staminate tip, the carpellate portion 3-6 mm. in diameter; carpellate scales broadly ovate, rounded above, brown, with pale hyaline margins; perigynia at first ascending, soon divergent, about 1.9 mm. long, ovate, planoconvex, sessile, rounded at base, abruptly narrowed to the short beak; stigmas 2; rachilla nearly equaling the lenticular achene.

In alpine sites, Scandinavia, Greenland, Arctic America, and scattered localities in mountains of South America.

GRAND CO.: tundra above head of Fool Creek, Vasquez Range, Fraser Experimental Forest near Fraser, 11,500 ft. alt., July 31, 1953, *Weber 8621*.

This species is clearly related to *C. capitata* L., but differs by being lower in habit, with a darker spike and a shorter and narrower perigynium and with an abruptly contracted beak. The tendency among American authors has been to treat *C. arctogena* as a synonym of *C. capitata* or as a *subspecies* or *forma*. Nevertheless, the plant is morphologically quite distinct and it occupies a different ecological niche; and in Scandinavia, at least, it grows adjacent to *C. capitata* with no tendency to produce intermediates. If, as Smith, *l.c.*, states, the report of *C. capitata* in New Hampshire is correct, then the Colorado record represents the first time *C. arctogena* has been taken in the United States.

CAREX GEOPHILA Mackenzie in Bull. Torr. Bot. Club 40: 546. 1913.

Caespitose; rootstocks slender or stoutish, branched; culms up to 10 cm. tall, stiff, rough on angles, phyllopodic, brownish and fibrillose at base; sterile culms aphyllopodic, well-developed leaves 5 to 10 to a fertile culm; blades 2–15 cm. x 1.5–2.5 mm., keeled below, channeled above, with revolute margins, firm, light green, roughened, attenuate; sheaths whitish ventrally; ligule wider than long; terminal spike staminate, 5–9 x 2.5 mm.; lateral spikes 2 to 5, pistillate, the lower basal, peduncled; bract of upper spike squamiform, somewhat sheathing, brownish-reddish-tinged and hyaline at base; scales acute to cuspidate, the staminate striate, purplish or reddish-brown, the pistillate reddish-brown, those of the lower spikes scarcely reddish-brown-tinged, with hyaline margins and 3-nerved green center; perigynia 5 to 15 to a spike, 3.25–4.0 mm. x 1.75 mm., ascending, orbicular, green, puberulent, 2-keeled, the stipe 0.5–0.75 mm. long; beak 0.5–0.75 mm. long, conic, serrulate, bidentate, hyaline or purplish-tipped; achenes 2.25 mm. x 1.75 mm., triangular with convex sides and prominent angles, closely enveloped, stipitate, truncate and apiculate, jointed with the style; stigmas 3, long.

Foothills, mountains of New Mexico and Arizona.

BOULDER CO.: Upper Gregory Gulch, Flagstaff Mt., s.w. of Boulder, 7,000 ft. alt.; south slope, over massive granite outcrops, May 18, 1952, *Weber 7411*.

Carex geophila is undoubtedly present all along the eastern foothills of the Front Range from northern New Mexico probably to Larimer County, but has been overlooked because of its inconspicuous inflorescence. The same might be true of the somewhat similar *C. pityophila*, of the pinon-juniper belt of western Colorado. Both blossom quite early, along with *C. heliophila*, and the inflorescence is hidden among the dense leaf-tufts.

* CAREX INCURVIFORMIS Mackenzie in Rydberg, Fl. Rocky Mts. 120. 1917.

Rhizomes long, brownish or blackish, scaly; culms 2–6 cm. high, erect or curved, smooth, brownish-tinged and fibrillose at base; leaves 4–8 to a culm, near base; blades 1–4 cm. x 0.75–1.5

mm., flattened at base, involute above, thick, stiff, light green; sheaths hyaline, truncate; ligule short; spikes few, androgynous, bractless, in a dense head 6-9 mm. x 5-8 mm.; scales acute or acuminate, brown with hyaline margins and lighter center; staminate flowers inconspicuous; perigynia few, 3.25 mm. x 1.25 mm., ascending or spreading, plano-convex, shining, membranous, narrowly sharp-edged ventrally, dark chestnut-brown, short-stipitate; beak 1 mm. long, obliquely cleft dorsally, bidentulate; achenes 1.5 mm. x 1 mm., lenticular, loosely enveloped, yellowish-brown, short-stipitate, apiculate, jointed with the short deciduous style; stigmas 2, long, light brown.

Alberta and British Columbia.

PARK CO.: ledges by a small cascade at upper end of Wheeler Lake, in cirque basin at head of Platte Gulch, north of Mount Lincoln, 12,200 ft. alt., July 3, 1954, *Weber 8745*.

Carex incurviformis is a member of the series Foetidae, in which the spikes are short, and densely aggregated into a globose or ovoid head *appearing like one spike*. In the Manual, these species, namely *C. perglobosa* and *C. vernacula*, are keyed as if they possessed one spike per culm, as well as in the technically correct manner, in order to aid students who might be unable to detect the individual spikes. Following is a revised key to the three species forming this group.

Leaf-blades 2-4 mm. wide; perigynia little exceeding the scales at maturity, not inflated. *C. vernacula*

Leaf-blades 1.5 mm. wide or less; perigynia usually slightly or much exceeding the scales at maturity, more or less inflated.

Perigynia very membranous, little exceeding the scales at maturity, markedly inflated, at most substipitate; rhizomes very slender; culms slender, light brown at base; head very globose. *C. perglobosa*

Perigynia membranaceous or submembranaceous, usually much exceeding the scales at maturity, more or less inflated, slenderly short-stipitate; rhizomes stouter, lignescent; culms stoutish, brown at base; head capitate, usually ovoid. *C. incurviformis*

Carex perglobosa is common in Colorado on alpine rockslides, where it meets with little competition. The plant is always 5 or 10 centimeters high or more, and commonly rather tufted. The leaves in *perglobosa* are broad and not involute, and the heads, because of the long, dark-colored bracts, have a very chaffy appearance and texture. *C. incurviformis*, on the other hand, grows in among mosses and other low plants on well-vegetated sites, rarely attains a height of over 4 centimeters, and produces culms singly or a few together. The leaves are very narrow and involute, and the heads are distinctly green in appearance because of the fact that the perigynia exceed the bracts. *C. incurviformis*, growing as it does half hidden in tundra mats, is almost invisible except at close range. For excellent illustrations of the species, see Mackenzie (1940), Plates 11-13.

CAREX NARDINA Fries var. HEPBURNII (Boott) Kükenthal in Pflanzenr. 38 (IV. 20): 70. 1909.

Carex hepburnii Boott in Hook., Fl. Bor.-Am. 2: 209. 1839.

SUMMIT CO.: locally abundant and often the only species present amid huge rock piles on summit of Hoosier Ridge, east of Hoosier Pass, 13,200 ft. alt., August 31, 1948, *Weber & Thornburg 4452*. Also seen in the Rocky Mountain Herbarium, the following Colorado specimens: LAKE CO.: dry hillside, 12,000 ft. alt., Lake Creek, Aug. 4, 1919, *Clokey 3404*. LAKE-SUMMIT CO.: Mt. Bartlett, near Robinson, Aug. 24, 1896, *Shear 5429*.

Doubt was cast recently upon the occurrence of *Carex "hepburnii"* in Colorado. Porsild (1943) gives the known range as follows: "mountains of Alberta, British Columbia, and Washington, north to Alaska and Yukon; doubtful in Colorado." Harrington (1953) under *Carex elynoides* Holm, writes: "Doubtfully separated from *C. hepburnii* Boott in Colorado."

Part of the difficulty stems from the fact that *Carex nardina* var. *hepburnii* is very rare in Colorado, and has been so sparingly collected that very little material has been available in local herbaria for comparison. The rest of the trouble stems from the rather consistent misidentification of *C. elynoides* as *C. hepburnii*. Given good material, the two species are hardly to be confused. *C. hepburnii* is 5 to 8 cm. tall, the spikes are very short (5-7 mm.) and stout (ca. 3 mm. wide) without a sharp distinction between the staminate and pistillate portion, the culms are often shorter than the leaves, the achenes are lenticular, and the perigynium consequently is quite flat. *C. elynoides* is almost always between 10 and 15 cm. tall, the spikes are elongate (9-13 mm. long) and proportionately narrower (1.5 mm. wide in staminate portion, 2.5 mm. wide in pistillate portion) and the staminate portion is usually sharply differentiated, often elongate; the spikes may sometimes slightly overtop the leaves, and the achene is trigonous.

All of the specimens cited above are from the rich alpine-arctic relict area centering around Hoosier Pass. In the Rocky Mountain Herbarium I have seen a specimen from Utah: Bald Mountain, Uintah Mts., Aug. 10, 1911, *Mrs. J. Clemens*.

* CYPERUS ERYTHORRHIZOS Muhl., Gram. 20. 1817.

Annual; culms tufted, stout or slender, 7-50 cm. tall; leaves 3-8 mm. wide, rough-margined, those of the involucre 3-7, some of them 3-5 times as long as the inflorescence; umbel mostly compound; spikelets linear, subacute, 6-25 mm. long, less than 2 mm. wide, compressed, many-flowered, clustered in oblong, nearly or quite sessile, spikes; scales bright chestnut-brown, oblong-lanceolate, mucronulate, the membranous wings of the rachis separating as a pair of hyaline interior scales; stamens 3; style 3-cleft; achene sharply angled, oblong, pointed at both ends, pale, half as long as the scale.

Alluvial or damp sandy soil, Fla. to s. Calif., n. to Mass., N.Y., s. Ont., Mich., Wisc., Minn., N.D., Wyo., and Wash.

BOULDER CO.: infrequent on drying sand-mud flats of Baseline Lake, east of Boulder, ca. 5300 ft. alt., Oct. 11, 1954, *Weber 8959*.

CYPERUS RIVULARIS Kunth

BOULDER CO.: common in coarse gravels and sand bars along St. Vrain Creek just south of Hygiene, ca. 5500 ft. alt., Oct. 13, 1954, *Weber 8977*.

Two strikingly different growth forms of this species are found intermingled, the normal well-developed form with elongate rays and several stout stems from the base, and dense sods of capillary stems lacking rays and having the spikelets solitary or a few together near the summit of the slender, weak stem. These latter massed colonies often have old spikelets of the larger plants half-buried in the gravel in which they grow, and probably represent a second, autumnal growth of the species. Superficially the two kinds of plants look very different, and one is not easily convinced that they represent different phases of growth of the same species.

Cyperus rivularis is probably much more common than existing records suggest. Its absence in herbarium collections appears to be due to the paucity of late-summer collections in the piedmont valleys and plains.

*ERIOPHORUM SCHEUCHZERI Hoppe, Taschenb. 104. 1800.

Loosely stoloniferous; culms solitary, soft, 0.5–3.5 dm. high, slightly leafy at base, above with usually one bladeless, loose, membranous-margined, black-tipped sheath 2–7 cm. long; leaves of basal shoots 3–12 cm. long, soft, channeled or strongly involute; flowering spikelet broadly obovoid or subglobose, 0.8–1.2 cm. long, in fruit depressed-globose and 2–2.5 cm. high; scales lead-colored to blackish, with slightly paler narrow margins, the 1–3 outer scales ovate, the others ovate-lanceolate to lance-attenuate; anthers 1 mm. long; bristles bright white.

Arctic regions, s. in wet peat to n. Nfld., James Bay and Alta; Montana and Wyoming *vide* Rydberg, 1922.

SAN JUAN CO.: in bog, Ice Lake Basin, northwest of Silverton, 12,100 ft. alt., July 8, 1934, *Penland 1037*.

HEMICARPHA MICRANTHA Pax

BOULDER CO.: drying shore of Baseline Lake, east of Boulder, 5300 ft. alt., Oct. 11, 1954, *Weber 8948*; in coarse gravel and sand bars along St. Vrain Creek just south of Hygiene, ca. 5500 ft. alt., Oct. 13, 1954, *Weber 8978*.

Hemicarpha cannot be as rare as collections indicate, but it is nevertheless a reward for sharp observation, since it is certainly a most elusive species. Bethel and also Marcus Jones (No. 602, 1878 in herb. Colorado College) collected it on the Platte near Denver many years ago, and until the present collections were obtained his specimens were the only ones in our herbarium. Bethel noted that the species was extremely rare where found. I had the same experience at Baseline

Lake. After we had found one small tuft, four students and I spent over an hour on hands and knees searching the mud flat without finding another plant. Along the South St. Vrain, hunting was a little better, but even here we found only about one square foot in which plants were concentrated. There is a great need for intensive botanical exploration of the myriad of small temporary lakes and reservoirs which dot the piedmont valleys. These lakes support a unique strand flora whose growing season extends well into the autumn; such species as *Ammania coccinea*, *Lindernia anagallidea*, *Gratiola neglecta*, *Bergia texana*, *Limosella aquatica*, *Bacopa rotundifolia*, *Hypericum majus*, *Gerardia tenuifolia*, *Juncus marginatus*, *Eleocharis parvula* and *E. engelmanni* are locally abundant on some lakes and totally lacking on others.

KOBRESIA MACROCARPA Clokey

Kobresia bellardii (All.) Degland, var. *macrocarpa* (Clokey) Harrington

I am convinced that Harrington's reduction (1953) of *Kobresia macrocarpa* was not justified. In its morphology *K. macrocarpa* is more closely allied to *K. hyperborea* Porsild than to *K. bellardii*; both are amply distinct from *K. bellardii*, although *K. bellardii* is often hopefully identified as *macrocarpa* by persons unfamiliar with either. The characteristic differences between the two species, most of them outlined in Mackenzie (1931), are shown in the table below:

	<i>K. bellardii</i>	<i>K. macrocarpa</i>
Culm	5-35 cm. tall, slender, less than 1 mm. thick and up to 0.5 mm. thick	3-10 cm. tall, stout, up to 2 mm. thick, hardly ever less than 1 mm.
Spike	Usually simple, 1-3 cm. x 2-3 mm., equaling or exceeding the leaves	Usually compound, 1-2 cm. x 4-5 mm., overtopped by the leaves
Scales	2-3 mm. long	4-5 mm. long
Perigynium	3-3.5 mm. x 1.25 mm., margins free to base or nearly so	5.5 mm. x 1.25 mm., margins united below
Achene	2.5-2.75 mm. x 1.1 mm.	3.5 mm. x 1 mm.
Leaves	Straight, erect, very slender, 0.1-0.3 mm. wide	Curved, broad, 0.5-1.0 mm. wide

Kobresia bellardii is abundant on well-developed tundra soils, where it forms pure stands under the best conditions; *K. macrocarpa* is rare, found in sandy or gravelly soils, never a tundra dominant. I have found *K. macrocarpa* in only one locality: in gravels near the southeast shore of Summit Lake on Mount Evans, Clear Creek County.

**SCIRPUS LINEATUS* Michx., Fl. Bor. Am. 1: 32. 1803.

Perennial with fibrous roots; culms 0.5–1.5 m. high, single, erect from a slightly swollen base, obtusely trigonous, smooth; leaves mostly to 0.5 cm. broad, linear, flat, pale green, stiff, scabrous on the margins and midrib, the basal sheaths persistent, dark brown, the upper green, smooth, the margin of the orifice truncate, hyaline; involucre bract often single, occasionally 2 or 3, leaf-like, to 8 cm. long, 4 mm. broad, green or pale brown at the base, the involucels pale brown, scale-like; umbels terminal and sometimes axillary, loose, 0.5–2.0 dm. high, subsecund, the involucre much shorter than the long, slender, ascending, nodding-tipped rays; spikelets 0.5–1.0 cm. long, oblong becoming cylindric, on thread-like, drooping, scabrous pedicels, the primary pedicels to 10 cm. long, the secondary to 5 cm. long, the tertiary to 2 cm. long; scales ca. 2 mm. long, ovate, with pale brown margins and broad, green midrib, pointed, the tips ascending; style trifid, redish; bristles light brown, elongate; achene ca. 1 mm. long, light brown, firm, trigonous, obovate, prominently apiculate.

Wet places at low altitudes; Maine and Ontario, south to Florida, westward to Iowa and Texas.

BOULDER CO.: roadside swale 1 mi. south of Boulder along Marshall Road, Aug. 3, 1949, *Weber 5011*.

In 1949, a swale of this species existed along the roadside just southeast of Boulder. The colony has been destroyed by construction of the U. S. Bureau of Standards laboratories and a nearby housing development. The source of the water for the swampy area passed through the D. M. Andrews nursery, where for many years a small arboretum was maintained and nursery stocks including many native plants were kept. Therefore, it is entirely possible that this colony was a chance introduction, as are scattered plants of *Sambucus canadensis* which occur along the nearby irrigation canals. Nevertheless, other species with similarly disjunct distributions occur in the same general area and are unquestionably native, such as *Thalictrum dasycarpum*, *Stipa spartea*, *Leersia oryzoides*, *Apios americana*, and *Impatiens capensis*.

JUNCACEAE

**JUNCUS BIGLUMIS* L., Sp. Pl. 328. 1753.

Plants perennial; stems 4–10 (–20) cm. tall, solitary or a few together, usually exceeding the leaves, leaves terete, 2–6 cm. long, about 1 mm. thick, internally septate; sheaths shallowly auriculate; inflorescence a sessile or subsessile cluster of 2 to 3 flowers, the bract subtending the cluster appearing as a continuation of the stem, but flat, blade-like, not terete although tending to be involute, 5–20 mm. long; flowers deep purple-black; outer perianth segments ca. 4 mm. long, broadly lanceolate, dark with pale median portion; inner segments similar, slightly shorter and more blunt; stamens 6, the filaments 3 mm. long, anthers 0.5 mm. long, white; capsule exceeding the perianth, obtuse, the valves emarginate, purplish-black; seeds 1 mm. long excluding the tails, which are each about $\frac{1}{4}$ the length of the seed, somewhat unequal in length.

Circumpolar in Arctic regions.

BOULDER CO.: in gravelly seepage area on north side of Green Lakes Valley just north of Kiowa Peak, ca. 12,200 ft. alt., between the two upper Green Lakes;

associated with *Carex capillaris*, *C. misandra*, *Juncus triglumis*, *J. castaneus*, *Cetraria tilesii*, and *Cladonia mitis*, July 21, 1953, Weber & E. Dahl. CLEAR CREEK CO.: in unstable gravels along shore of Summit Lake, Mount Evans, 12,700 ft. alt., associated with *Phippsia algida*, *Koenigia islandica*, and *Saxifraga foliolosa*, July 30, 1953, Weber & E. Dahl 8612.

Juncus biglumis has been omitted consistently from reports on the Colorado Flora, although Theodore Holm collected the species on Long's Peak and reported the collection in his paper on the alpine vegetation of Colorado (Holm 1923). Harry N. Patterson also collected it on "high mountains, Gray's Peak and vicinity, 11,000-14,000 ft. alt., 1885". The species is certainly not common or widespread, but a thorough search is often rewarded in areas where *Juncus triglumis* (albescens) and *J. castaneus* grow. It is inconspicuous and is likely to be mistaken for a small and slender *J. castaneus*, both species having the bract stiffly erect and the inflorescence appearing lateral. *Juncus castaneus* is easily distinguished by its sharp-pointed capsules and by the tendency of the culm to produce more than one flower-cluster from the subtending bract with a consequent development of one or more leaf-like bracts in addition to the principal one. The leaves of *castaneus* are not terete, but flat and involute.

* *JUNCUS BRACHYCEPHALUS* (Engelmann) Buchenau in Bot. Jahrb. 12: 268. 1890.

Culms slender, 2.5-7.0 dm. high, bearing numerous small 3-5-flowered heads in a large (0.5-2.5 dm. long) spreading, open or diffuse cyme; perianth greenish or light brown; sepals rather soft and scarious-margined, shorter than the blunt petals and the brown abruptly short-beaked capsule; stamens usually 3, rarely 6; seeds ellipsoid, barely 1 mm. long, their short white tails about one-tenth as long as the body.

Calcareous shores, marshes, meadows, etc., C. B. to Ont., s. to n. and w. N.E., n. N.J., Pa., O., Ind. and Ill.

EL PASO CO.: stream bank, ca. 4 miles s.e. of Peyton, near small pond, Aug. 22, 1946, R. B. Livingston (Herb. Colorado College).

Juncus brachycephalus was one of a number of disjuncts reported by Livingston (1952) in a paper analyzing relict prairie communities in the Black Forest area. Although Livingston stated that this species might be an introduction, he gave no evidence for such an assumption save the magnitude of the disjunction. A great many species belonging to this relict element in central Colorado along the foot of the mountains have disjunct distributions in the Black Forest region comparable to *Juncus brachycephalus*; they appear in similar community relationships and in ecologic niches typical of those species in their eastern ranges, and they are species with widely variant specificities as to habitat; *Viola selkirkii*, *Heuchera richardsonii*, *Hypoxis hirsuta*, *Oxalis violacea*, *Helianthemum bicknellii*, *Sporobolus heterolepis*, *Viola pedatifida* and *Apios americana* belong to this same pattern. Unless there is definite evidence pointing to the establishment of *J. brachycephalus*

as an adventive it is quite proper to include it in the native flora along with these other species.

* *JUNCUS GERARDI* Loiseleur in Jour. de Bot. 3: 294. 1809.

Rhizomes and slender stolons dark, horizontally spreading; culms in small tufts, scarcely flattened, stiffly ascending, 1.5–8.0 dm. high; leaf-sheaths extending about half-way up the culm, the blades soft and green; cyme contracted, 0.1–1.5 dm. long, usually exceeding the bracteal leaf; the brown and green flowers 2.0–3.5 mm. long, mostly sessile or very short-pedicelled; the oval-oblong sepals green with reddish-brown margins, their tips incurved and scarcely equaling the ellipsoid-ovoid, obtuse, mucronate capsule; anthers about three times the length of the filaments; style as long as the ovary; seeds obovoid, tail-less, 0.4–0.6 mm. long, delicately dark-ribbed and cross-lined.

Saline marshes and saline sites, Nfld. and Gaspé Pen., Que., south along coast to Florida; locally inland where adventive in saline or alkaline areas, to Indiana and Minnesota; also in Eur-
asia.

ADAMS CO.: in alkaline depressions between Highway 6 and railroad tracks, south of Barr Lake, between Brighton and Denver, July 25, 1954, *Donald A. Spencer*. BOULDER CO.: dominant on alkali flats, west side of Beasley Reservoir, 6 miles northeast of Boulder, July 16, 1952, *Weber 7787*.

In the Manual key, *Juncus gerardi* would trace to *J. interior*, but *gerardi* is clearly distinguished by its relatively leafy stem, the dark rhizomes, the small, reddish-brown flowers with distinctly incurved perianth-tips, and the small, plump seeds with longitudinal striations.

SPERMATOPHYTA — DICOTYLEDONEAE POLYGONACEAE

* *ERIOGONUM SHOCKLEYI* S. Wats. in Proc. Amer. Acad. 18: 194. 1882–3.

Perennial pulvinate mat-plant from a multicipital caudex; leaves crowded on the upper end of the caudex branches, pannose, elliptic to oblanceolate, short-petioled, about 1 cm. long, 3–4 mm. wide, appearing white; flowering stems scapose, up to 3 cm. tall; umbel simple, capitate; involucre woolly-pubescent, up to 6 mm. long, sessile or nearly so; perianth ochroleucous, turning reddish in age, the segments spatulate, broadest above, covered with a fluffy wool knap except at the tips; stamens and gynoecium more or less imbedded in wooly pubescence

Desert regions of Utah, Nevada, and northern Arizona.

MESA CO.: hogbacks at base of escarpment, Colorado National Monument, 1 mi. e. of Fruita entrance road, May 27, 1951, *Weber 6087*. MOFFAT CO.: Vermillion Creek Bridge, *Penland 4243* (Herb. Colorado College). MONTEZUMA CO.: in pockets of sand on sandstone ledges above San Juan River opposite Four Corners, June 8, 1950, *Weber 5462*.

* *KOENIGIA* L.

Minute glabrous annual; stems slender, spreading or erect; leaves opposite, entire, with funnelform, connate, membranous sheaths; flowers minute, perfect, in terminal few-flowered clus-

ters subtended by a several-leaved involucre; calyx usually 3-parted, greenish-white, with equal valvate segments; stamens 2 or 4; achenes trigonous.

* *KOENIGIA ISLANDICA* L., Mantissa 1: 35. 1767.

Stems very slender, 5-15 cm. long (ours less than 3 cm. long), simple or forked; leaves obovate or oblong, 2-8 mm. long; involucre of 3 to 6 obovate leaves; flowers fascicled in the involucre and solitary or few in the axils of the upper leaves; calyx-segments ovate, obtuse; achenes about 1.5 mm. long, trigonous, the faces convex.

Circumboreal; in America restricted to Arctic Canada and Alaska. The following represents the first record for the United states.

CLEAR CREEK CO.: on gravelly polygons and sand bars of inlet streamlets feeding Summit Lake, Mount Evans, 12,700 ft. alt., July 31, 1953, *Weber, E. Dahl, & C. Wasser 8600*.

This high Arctic annual is one of the most remarkable discoveries of boreal relicts in Colorado in recent years. Like the rare *Armeria maritima*, which occurs on Hoosier Ridge, *Koenigia* is a plant of the tundra bordering the Arctic seas.

* *POLYGONUM TENUE* Michx., Fl. Bor. Am. 1: 238. 1803.

Stem slender, erect or ascending, sharply angled, with strongly ascending slender branches, 0.5-4.5 dm. high; leaves narrowly lanceolate to linear, firm, nearly erect, plicate, furrowed on each side of the midrib, acute at each end; flowers erect, subsessile or short-pedicelled, 1 or 2 in axils of greatly reduced bracteal leaves, thus forming slender, interrupted, terminal, spiciform inflorescences; fruiting calyx 3.0-3.5 mm. long, with subequal, ovate, tapering, pale to roseate sepals tightly appressed over the enclosed achene; achene dark brown to dull black, 2.5 mm. long.

Dry soil, open places, Maine to Minnesota, south to Georgia, Arkansas, and Oklahoma.

The following collection was taken along a new stretch of highway just north of the Colorado State line in Wyoming. The species was common on bare soil for several miles and it is reported as almost certainly occurring within the Colorado borders as a roadside weed. It is also new to the Wyoming flora.

WYOMING. ALBANY CO.: common on recently graded roadside, probably introduced in road improvement operations, 1.5 mi. north of Colorado-Wyoming State line north of Virginia Dale, Sept. 21, 1954, *Weber 8968*.

* *RUMEX STENOPHYLLUS* Ledebour, Flora Altaica 2: 58. 1830.

Rumex alluvius McGregor

Tall perennial from a taproot, branched from near the base, about 1 meter high; lower leaf-blades 1.5-2.0 dm. long, 3-5 cm. wide, broadly lanceolate, the margins crisped; inflorescence comprising about $\frac{2}{3}$ of the plant height, composed of many axillary branches forming an open panicle, dense at the upper ends of the racemes, but with the lower flower clusters forming distinct whorls, each whorl commonly subtended by a leaf-like bract; pedicel slender, recurved, 5-6 mm. long; perianth (fruiting) 5-6 mm. long, reddish-brown; valves 5-6 mm. long in fruit, very conspicuously reticulate-veined, margin lacerate or fimbriate with irregular reflexed or spreading

attenuate lobes or teeth; all three valves usually bearing grains; achenes 2.5 mm. long, red-brown, smooth and shining.

Introduced from Eurasia.

BOULDER CO.: rock rip-rap on west shore of Baseline Lake, east of Boulder, ca. 5000 ft. alt., Sept. 30, 1952, (still abundant in 1954) *Weber 7968*. SEDGWICK CO.: depressions along railroad track and highway just northeast of Julesburg, August 14, 1951, *Weber 7239* (these specimens verified by Dr. K. Rechinger, Jr.).

In the Manual, this species would key to *R. fueginus* because of the generally lanceolate leaves and valves possessing sharp-pointed teeth, each valve with a grain. However, *R. fueginus* is always low in stature, our specimens reaching a maximum height of about 4 decimeters, the spikes or whorls of flowers are about 1 cm. thick (in *stenophyllus* about 2–2.5 cm.), the valves are so strongly lacinate that the entire valve blade is converted to teeth, with very little of the lamina remaining around the grain (in *stenophyllus* the lacinae are definitely teeth bordering a well-developed blade), and the flowers are smaller (2–3 mm. long at maturity) with shorter pedicels (2–3 mm. long) forming dense clusters rather than the loose, pendulous ones of *stenophyllus*.

Discovery of this species in widely separated localities on the plains of eastern Colorado indicates that it must be rather common, although it has not been reported in other regional manuals of the United States flora. Its absence from collections may be due to the late blossoming season and its occurrence in botanically unattractive areas.

The species was incorrectly identified at first as *R. pulcher* and so reported in the Manual.

CHENOPODIACEAE

ATRIPLEX PLEIANTHA W. A. Weber in Madrono 10: 189. 1950.

Erect annual herb, much-branched from near the base, glabrous or sparsely farinose, 0.5–1.5 dm. tall with rather fleshy stem and foliage; branches ascending, white or commonly reddish; leaves numerous, alternate, entire, fleshy, the petioles 0.5–1.0 cm. long, the blades ovate or suborbicular, 5–15 mm. long, very obtuse to acute at the apex, cuneate to truncate at the base; plants monoecious, the staminate and carpellate flowers mixed in the inflorescence, or the staminate grouped into short terminal moniliform spikes; stamens of staminate flowers 5, opposite the perianth segments; bracts of carpellate flowers triangular-ovate, short-petiolate, entire, 3–7 mm. long and broad, obtuse or mucronate at the apex, united only at the very base, usually bearing a few inflexed cilia on the upper margin, each pair of bracts enclosing from 2 to 6 carpellate flowers; perianth of carpellate flowers well-developed, consisting of 5 hyaline, lanceolate or oblanceolate, sparsely ciliate-margined scales, 1.0–1.2 mm. long, persistent in the cupule formed by the bracts; utricle suborbicular, compressed, black, smooth and shining, 1.5 mm. long, falling free at maturity, not permanently enclosed within the bracts; seed vertical, radicle inferior.

MONTEZUMA CO.: barren clay slope of mesa, northeast of trading post on Mancos

River a few miles above its junction with the San Juan River, ca. 27 mi. s.w. of Towaoc, Ute Indian Reservation, T. 32 N., R. 19 W., Sec. 17, June 12, 1949, *Weber 4788* (Type, Colo).

This species is unique in the genus by the possession of more than one carpellate flower within the enclosing pair of bracts and by the well-developed perianth segments.

NYCTAGINACEAE

* *MIRABILIS FROEBELII* (Behr) Greene in Bull. Calif. Acad. Sci. III. 1: 124. 1885.

Oxybaphus froebelii Behr in Proc. Calif. Acad. Sci. 1: 69. 1855.

Mirabilis multiflora var. *pubescens* S. Wats., Bot. Calif. 2: 2. 1880.

Quamoclidion froebelii Standley in Contr. U.S. Nat. Herb. 12: 359. 1909.

Quamoclidion multiflorum ssp. *obtusum* Standley, l.c.

Quamoclidion multiflorum glandulosum Standley, l.c.

Much-branched perennial forming large sprawling clumps, densely viscid-pubescent throughout; leaves thick, 6–11 cm. long with stout petioles, broadly ovate, sometimes orbicular and becoming cordate, mucronate, acute to mostly broadly obtuse at the apex, green, not glaucous; involucre 5–9-flowered, somewhat accrescent in age, 2–3 cm. long, the lobes broadly acute or rounded-obtuse, $\frac{1}{4}$ to $\frac{1}{2}$ the length of the involucre; perianth rose-purple, up to 7 cm. long, expanded into a shallowly 5-lobed limb, usually viscid-pubescent without; anthocarp 8 mm. long, slightly constricted at both ends, light brown with darker spots and marked with 10 pale or dark vertical lines.

Southern Utah and Nevada through southern California and Arizona.

MESA CO.: Colorado National Monument, *Weber 3862, 3896; Osterhout 6559, 4720* (RM); *Crandall*, May 28, 1894 (RM). GARFIELD CO.: west of Rifle, June 17, 1926, *Osterhout 6546; De Beque*, May 27, 1910, *Osterhout 4270* (RM).

For many years Colorado botanists have been puzzled by a most beautiful and fragrant, early spring-flowering *Mirabilis* which occurs on the sandy soils of the pinon-juniper belt near Grand Junction and at scattered points up the Colorado River Valley and south to Mesa Verde. It is characterized by its very large leaves and stems, glutinous inflorescence, and large flowers, and, in other characters mentioned above, it differs significantly from the common *Mirabilis multiflora*, a smaller plant with somewhat glaucous foliage, smaller flowers, and sometimes pubescent but never glandular foliage. Osterhout could not reconcile the two forms under a single binomial name and his specimens in the Rocky Mountain Herbarium bear an unpublished manuscript name.

Fifty years ago these populations might have been regarded justifiably as a huge, glandular form of *M. multiflora* endemic to the eastern edge of the Colorado plateau province, because collections from Utah, Arizona, and Nevada were not at hand. However, modern Great Basin collections of this species from those

states clearly connect the California and Colorado populations of the well-known *Mirabilis froebelii* (Behr) Greene of the Californian deserts.

Standley evidently regarded the Colorado specimens as conspecific with *M. multiflora* because of the apparent disjunction in range between them and the nearest populations of *froebelii*, and because the plants lacked mature fruit, the color of which was accorded much weight in his specific concept. The type specimen of *Quamoclidion multiflorum* ssp. *glandulosum* Standl. was a Crandall collection, no. 423, from "dry mesa at Grand Junction", May 28, 1894 (US). *Q. multiflorum* ssp. *glandulosum* appears to be a straight synonym of *M. froebelii*.

Quamoclidion froebelii subsp. *glabratum* is a glabrate form which needs study in the field. It is similar to *froebelii* except that it lacks the glandular pubescence of that species. The involucre characteristically show short appressed flattened hairs sparsely distributed over the lower half. This form occurs over the major portion of the range of *froebelii*. In Colorado, Utah, and Arizona, this variation might possibly be the result of hybridization of *froebelii* with *multiflora*, but the glabrate form also occurs in areas where *multiflora* seems to be absent.

Key to the Species

- Plants viscid-glandular, especially the upper leaves, stem, and involucre; leaves broad-ovate, sometimes almost orbicular, becoming cordate, the apex more often obtuse (see the larger leaves), thick and leathery, green, not glaucous; flowers up to 70 mm. long. *M. froebelii*
- Plants pubescent but never viscid-glandular; leaves triangular-ovate, rarely becoming cordate, thinner-textured, often glaucous, even the largest leaves acute; flowers about 40-50 mm. long. *M. multiflora*

CARYOPHYLLACEAE

* GYPSOPHILA L. Baby's breath

Calyx slenderly turbinate or campanulate, 5-nerved, 5-toothed, naked at base; petals not crowned; stamens 10; styles 2; capsule 1-locular, 4-valved at the apex, sessile. Slender, often glaucous, perennials or annuals, with numerous small flowers, natives of the Old World.

* GYPSOPHILA PANICULATA L., Sp. Pl. 407. 1753.

Perennial, up to 1 meter tall, naked at the base; leaves lance-acuminate, attenuate at base, 1-nerved; inflorescence a large open dichasial cyme, with corymbiform branches; pedicels 5-12 mm. long; calyx 1.5-3.0 mm. long, the teeth suborbicular, their green centers much narrower than the white-scarious margins; blade of petal about equaling calyx, white, spatulate; capsule globose, about equaling calyx; seeds tuberculate in rows.

Cultivated and locally spreading to sandy or rocky roadsides and waste places, New England, to Manitoba, s. to Indiana and Nebr. Introduced from Eurasia.

BOULDER CO.: gravel lateral road leading to Table Mountain, 4 mi. e. and 3 mi. n. of junction, Colorado highways 7 and 66, July 14, 1949, *Lydia Bougère* 1483.
EL PASO CO.: roadside mesas, Colorado Springs, 6000 ft. alt., July 10, 1924, *G. W. Goldsmith* 115.

PAPAVERACEAE

* ARGEMONE SQUARROSA Greene in Pittonia 4: 68. 1899.

BENT CO.: 4.6 miles southeast of Las Animas (Hwy. 101); lowest slopes of irrigated valley floor, Purgatoire River; soil sandy, very light; arid. Perennial, 1-10 stems from the base, these to 2 cm. in diam., just beginning to flower; juice lemon-yellow; locally abundant, June 19, 1954, *Gerald B. and Findley Ownbey* 1668.
PROWERS CO.: 10.7 miles east of Lamar; flat plains of river valley, associated with *Artemisia*, June 19, 1953, *G. B. Ownbey & Findley Ownbey* 1670; 8.9 miles south of Lamar (Hwy. 289), Aug. 7, 1953, *G. B. Ownbey & Findley Ownbey* 1704.

Dr. Gerald Ownbey is preparing a monographic treatment of the genus *Argemone* and has kindly permitted the following quotation of a comparison of *A. hispida* (*platyceras* of the Manual) and *A. squarrosa*, from his manuscript:

"*A. squarrosa* appears to be closely allied to *A. hispida* with which it shares many features of gross aspect. The aculeate-hispid nature of the inter-vein surfaces of the leaves of *A. squarrosa* approaches that typical of *A. hispida*. The hispidity differs in being somewhat coarser in *A. squarrosa*. The capsule armature of *A. hispida* is fine, dense, and simple; the much stouter and longer capsular spines of *A. squarrosa* are sometimes branched, and are provided with secondary prickles along much of their length. Furthermore, the ultimate lobes of the leaves tend to be more lanceolate, and the terminal spines of the lobes longer and stouter in *A. squarrosa*."

Dr. Harrington noted variant reports on the color of the latex among the species of this genus. During the past season I gave special attention to this character and found that *A. intermedia* always has a bright yellow to orange-yellow latex, while *A. hispida* has a whitish to pale lemon-yellow juice, a characteristic shared by *A. squarrosa*.

CRUCIFERAE

* BRAYA, Sternb. & Hoppe

Annual, biennial, or perennial herbs, pubescent with simple or branched hairs; sepals somewhat cucullate; petals white or suffused with purple, oblong-obovate; filaments flat; anthers cordate-ovate; short stamens subtended by a U-shaped gland; ovary cylindric; ovules 2 to several in each locule; style very short; stigma capitate; fruit linear, often torulose, the valves with prominent midnerve and obscure secondary nerves, the septum composed of thick-walled cells elongated transversely or obliquely, appearing transversely striolate under a 20× lens.

* *BRAYA HUMILIS* (C. A. Meyer) Robinson in Gray's Manual, ed. 7, p. 430. 1908.

Perennial from a stout caudex; stems several, caespitose, 1-2 dm. tall (ours less than 1 dm.), the outer prostrate or decumbent, the inner erect, sparsely pubescent; leaves linear-oblongate, 1-3 cm. long, with a few sharp teeth near the summit or entire, more or less pubescent with 2-4-pronged hairs; racemes at maturity 4-10 cm. long; pedicels strongly ascending, 2-6 mm. long, lower ones subtended by leaf-like bracts; petals 3-4 mm. long, white or pinkish; fruits 10-25 mm. long, about 1 mm. wide, pubescent when young, sometimes glabrous at maturity; seeds in one row; sepals persistent, remaining attached even at silique maturity.

Limestone cliffs, Willoughby Mt., Vt.; n. Michigan; widely scattered in arctic America and Siberia. The race found in Colorado is subsp. *ventosa* Rollins in Rhodora 55: 114. 1953.

The flowering period of the species is strongly influenced by the type of season. In 1951, a relatively moist year, early anthers were obtained for chromosome counts on July 7; in 1954, at the height of the severe drought cycle, *Braya* showed mature fruit in July. The occurrence of *Braya* in Colorado is discussed in detail by Rollins (1953).

* *CARDARIA DRABA* (L.) Desv. var. *REPENS* (Schrenk) O. E. Schulz, Pflanzenfam. 17b: 417. 1936.

Cardaria repens (Schrenk) Jarmolenko, Weeds of U.S.S.R. 3: 28. 1934.

ARCHULETA CO.: roadside between Piedra River and Pagosa Springs, June 21, 1951, *Weber & Livingston 6361*. JEFFERSON CO.: fallow fields and roadsides east of Golden, May 29, 1941, *J. H. Ehlers 8077*.

Cardaria draba proper has siliques of circular outline. The variety *repens* has fruits which are inversely heart-shaped, that is, narrow at the upper end and cordate or truncate and broad at the base. Rollins (1940) had seen specimens from Alberta, South Dakota, California, Oregon, and Washington. The following specimens in the University herbarium extend further the known range of *repens* beyond that cited by Rollins.

IOWA. STORY CO.: north of Ames, June 2, 1940, *Weber 1898*. KANSAS. 3 mi. s. of Lansing, *W. H. Horner 83*.

* *DRABA INCERTA* Payson in Amer. Jour. Bot. 4: 261. 1917.

A caespitose, rather loosely tufted perennial; leaves not particularly imbricated, relatively thin, the midrib plainly visible, linear-oblongate, 7-13 (-25) mm. long, (1-) 1.5-3.5 mm. broad, usually ciliate with simple to pectinately branched hairs, the lower surface somewhat cinereous with stellate, stellate-pectinate, or pectinate trichomes, but the hairs neither sessile nor appressed to the surface of the leaf; scapes relatively few, 1-12 (-20) cm. tall, leafless, or frequently with a single reduced leaf, or the leaf subtending the first flower or on the pedicel itself, pubescent (as are the pedicels) with stellate or irregularly several-branched hairs, often also with some pilosity; racemes 3-15-flowered, elongate to subcorymbose; pedicels usually about equal to fruits (up to 18 mm. long); sepals ca. 2.5 mm. long, pilose; petals obovate-spatulate, yellow, fading to white, 4-5 mm. long; silicles ovate or ovate-lanceolate to elliptic, flattened, 2.5-3.75 mm. broad,

(4—) 6–10 mm. long, pubescent with short, stiff, simple or branched hairs (or glabrous); styles 0.4–1.0 mm. long; seeds 8–14, 1.2–1.5 mm. long.

Rocky ridges and dry alpine meadows in the mountains from Wyoming and Idaho west to the Olympic Mts. of Washington; far north into Alberta and British Columbia.

COLORADO. GUNNISON CO.: north-west facing slope of marbleized limestone, 12,000 ft. alt., North Italian Mt., Aug. 26, 1954, *Jean Langenheim 3965* (verified by C. L. Hitchcock).

This species is most closely related to *D. oligosperma* Hook., but has broader leaves, and stalked, rather than sessile, hairs. Most of the plants will be found to have a single cauline leaf or bract. The pectinate (pinnately branched) hairs are diagnostic for *D. oligosperma* and *D. incerta* and are found in no other species.

The Manual does not mention this species, and the only record for Colorado prior to the above was a specimen at the Missouri Botanical Garden, collected by Koch, without definite data (Hitchcock, 1941, p. 77).

* *DRABA VENTOSA* Gray in Amer. Nat. 8: 212. 1874.

Low perennial with freely branched caudex and numerous slender trailing stems; leaves cushioned at ends of prostrate stems, marcescent, the old midribs persistent for several years, oblanceolate to nearly elliptic or ovate, entire, 5–12 (–18) mm. long, 2–4 (–5) mm. broad, silvery-green because of dense pubescence, practically all of trichomes 4- to many-rayed and stalked, but simple or forked hairs often also present on petioles; scapes leafless, 2–4 cm. long, densely pubescent with simple, forked, or (more commonly) cruciform trichomes; racemes short, 3–20-flowered; pedicels equal to or slightly shorter than the silicles, densely pilose to stellate; sepals 2.0–2.5 mm. long, soft pilose; petals yellow, 4–5 mm. long, silicles oval to ovate, quite flat, rounded or acute at apex, 5–8 mm. long, 3.5–5.5 mm. broad, valves quite thick and firm, often slightly corrugated, densely pubescent with soft simple or (more commonly) 4-rayed hairs; styles 0.6–1.2 mm. long; seeds 10–16, 1.5–2.0 mm. long.

GUNNISON CO.: talus, 13,000 ft. alt., North Italian Mountain, northeast of Gothic, August 13, 1951, *Langenheim 1476* (verified by C. L. Hitchcock).

Draba ventosa occurs in the Uinta Mts. of Utah, and the Grand Tetons of Wyoming. The variety *ruaxes* (Pays. & St. John) C. L. Hitchcock is found in Washington, British Columbia and Alaska. Our specimens represent the typical variety.

* *EUTREMA PENLANDII* Rollins in Contrib. Gray Herb. No. 171: 51. 1950.

Perennial; stems one to few from a slightly fleshy tap-root, decumbent to erect, glabrous, 3–8 cm. high; basal leaves petiolate, petiole very slender, 1–2.5 cm. long, blade ovate to elliptical, cordate, truncate or cuneate below, rounded at apex, 5–10 mm. long, 3–5 mm. wide, glabrous, slightly coriaceous, with a prominent midrib; cauline leaves 3–7, sessile, narrowly oblong, not auriculate, 1–1.5 cm. long, 2–3 mm. wide, glabrous, slightly coriaceous with a well-defined midrib; sepals purplish, glabrous, broadly oblong, scarious-margined, 1.5–2 mm. long, somewhat persistent after anthesis; petals white, narrowly lingulate with a very narrow claw, 2–3.5 mm. long, less than 1 mm. wide; stamens subequal, ca. 2 mm. long, equaling or slightly exceeding the sepals; anthers

minute, slightly longer than broad, ca. 0.2 mm. long; infructescence crowded, 1.5–3 cm. long; pedicels divaricately ascending, glabrous, straight, 3–5 mm. long, noticeably expanded distally; siliques narrowly elliptical, glabrous, not strongly flattened, ca. 1.5 mm. wide, 4–8 mm. long; style barely evident; stigma about the same diameter as the style, not noticeably lobed.

PARK CO.: Hoosier Pass, 12,300 ft. alt., July 27, 1935, *C. W. T. Penland 1305* (TYPE at Gray Herb., Isotype at Colorado College); in moss in seepage below a snowbank on south scree slope of Hoosier Ridge at about 12,800 ft., July 26, 1949, *Penland 3909* (Gray Herb.); wet mossy sod near cold stream, steep south-facing slope, Hoosier Ridge, ca. 2 mi. e. of Hoosier Pass, Aug. 8, 1951, 12,500 ft. alt., *Rollins & Weber 51291*.

Eutrema penlandii is endemic at this single locality, but is clearly related to *E. edwardsii* of the Arctic regions from eastern Greenland to Alaska. It is easily distinguished from other alpine crucifers by the long-petioled cordate obtuse basal leaves, totally glabrous foliage, and by the raceme of plump, narrowly elliptical siliques, suggesting *Draba*.

* *RORIPPA AMPHIBIA* (L.) Besser, Enum. Pl. Volh. 27. 1822.

Perennial; stems erect or ascending, up to 9 dm. tall, often rooting from the lower nodes; leaves lanceolate to oblanceolate, up to 12 cm. long, the lower or the submersed leaves commonly laciniately pinnatifid or pectinately parted, the upper proportionately narrowed, merely dentate; flowers 8–10 mm. long, 2–3 mm. wide, the petals longer than the sepals; pedicels at maturity 8–15 mm. long, horizontally divergent or somewhat deflexed; fruits ellipsoid, the body 3–5 mm. long.

European; adventive in Quebec, New England, and New York. In wet ground, often with the lower part of the stem submerged.

PUEBLO CO.: near Beulah, June 5–9, 1908, *W. W. Robbins 4915*.

SAXIFRAGACEAE

* *HEUCHERA RUBESCENS* Torrey in Stansbury, Expl. Utah, p. 388. 1852.

Flowering stems 7–36 (–53) cm. tall, sparingly glandular-puberulent or glandular-hirtellous; petioles 2–8 cm. long, finely glandular-puberulent; blades membranous, 1.5–3.5 cm. wide, nearly orbicular or somewhat ovate, cordate, or subcordate, shallowly to deeply 5–7-lobed with broad rounded lobes, the lobes crenate-dentate with obscurely mucronate teeth (variable on the same individual), the margins ciliate; panicle 6–16 cm. long, narrow but lax, slightly secund, the cymes rather distant, mostly 2–5-flowered; flowers 4–5 mm. long, campanulate and very slightly zygomorphic; hypanthium somewhat oblique, 0.7–0.9 mm. long on the shorter side, 1.5–1.6 mm. on the longer; sepals oblong with rounded tips, those on the short side of the hypanthium longer and compensating for the obliqueness of the hypanthium; petals 3–4 mm. long, narrowly oblanceolate; stamens slightly exceeding the petals; styles strongly exserted, stigmas small, capitate; capsule 5–6 mm. long, about 3 mm. wide; seeds about 0.9 mm. long, their spines somewhat irregular, with broad bases and short thin tips.

The typical variety has a range including eastern and central Utah, northeastern Arizona, Nevada (Glencoe), and the southwestern corner of Colorado. In its broader interpretation the species extends into California.

MONTEZUMA CO.: El Late, *T. S. Brandegee*, Hayden's Geological Survey, 1875 (University of California).

This specimen was cited by Rosendahl et al (1936), but the record seems to have been overlooked by Harrington. El Late is the "Sierra el Late", now known as the "Sleeping Ute", a mountain range directly west of Mesa Verde and north of the Carrizo Mountains of Arizona. There are three well-known prominences in this range, the "toe" of the Ute being Sentinel Rock, with Hermano Peak to the northwest. The range culminates on the north with Ute Peak, about 9,000 feet altitude.

This species is distinguished by its open-campanulate flowers with relatively short, moderately oblique, hypanthia, strongly exserted stamens, and very slender, exserted styles.

* *PARNASSIA KOTZEBUEI* Chamisso ex Sprengel, Syst. 1: 951. 1825.

Flowering stems slender, less than 1 dm. tall (in ours); blades of the basal leaves thin, ovate to round-deltoid or subrotund, 10-25 mm. long, broadly rounded below to a truncate or triangular base decurrent on the petiole; cauline leaf lacking, or, if rarely present, resembling the basal leaves and attached on the basal fifth of the stem; petals 3-nerved, 4-7 mm. long, commonly considerably shorter than the sepals; staminodia 2-3 mm. long, bearing 2-4 filaments.

Greenland, northern Labrador, to n.w. Newfoundland and Gaspé Peninsula, Quebec; Hudson's Bay; Alaska; Wyoming; northeast Asia.

SUMMIT CO.: in mats of *Timmia norvegica*, along small streamlets in deep wet spruce forest, north base of Hoosier Pass along Monte Cristo Creek, 10,800 ft. alt., July 4, 1954, *Weber 8751*.

This record extends the known range of this species in the United States to include Wyoming and Colorado. At the Monte Cristo Creek station, *Parnassia kotzebuei* grows in moss beds along with *Carex capillaris*, *Parnassia fimbriata*, *Saxifraga adscendens*, and *Anemone parviflora*. *P. kotzebuei* is distinguished by its lack of any bract on the scape, its small oval leaves, and its small flowers, in which the petals do not exceed the sepals and in which the staminodia have only 2 to 4 cilia.

* *SAXIFRAGA FOLIOLOSA* R. BR., Chlor. Melv. 17. 1823.

S. stellaris L. var. *comosa* Poir.

Leaves basal, crowded on the short caudex, the blades cuneate to oblanceolate with 3 to 5 teeth at the apex, more or less ciliate, 8-25 mm. long; scapes usually one, sometimes more, simple or with extremely short branches (these lengthening somewhat after anthesis), 6-22 cm. tall; flowers solitary at the end of the scape and often at the ends of the branches (usually all flowers absent in ours), the rest of the inflorescence developing bulblets or rosules of miniature leaves, the branches glomerulate at anthesis but elongating in age; sepals about 1.5 mm. long; petals white, 4-5 mm. long; carpels in fruit thick, 4-5 mm. long.

Alpine-arctic, circumpolar; American collections limited to Arctic Canada, Alaska, and Mount

Katahdin, Maine. The present report represents the only known station in western United States.

CLEAR CREEK CO.: in moss on borders of small streamlets feeding Summit Lake, Mt. Evans, 12,700 ft. alt., locally abundant, with *Phippisia algida* and *Koenigia islandica*, July 14, 1953, *Weber & G. N. Jones* 8525.

J. K. Small (North American Flora 22 (2): 149. 1905) described *Spatularia vreelandii* from specimens collected at Glacier Basin, Montana, August 5, 1901, by F. K. Vreeland, no. 1048. In the herbarium of the New York Botanical Garden there is a specimen labelled *S. vreelandii* by Small, collected by E. L. Greene on Mount Evans. This is the specimen upon which Colorado reports of *S. vreelandii* have been based.

Porter and Coulter correctly identified the Greene collection and reported it in the Synopsis of the Flora of Colorado, page 39, as *Saxifraga stellaris* L. var. *comosa*. Small apparently was unaware of their evaluation of this collection.

The type specimen of *S. vreelandii* at the New York Botanical Garden quite clearly belongs to *S. ferruginea* Grah., a common species of Alberta, British Columbia, and northwestern United States. *S. vreelandii*, therefore, is synonymous with *S. ferruginea*. However, the fragmentary specimen collected at Mount Evans is something entirely different. Small may have included it with *vreelandii* because, as far as distribution was concerned, this specimen was geographically nearer *vreelandii* than to the nearest populations of any other related species. Greene's specimen, although fragmentary, is clearly referable to the Arctic *S. foliolosa* R. Br. The collection of a large series of *S. foliolosa* at the station mentioned by Greene substantiates this statement.

The tendency among American authors has been to consider *S. foliolosa* as a race of *S. stellaris*. I have examined all of the material in the New York Botanical Garden herbarium of *S. stellaris* and *S. foliolosa* and feel that they are amply distinct; among other things, *S. foliolosa* has an inflorescence with a single, erect central rachis from which the few lateral branches are short glomerules until after anthesis; *S. stellaris* has an inflorescence which is branched, in which there are several main rachises. The abortion of most of the flowers in *foliolosa* is also characteristic.

In Greenland *S. stellaris* has a distribution pattern distinctly different from *S. foliolosa*, *stellaris* being confined to southern Greenland and *foliolosa* being principally northern, the patterns overlapping only slightly in southwest Greenland (Bocher, 1938, Fig. 57). Bocher also implies (p. 120) a different ecological niche for each, rather analogous to the situation between *Carex capitata* and *C. arctogena*, *C. capitata* and *S. stellaris* being lowland forms, and *C. arctogena* and *S. foliolosa* being high alpine. *S. stellaris* is diploid, $n = 14$, while *S. foliolosa* is tetraploid, $n = 28$ (See also Scholander, P. F. 1934. Vascular plants from northern Svalbard.

Skrifter om Svalbard og Ishavet (pp. 20–21, Fig. 5) for additional discussion, in favor of maintaining the two as species. For the opposing point of view, see Polunin (1940, pages 257–258).

* *SAXIFRAGA RIVULARIS* L., Sp. Pl. 404. 1753. Alpine Brook Saxifrage.

Stems usually tufted, 1–3-flowered, glabrous or finely glandular-pubescent, 3–9 cm. tall; leaves fan-shaped or reniform, 3 to 5-lobed, those of the stem sometimes entire, 3–10 mm. wide; sepals ovate, about 2 mm. long, obtuse; petals white or purplish, nearly twice as long as the sepals; tips of the fruiting carpels widely divergent.

Wet alpine situations, circumpolar; Faeroes, southern Scandinavia, Scotland, Arctic Canada, Yukon, Alberta; in the United States, Montana and the White Mountains of New Hampshire.

Saxifraga rivularis has been collected several times in Colorado; in fact, Bocher (1938), p. 118, lists, in his statement of distribution, "Colorado (Grays Peak, 4300 m.)". In the University of Colorado Herbarium are the following specimens:

CLEAR CREEK CO.: crevices in boulder-fields, trail from Stevens Mine to summit of Gray's Peak, July 11, 1950, *Weber 5628*; in mossy tufts along inlet stream of Summit Lake, Mount Evans, 12,700 ft. alt., July 30, 1953, *Weber 8611* (both specimens verified by A. E. Porsild, 1954).

Saxifraga rivularis and *S. debilis* are admittedly closely related, but they may be distinguished morphologically in the following way:

Petiole bases of lowermost basal leaves widened, sheathing the shoot and truncate at the top. *S. rivularis*

Petiole bases flattish, not sheathing, gradually tapering at the top. . . . *S. debilis*

I am indebted to Dr. Rimo Bacigalupi for making clear this distinction. *S. debilis* is fairly well distributed throughout mountainous Colorado where it inhabits rock crevices in fell-fields, rarely if ever occurring on open tundra. *S. rivularis*, as far as is now known, is restricted to the relict area around Gray's Peak and Mount Evans. I have found it not infrequent in the mossy tufts lining the slow streamlets which feed Summit Lake, on Mount Evans, associated with *S. foliolosa*. It is always a low, delicate plant, in which the flowering stalks do not much exceed the basal leaves.

ROSACEAE

* *POTENTILLA ANGLICA* Laicharding, Veg. Eur. 1: 475. 1790.

P. procumbens Sibth.

Caudex stout, terminating in a long root; stems slender, at first ascending, soon trailing, up to 7 dm. long, mostly forked, with lash-like tips often rooting late in the season and producing vegetative buds; lower leaves long-petioled, with 5, 4, or 3 leaflets, palmately compound; upper leaves shorter-petioled, similar, glabrous or appressed-pubescent; stipules of lower leaves with lance-ovate acute auricles; leaflets oblong, or cuneate- or oblong-ovate, crenate-dentate; flowers solitary on filiform peduncles 3–17 cm. long, mostly 4-merous, 1–1.8 cm. broad; bracteoles ob-

long or lanceolate, acute, equaling the lance-ovate acute calyx-lobes; petals obcordate, much longer than calyx-lobes.

Evidently an Amphi-Atlantic species, native in Labrador and Newfoundland, as well as Europe and the Azores. Adventive in western United States in Oregon.

BOULDER CO.: sandy floodplains of Boulder Creek at White Rocks, 8 mi. n.e. of Boulder, ca. 5,100 ft. alt., July 26, 1954, *Weber 8815*.

This species is easily recognized by its creeping habit, palmately-compound leaves, and 4-merous flowers. The Colorado specimens were undoubtedly brought in with seed, possibly of *Trifolium fragiferum*, with which the plants were associated at the above station.

* SANGUISORBA L. Burnet

Perennial herbs from a thick rhizome, or annuals, with once-pinnately compound leaves, serrate to pinnatifid leaflets, and small flowers in dense spikes or heads; flowers 4-merous, perfect or unisexual; hypanthium urn-shaped, contracted at the mouth, more or less 4-angled, not prickly; sepals petaloid, petals lacking; stamens 4 (rarely 2) or many; carpels 1 or 2, separate; ovaries included by the hypanthium; ovule one, pendulous; style terminal; fruit an achene, enclosed by the indurate hypanthium.

* SANGUISORBA MINOR Scop., Fl. Carn. ed. II. 1: 110. 1772. Salad Burnet

Perennial from a caudex-like rhizome; stems 2-7 dm. tall; basal and lower leaves numerous, with usually 7-17 leaflets; upper leaves progressively reduced; leaflets ovate to rotund, 5-20 mm. long, with 3-7 deep sharp teeth on each side; heads several on elongate peduncles, short-ovoid to globose, 8-20 mm. long; flowers subtended by ciliate bracts, the lower staminate, the upper carpellate or perfect; sepals green or brown, 2.5-5 mm. long, the outer pair narrowly, the inner broadly, ovate; stamens numerous, the long capillary filaments drooping; carpels 2; fruiting hypanthium about 5 mm. long, very rough between the wings; achenes 2, semi-ovoid.

Native of Eurasia, established in roadsides, waste places, and fields.

HUERFANO CO.: on the flat 2 miles above LaVeta, Cuchara Valley, June 16, 1934, *Stigall*; 1 mi. s. of LaVeta, June 5, 1954, *Douglass 54147*. ADAMS (?) CO.: north side, Denver, July 13, 1923, *Clarke*.

In the Manual, *Sanguisorba* would key to *Alchemilla*, being an herbaceous plant with a superior ovary, compound leaves, and petals absent. In *Alchemilla*, however, the leaves are digitately compound, and in many other respects these two genera are hardly to be confused.

LEGUMINOSAE

* ASTRAGALUS BRANDEGEI Porter in Porter & Coulter, Syn. Fl. Colorado p. 24. 1874.

Atelophragma brandegei Rydberg in Bull. Torr. Bot. Club 32: 660. 1905.

Very slender perennial with weak, slender taproot, thus appearing annual, sprawling, about 1 dm. tall; leaves greatly exceeding the short stem, the leaflets 9-11, distant, linear to oblong, obtuse to acute, 5-15 mm. long, glabrous above, strigose beneath; raceme 2-5-flowered on long

flagelliform peduncle; calyx strigose, the tube scarcely 2 mm. long, teeth 1 mm. long or less; corolla about 5 mm. long, white or cream-colored, tinged with purple; banner broadly obovate, rather strongly arched below the middle; wings shorter, the blade obliquely obovate, strongly falcate; keel-petals still shorter, the blades broadly lunate; pod membranous, nearly round in cross-section, sessile or nearly so, 10-12 mm. long, 4-5 mm. wide, broadest near the tip, strigose, the partial septum 2 mm. wide.

Colorado, Utah, New Mexico, and Arizona, in meadows at medium altitudes. In Colorado the known localities are widely disjunct.

CONEJOS CO.: in meadow along Conejos River, 12 mi. west of Antonito, with *Chrysothamnus*, *Lupinus kingii*, and *Penstemon oliganthus* plants quite hidden by dense growth of low annual lupines; flowers pinkish-white, in loose racemes on flagelliform peduncles, 8200 ft. alt., July 19, 1952, *Weber 7795*. GUNNISON CO.: dry gravel flats on western limits of town, Gunnison, 8650 ft. alt., July 1, 1950, *H. D. Ripley & R. C. Barneby 10231*.

The type locality is "banks of the Arkansas, near Canyon City".

* *ASTRAGALUS RIPLEYI* Barneby in *Leaflets of Western Botany* 6 (9): 175. 1952.

Perennial, erect, stems few, 4-10 dm. tall, leafy above the base; leaves 4-9 cm. long, with 6 to 8 pairs of linear to narrowly elliptic, widely spaced leaflets, these 9-25 mm. long, glabrate above, appressed pubescent beneath with basifixed hairs; stems branched in the upper two-thirds, the branches bearing terminal, loose, secund racemes 4-16 cm. long, bearing 16-45 flowers, these becoming pendulous on pedicels 2-7 mm. long in fruit; calyx 5-6 mm. long, 2.5-3.0 mm. wide, the teeth deltoid, 0.5-0.7 mm. long; petals pale lemon-yellow; standard oblanceolate, somewhat recurved, 15-16 mm. long, about 6 mm. wide; wings 13-14 mm. long; keel 10-11 mm. long; pod pendulous, stipitate, linear-oblong to narrowly lanceolate, attenuate, 20-33 mm. long, 4-6 mm. wide, strongly laterally compressed, neither suture intruded; stipe 8-15 mm. long, valves reddish, chartaceous when mature and dry.

Formerly known only from the type locality, near Tres Piedras, New Mexico.

CONEJOS CO.: Conejos Canyon, June 22, 1935, 8500 ft. alt., *Ramaley & Johnson 14747* (in flower only); in meadow along Conejos River, with *Chrysothamnus*, *Lupinus kingii*, *Penstemon secundiflorus* and *P. oliganthus*, 12 mi. west of Antonito in Conejos River Canyon just above Canyon, 8200 ft. alt.; flowers yellow; plants 1 meter tall, July 18, 1952, *Weber 7788*.

Astragalus ripleyi is a common and conspicuous plant along the roadside between Antonito and the base of Cumbres Pass. It is most surprising that the species went undetected until 1952. The type locality is about 40 miles south of the Colorado border. The diagnostic features are the stipitate, laterally compressed pods, and yellow flowers.

* *COLUTEA* (Tourn.) L.

* *COLUTEA ARBORESCENS* L., Sp. Pl. 723. 1753. Bladder Senna

Deciduous shrub, up to 15 ft. tall, with alternate, odd-pinnate leaves; leaflets 9 to 13, elliptic, dull green, usually slightly pubescent beneath, 1-2 cm. long, ca. 1 cm. wide, slightly emarginate

and mucronulate; stipules small, triangular-ovate; flowers long-peduncled, in axillary racemes, yellow, 3 to 8 in each raceme, papilionaceous, about 1.5 cm. long; stamens diadelphous, 9 united, one free; wings nearly as long as the keel, flat; pod 5-7 cm. long, inflated, papery, many-seeded, short-stipitate.

Native in the Mediterranean region. Introduced but rarely naturalized in the United States.

BOULDER CO.: introduced in about 1918, and now very well established on south hillsides in Sunshine Canyon a few miles west of Boulder, 6500 ft. alt., Sept. 5, 1951, *Weber 7281*.

EUPHORBIACEAE

* *EUPHORBIA INCISA* Engelm. var. *MOLLIS* (Norton) L. C. Wheeler in Jour. Wash. Acad. Sci. 30: 473. 1940.

Euphorbia yaquiana Tidestrom in Proc. Biol. Soc. Wash. 48: 41. 1935.

Euphorbia schizoloba var. *mollis* Norton

Euphorbia mollis Engelm., not C. G. Gmel.

Perennial, the foliage and stem hirtellous; stems numerous from the root-crown or caudex, slender, erect or ascending, 0.5-2.0 dm. tall, simple below the umbel; rays of the umbel mostly 3, and 2-3 times dichotomous; leaves entire, rather thin-textured; stem-leaves ovate-elliptic to broadly oblanceolate, 0.5-1.0 cm. long, distinctly short-petiolate, the tip acute or mucronate; umbel-leaves triangular-ovate or -cordate to diamond-shaped, sessile, 0.5-1.0 cm. long; floral leaves similar, smaller; involucre campanulate, hirtellous, ca. 3 mm. long, 2 mm. wide; glands broadly transversely oblong to oblong-crescentic, short-horned, lacerate or crenulate, sometimes smooth, between the horns; staminate flowers about 20; capsule glabrous, ca. 3 mm. long, oblong-ovoid, roundly 3-lobed; seeds pruinose, with dark pits, the entire surface very minutely pitted also; seed with a mucro.

MONTEZUMA CO.: perennial, common in rock crevices; head of Spruce Tree Canyon, Mesa Verde Nat. Park, June 9, 1954, *Weber*; canyon side, trail from Soda Tipoff to Mancos River, south rim of Mesa Verde, June 10, 1950, *Weber 5455*; Lower Navajo Canyon, July 24, 1929, *Bader 251*; along trail to Spruce Tree House, June 11, 1929, *Bader 106*.

The range of *E. incisa* is given (Kearney & Peebles, 1951) as Nevada, Arizona, and California. The pubescent race, of which our specimens are representative, ranges in Arizona through Yavapai, Graham, Gila, Cochise, and Pima counties. In Colorado this species reaches the northeasternmost edge of its range. It is quite possible that, with further study, var. *mollis* and *E. incisa* may be justified as species.

* *EUPHORBIA PARRYI* Engelm. in Amer. Nat. 9: 350. 1875.

Annual; glabrous; stems spreading or erect, 5-30 cm. long; leaves 5-22 mm. long, linear, entire, equilateral, shortly petiolate; stipules distinct, linear, entire or parted; cyathium long-peduncled; involucre campanulate, 1.5-1.75 mm. in diam.; glands 0.3-0.5 mm. long, transversely oval,

cupped; fifth gland linear, equaling the other glands; sinus very broadly U-shaped, not depressed; appendages narrow, white, glabrous, entire, margining all except the inner side of the gland, ascending; staminate flowers 4-5; capsule deeply 3-lobed, oblate-spheroid, 2 mm. long; seeds mottled brown and white, 1.8 mm. long, narrowly ovate, ovoid-triangular.

MONTEZUMA CO.: Mancos, July, 1890, *Eastwood* (Colo).

Euphorbia parryi resembles closely *E. missurica* of the eastern plains, but lacks the conspicuous white petaloid appendages of that species.

ELATINACEAE

* *BERGIA* L.

Sepals 5, acuminate, with thickened midnerve and scarious margins. Petals 5. Stamens 5 or 10. Capsule of firm texture.

* *BERGIA TEXANA* (Hook.) Seubert ex Walp. Repert. 1: 285. 1842.

Low annual plant, our specimens up to 7 cm. tall, with reddish stems, rather stiffly erect except for a few of the lowermost branches which are divaricate, glandular-pubescent; leaves opposite, simple, lance-oblong, serrulate with gland-tipped teeth, up to 1.5 cm. long, tapering to a short petiole; flowers sessile or nearly so, axillary. Flowering in October.

Arkansas and Texas to southern California, north to southern Illinois, Missouri, S. Dakota, and Washington.

ADAMS CO.: frequent in drying bed of small reservoir 3 mi. w. of Brighton, Oct. 19, 1953, *Weber 8664*. BOULDER CO.: drying shore of Baseline Reservoir, 3 mi. e. of Boulder, Oct. 11, 1954, *Weber 8956*. JEFFERSON CO.: on drying mud flat around small pond just west of Church's Lake, ca. 5500 ft. alt., T. 2 S., R. 69 W., Sec. 11, just south of Broomfield, Oct. 15, 1953, *Weber 8658*.

Bergia appears to be abundant on the drying edges of certain reservoirs in the piedmont valleys along the east base of the Front Range, but it develops so late in the season and grows in such unattractive sites that it has escaped the attention of botanists.

CACTACEAE

ECHINOCEREUS FENDLERI (Engelm.) Rumpler

MONTEZUMA CO.: sagebrush flat, Mancos River below Soda Tipoff, south rim of Mesa Verde, June 10, 1950, in flower, *Weber 5459*.

ECHINOCEREUS REICHENBACHII (Terscheck) Haage f.

E. caespitosus Engelm.

OTERO CO.: shale buttes 4 mi. s.w. of Timpas along Hwy. 350, April 28, 1951, *T. P. Maslin 6001*.

ONAGRACEAE

* *EPILOBIUM LEPTOCARPUM* Hausskn. var. *MACOUNII* Trel. in Ann. Report Mo. Bot. Gard. 2: 103. 1891.

Perennial; stems slender, reddish, 1 dm. or less tall, with lines of pubescence extending to upper parts; turions small; leaves ovate-lanceolate, 1-2 cm. long, with short, winged petioles; petals 3 mm. long, white to pinkish; capsules 2-3 cm. long, on slender pedicels 1-2 cm. long; seeds 1 mm. long, ellipsoidal, with brownish coma.

Alaska to Washington and Idaho.

ROUTT CO.: wet depression in meadow, Seedhouse Guard Station, North Fork Elk River, 28 mi. n.e. of Steamboat Springs, 8400 ft. alt., July 17, 1951, *Weber 6746* (verified by Dr. P. A. Munz).

* *OENOTHERA LONGISSIMA* Rydberg in Bull. Torr. Bot. Club 40: 65. 1913.

Biennial or short-lived perennial, 1-3 m. tall, the stem and leaves appressed-pubescent; basal leaves sinuate-serrulate, oblanceolate, 10-20 cm. long, 1.5-3.0 cm. wide, narrowed to winged petioles 5-10 cm. long; cauline leaves strigose, linear-lanceolate, remotely sinuate-serrulate, the blades 8-18 cm. long, 0.8-2.2 cm. wide, narrowed to petioles up to 2 or 3 cm. long, the upper leaves gradually more reduced and sessile, passing into bracts; inflorescence 1-6 dm. long; hypanthium 8-12 cm. long, reddish; sepals 3.5-4.5 cm. long, reddish, reflexed in pairs, the subulate tips 3-6 mm. long; petals pale yellow at anthesis, yellow to orange or reddish in age, obovate, ca. 4 cm. long, 3.2-4.0 cm. wide; filaments half as long as petals; anthers 14-18 mm. long; style equaling or exceeding petals; stigma-lobes yellowish, 4-5 mm. long; capsule subquadrangular, sometimes with red bands, usually 3.5-4.5 cm. long, 4.5-5.5 mm. thick, the free tips ca. 2 mm. long, more or less emarginate; seeds 1-1.5 mm. long.

Southern Utah, northern Arizona, southern Nevada and the desert region of southern California.

MONTEZUMA CO.: frequent along irrigation ditches, McElmo Canyon, 17 mi. west of junction with Cortez road; plants 6-8 feet tall, often overhanging ditches, Sept. 1, 1952, *Weber 7940*.

This collection represents subspecies *clutei* (A. Nels.) Munz in El Aliso 2 (1): 46. 1949, the plant more or less hirsute especially in the upper parts, somewhat muricate on the stem, and glandular-pubescent in the inflorescence.

PRIMULACEAE

* *PRIMULA EGALIKSENSIS* Wormskjold ex Hornem., Flora Danica, Vol. 9, tab. 1511. 1816.

Leaves thin, cfarinose, ovate, oblong, obovate, or spatulate, entire or obscurely undulate, slender-petioled, up to 5 cm. long and 1.5 cm. broad; scapes strict, cfarinose, purplish, 0.1-2.4 dm. high; involucrel bracts dilated and gibbous-saccate at base, 2.5-7.0 mm. long; pedicels strict, in fruit becoming very unequal, the longest 0.5-5.0 cm. long; calyx pale green, cylindric to slenderly campanulate, 3.5-6.0 mm. long, cleft only one-third or one-fourth to base into glandular-ciliate lobes; corolla with white limb 5-9 mm. broad, or limb violet to deep lilac and whole plant

darker or suffused with purple (all of our specimens are like this, and belong to forma *violacea* Fernald in *Rhodora* 30: 98. 1928), the short cuneate lobes only 1.6-4.0 mm. broad and deeply cleft; capsule slender-cylindric, tapering above, becoming twice or thrice the length of the calyx, 7-13 mm. long, 1.8-2.1 mm. thick; seeds pale, smooth.

Meadows and wet calcareous shores, s. Greenland (the type locality) and Lab. to Alaska, s. to n. Nfld., e. Saguenay Co., Que., James Bay, Alta., and B.C.

PARK CO.: north end of South Park, 1936, *Ramaley & Gambill 16881*; wet meadow and roadside swales, with *Primula incana*, South Park, 1 mi. east of Jefferson, July 11, 1954, *Weber & Vogelmann*.

Mr. Hubert Vogelmann, who is studying the cytotaxonomy of *Primula*, discovered *Primula egaliksensis* while making a routine check of specimens in the University of Colorado Herbarium. Several individuals of this Arctic species were mixed on a sheet of *P. incana* collected almost twenty years ago by Ramaley. The locality, other than "north end of South Park", was not given. By a coincidence, I had collected *Primula incana* near Jefferson a few days before Vogelmann arrived, and a quick examination showed that my collection also contained a mixture of the two species.

On July 11, we both returned to the South Park locality and found *P. egaliksensis* to be abundant in the wet meadows of the north end of South Park for at least a mile on each side of the village of Jefferson. The species undoubtedly is widely scattered throughout the higher, wetter areas of the Park. In fact, it seemed to be more abundant than *P. incana* although a good deal less conspicuous. This collection represents an addition to the United States flora.

Primula egaliksensis is easily distinguished from *P. incana* in being completely non-farinose, with smaller, stiffly erect flowers on unequal pedicels. The whole plant is much more slender than *P. incana*.

It is highly probable that a fifth species of *Primula* will be found in Colorado. This is *Primula specuicola* Rydberg in Bull. Torr. Bot. Club 40: 461. 1901. This species resembles *P. incana* in having farinose leaves, but the leaves are conspicuously and irregularly dentate, and the flowers are larger. It is found on wet cliffs in the Colorado Plateau region near Moab, Utah, and on the North Rim of the Grand Canyon. It should certainly be present in western Colorado in Mesa or Montrose County.

ASCLEPIADACEAE

* *ASCLEPIAS INVOLUCRATA* Engelm. ex Torrey in Bot. Mex. Bound. Surv. 163. 1859.

Low herbaceous perennial from woody subfusiform roots; stems ascending, slender, 3-25 cm. long, minutely puberulent; leaves irregularly approximate, sessile or subsessile, narrowly lanceolate, 1-12 cm. long, 3-10 mm. broad, inconspicuously pilosulous, especially beneath; inflorescences terminal and from the upper nodes, sessile, several-flowered; pedicels 1.5-2.5 cm. long;

calyx-lobes ovate-lanceolate, 3-4 mm. long; corolla reflexed-rotate, pale green or pink, purple-tinged dorsally, the lobes 5-7 mm. long; gynostegium short-stipitate, white with purplish keels, the column obconic, 1.0-1.5 mm. long, 1.5-2.5 mm. broad; hoods ovate, acute, 3-4 mm. long, the horns adnate toward the base, incurved or ascending, about as long as the hood, the anther head truncate-conic, ca. 2 mm. long, 3 mm. broad; follicles erect on deflexed pedicels, stoutly fusiform, shortly apiculate, 4-7 cm. long, 1.5-2.0 cm. broad, very inconspicuously pilosulous; seeds oval, 6-8 mm. long, the pale tawny coma 2-3 cm. long.

Dry gravelly hills, flats, chaparral, and arroyos, New Mexico, Arizona, and adjacent Utah, Colorado and Kansas; northern Mexico from Coahuila to Durango.

LAS ANIMAS CO.: field 8 mi. northeast of Kim, May 31, 1948, *C. M. Rogers 5834*.

CONVOLVULACEAE

* *CUSCUTA DENTICULATA* Engelm. in Amer. Nat. 9: 348. 1875.

Stems very slender; flowers about 2 mm. long, subsessile, in shortened, more or less bracteate, inflorescences of few flowers, the bracts often one to three, ovate-lanceolate, acute; calyx-lobes orbicular, obtuse, denticulate, deeply divided, overlapping, enclosing the corolla tube; corolla campanulate, becoming urceolate in fruit, lobes ovate or oval, somewhat overlapping, spreading, about equaling the tube; scales denticulate, about reaching the anthers, oblong-ovate, bridged at about the middle, or below; anthers oval, shorter than the corolla-lobes, about equal to the filaments; styles shorter than the small conic ovary, stigmas small, globose; capsule conic, bearing the withered corolla about the top, mostly one-seeded; seeds about 1 mm. long, globose-ovoid, hilum small, embryo with an enlarged, round, terminal knob.

Utah, Nevada, and California.

MONTEZUMA CO.: on *Eriogonum* and *Artemisia*, bluffs above north bank of San Juan River, just n.e. of Four Corners, T. 32 N., R. 20 W., June 13, 1949, *Weber 4801* (early stage, only a few flowers present). Dr. T. G. Yuncker wrote, "The dodder you sent is scarcely in flower and I cannot be absolutely sure of my identification. However, from what I can see in the young flower buds I am reasonably certain it is *Cuscuta denticulata* Engelm. I would expect it in the region where found as it is in Utah and Nevada. It definitely is not *C. californica*. I think you are safe in calling it *C. denticulata*."

POLEMONIACEAE

* *GILIA CAPILLARIS* Kellogg in Proc. Calif. Acad. Sci. 5: 46. 1873.

Erect annuals, 2-35 cm. tall; stems well branched, or sometimes simple, stipitate glandular throughout their length; leaves simple, or rarely with a pair of lateral lobes at base, linear, sometimes slightly arcuate, 0.5-5.0 mm. wide, glandular, lower and middle cauline leaves 1-4 cm. long, the upper cauline leaves becoming progressively smaller; inflorescence cymose, the first flowers to mature being terminal on short pedicels and subsequent flowers being borne on longer pedicels which arise in the axils of the first; calyx slender, 3-4 mm. long, the lobes acuminate and about equal in length to the tube, glandular, green, often with purple streaks on the lobes or in the sinus; corolla funnelform, 3-6 mm. long, about twice the length of the calyx, pale violet, pink, or white, often striated with purple, the tube sometimes yellow, the throat sometimes possessing

purple spots; stamens inserted in the sinuses, the filaments equal in length and point of insertion, 0.5 mm. long, the anthers bright blue, visible through the wall of corolla in dried specimens; stigmas 0.5–1.0 mm. long, included, touching the anthers; capsule ovoid, 3–4 mm. long, equaling the calyx, containing 6–12 brown seeds 1.0–1.5 mm. long.

Eastern Washington and Oregon, southwestern Oregon and northern California, south in the Sierra Nevada and in the mountains of southern California. The Colorado specimen cited below represents a major range extension.

ROUTT CO.: Steamboat Springs, July, 1891, *Eastwood* (verified by Verne and Alva Grant, 1954).

HYDROPHYLLACEAE

* *HESPEROCHIRON*, Watson

Small acaulescent perennials, from thickened roots and with basal, entire leaves; scapes slender, 1-flowered, somewhat shorter than the leaves; calyx 5-parted; corolla campanulate to rotate, early deciduous; ovary 1-loculed, with 2 placentae and many ovules; style 2-parted.

* *HESPEROCHIRON PUMILUS* (Dougl.) Porter in Hayden, Geol. Rep. 768. 1872.

Capnorea pumila (Dougl.) Greene

Leaves mostly 2 to 4, usually lanceolate, sometimes spatulate, glabrous except the hispid margins, 2–6 cm. long; scapes 3–5 cm. long; sepals lanceolate to lance-ovate, ciliate or villous; corolla white with red veins, saucer-shaped, the tube 2–3 mm. long.

Idaho, Washington, Utah, and California.

While examining specimens in the U. S. Forest Service Herbarium, Division of Range Management, in Denver, I discovered a sheet of this species collected in the Montezuma National Forest many years ago. The collector is unknown, but otherwise the data are quite specific: associated with sagebrush and weeds, west slope, dry soil, 7000 ft. alt., Milk Ranch, April 28, 1914, no. 764, Washington office serial number 20571. The specimen consists of a single plant with tap root and three basal leaves. There are about 5 scapes from which the corollas have fallen; the 5 pubescent sepals, two-parted style, and pubescent unilocular ovary containing many ovules were verified by dissection of two of the flowers.

In Idaho and Washington, where I am familiar with the species in the field, *Hesperochiron* blossoms very early, following the melting of the snows. The locality, "Milk Ranch" has not been identified, but *Hesperochiron* should be found on the sagebrush summits of the plateaus, very likely in the Dove Creek area.

BORAGINACEAE

CRYPTANTHA WEBERI I. M. Johnston

Caespitose perennial, producing numerous crowded stems at the root crown, 1–2 dm. high, the stems and foliage densely appressed-pubescent with hairs of two kinds, mostly hispidulous-villous with small matted hairs, but with long pustulate appressed hairs scattered throughout;

leaves chiefly basal, narrowly oblanceolate, 3-8 cm. long, 2-5 mm. wide; stem leaves similar but shorter, chiefly subtending the axillary cymes; inflorescence cylindric, the stem bearing flower clusters on its upper three-fourths; cymes glomerate at the ends of short peduncles; calyx 3-4 mm. long (5-6 in fruit), sessile or short-pedicellate; corolla white, the tube short, cylindric, 3 mm. long, 2 mm. thick, the lobes suborbicular, 2-2.5 mm. in diameter; fornicies low, rounded, white, less than 0.5 mm. high; limb 4-6 mm. in diameter; stamens attached above the middle of the corolla tube; style with gynobase 3.5-4.0 mm. long; styles 1.5-1.8 mm. long; mature nutlets 2-2.3 mm. long, 1.3-1.8 mm. wide, ovate, lightly tuberculate and irregularly rugulose; scar open.

Endemic in the Cochetopa Pass region of Saguache County, Colorado.

SAGUACHE CO.: along road to Stone Cellar Ranger Station and Saguache Park, near junction of main highway, 4 miles west of Cochetopa Pass, volcanic ash deposit, 9700 ft. alt., with *Aster coloradensis*, *Senecio hallii*, and *Penstemon secundiflorus*, July 28, 1950, *Weber 5778* (TYPE, Gray Herb., ISOTYPE, COLO); dry knoll one mile north of Stone Cellar R. S., 9000 ft., July 7, 1936, *Rollins 1323* (Gray Herb.); Carnero R. S., Cochetopa Forest, scattered on lower slopes, 10,000 ft. alt., June 20, 1922, *Taylor 573* (Gray Herb.).

Cryptantha weberi differs from *C. virgata* in being perennial, lacking the conspicuous hispid pubescence of that species, in being shorter in stature, and in having narrower leaves, smaller flowers, and nutlets with an open scar. It really is so different in general aspect from *C. virgata* that the two can hardly be confused, although the two species share the character of a cylindrical inflorescence in which the bract-leaves are rather conspicuous.

* MYOSOTIS SCORPIOIDES L., Sp. Pl. 131. 1753. Forget-me-not.

Perennial, with slender rhizomes or stolons, the stems not tufted; foliage appressed-pubescent with straight, pointed hairs; stems up to 4 dm. tall (ours less than 2 dm.), decumbent or ascending, rooting at the lower nodes; leaves oblanceolate to oblong-lanceolate, 2.5-8.0 cm. long, 4-12 mm. wide, the upper stem leaves sessile, the lower narrowed to a winged petiole; racemes loosely many-flowered; fruiting pedicels longer than the calyx; calyx with straight appressed hairs, the lobes equal, ovate-triangular, acute, shorter than the tube, more or less spreading in fruit; corolla blue with a yellow eye, the limb flat, 6-8 mm. broad; nutlets angled and keeled on the inside.

Escaped from cultivation and naturalized in wet places through most of northern United States. Native of Eurasia.

This species is naturalized along Middle Boulder Creek, Boulder County, in the vicinity of Nederland, ca. 8000 ft. alt., (*R. Prettyman 8789*) and grows on mossy streambanks where it would pass for a native species. Our only native *Myosotis* is *M. alpestris* Schmidt, which is alpine with us, a tufted, hirsute perennial without rhizomes. *M. scorpioides* and *M. verna* (the last mentioned by Harrington as possibly occurring in Colorado) are distinguished as follows:

Hairs on calyx few, short, straight, closely appressed, eglandular; plants of wet soil.....	<i>M. scorpioides</i>
Hairs of calyx (at least some of them) hooked or gland-tipped; plants of drier habitats.....	<i>M. verna</i>

LABIATAE

LYCOPUS UNIFLORUS L.

The only previous Colorado record was that of Daniels, along streams, Arapahoe Road, Boulder, 5300 ft. alt., Aug. 16, 1906, No. 783 (Herb. Univ. Missouri). I find the species still abundant in a cat-tail swamp, floodplain of Boulder Creek opposite White Rocks on the Sullivan Ranch, 8 mi. n.e. of Boulder (July 30, 1954, *Weber 8818*). This is one of the relicts of the mesic prairie flora which must have extended in past time across the Great Plains, but which now is restricted to the Black Hills of South Dakota and scattered localities along the mountain front from Montana to New Mexico. Some of the numerous other species in this distribution pattern are *Stipa spartea*, *Sporobolus heterolepis*, *Lobelia siphilitica*, *Apios americana*, *Thalictrum dasycarpum*, *Eupatorium maculatum*, and *Hypoxis hirsuta*.

COMPOSITAE

* ARTEMISIA BOREALIS Pallas, Reise 3: 755. 1776.

Perennial; stems reddish, few from a multicapital caudex, 1 to 2 dm. high, erect from a sometimes spreading base; leaves mostly basal; flowering stem with a few leaves below the inflorescence; leaves once or twice ternate with linear divisions, mostly 0.5-2 mm. wide, or with a few extra lobes along the rachis and hence somewhat pinnately divided, the upper leaves simply ternate or undivided, glabrous to somewhat silky-villous and then glabrate at least on upper surface; flowering stems bearing heads in the upper two-thirds, the inflorescence spike-like, the heads sessile or nearly so, the lower axillary clusters sometimes spicate, all the clusters leafy-bracted; middle and upper leafy bracts entire; involucre hemispheric, 3-4 mm. high, purplish to green, glabrous or nearly so, the phyllaries with a narrow scarious border.

Circumpolar in Arctic regions, south to Newfoundland, Gaspé, Quebec, northern Michigan; disjunct in Colorado.

PARK CO.: south slope of ridge leading to North Star Mountain, just west of Hoosier Ridge, 12,500 ft. alt., Aug. 7, 1951, *Weber & Rollins 7148*. CLEAR CREEK CO.: growing with *A. norvegica*, summit of Mount Goliath along road to summit of Mount Evans, ca. 11,000 ft. alt., July 30, 1953, *Weber 8606*.

ARTEMISIA BOREALIS var. PURSHII Besser in Hooker, Fl. Bor.-Am. 1: 326. 1833.

Similar to *A. borealis* but leaves and stems densely and more or less permanently silky; involucre and axis of inflorescence usually villous.

SUMMIT CO.: tundra and loose rock slides, n. slope of Hoosier Ridge, 12,000 ft. to 12,700 ft. alt., 1-2 mi. east of hwy. over Hoosier Pass summit, July 24, 1948, *Weber 4304*.

This is the *Artemisia spithamea* of the Manual. I am following Fernald (1950) in reducing this to varietal status under *borealis*, to which it seems to be closely related.

* *BRICKELLIA LONGIFOLIA* Watson in Amer. Nat. 7: 301. 1873.

Much-branched glabrous shrub; stem with slender branches, pale- or white-barked, somewhat scabrous; leaves alternate, linear-lanceolate, attenuate, entire to obscurely denticulate, 3-13 cm. long, 2-10 mm. wide, 3-nerved, punctulate on both surfaces, short-petiolate; heads small, 3-5-flowered, paniculately arranged or rarely in cymose custers in the leaf-axils; phyllaries strongly unequal, the outermost very short, ovate, the inner linear, 3-nerved; receptacle naked; achenes gray, 1.8 mm. long, hirtellous on the ribs above, pappus bristles simple.

Nevada, southern Utah, northern Arizona, and in the Panamint Mts. of California.

MESA CO.: on hillside, with *Brickellia grandiflora*, 5000 ft. alt., canyon above Gateway, Nov. 7, 1954, *George W. Kelly* (verified by L. O. Gaiser).

The specimen is a late-season fruiting branch with ripe fruit and only a few leaves remaining. The species is easily distinguished by the small number of flowers in each head, the paniculate inflorescence, and the linear-lanceolate leaves.

* *CARDUUS NUTANS* L., Sp. Pl. 821. 1753. Nodding Thistle; Musk Thistle.

Biennial or rarely annual herb 3-10 dm. or rarely 20 dm. high; leaves glabrous, or long-villous chiefly along the midrib and main veins beneath, deeply lobed, up to 25 cm. long and 10 cm. wide; heads mostly solitary and nodding at the ends of the branches, usually large, the disk 4-8 cm. wide when pressed, sometimes smaller and scarcely more than 1.5 cm. wide; middle and outer phyllaries conspicuously broad (2-8 mm.) with long, flat, spreading or reflexed, spine-pointed tip; inner bracts narrower and softer, scarcely spiny, often purplish.

Introduced from Europe and Asia.

BOULDER CO.: roadside embankment just west of tollgate, Boulder-Denver turnpike, Aug. 17, 1953, *Weber 8633*; along Coal Creek on the outskirts of Louisville; tall plants 5 ft. high, with several heads per plant; only recently appeared as a weed and now established at several points, chiefly along Coal Creek between Louisville and the foothills, June 28, 1953, *S. B. Detwiler*. EAGLE CO.: 3 mi. e. of Eagle, Aug. 30, 1953, *Penland 4430* (Herb. Colorado College). JEFFERSON CO.: northwest-facing mesa slope, grown up in weeds, 6000 ft. alt., just south of Denver Water supply flume, s.e. of Eldorado Springs; very abundant locally, July 12, 1953, *Weber 8516*.

* *CIRSIUM ROTHROCKII* (Gray) Petrak

The group of thistles related to *C. pulchellum* (Greene) Woot. & Standl. form a species complex which is limited geographically to the region of the Colorado Plateau. The outstanding characteristic of this group is one which is rarely if ever mentioned in keys or descriptions, namely, that the heads are narrowly cylindrical to campanulate, unconstricted at the top of the involucre when fresh and in anthesis. This is in sharp contrast to the species of the *undulatum* group

and the other thistles of the region, in which the heads are hemispherical or globose, with the head strongly contracted at the top of the involucre. The species have been collected very infrequently, and they appear to form distinct geographic groups differing in such characters as length of involucre and leaf spines, presence, absence, or degree of tomentum on the underside of the leaf, and degree of lobing of the leaves.

Harrington lists two of these forms for Colorado; *Cirsium bipinnatum* (Eastwood) Rydberg, which has very short involucre spines, 3-4 (-5) mm. long, and deeply and regularly pinnatifid leaves with fairly narrow lobes, sparingly arachnoid to almost glabrous beneath; and *Cirsium pulchellum*, which has spines 4-5 mm. long, shallowly pinnatifid leaves with rather broad lobes, permanently and densely tomentose beneath.

In May, 1954, I collected a very different member of this group on the north end of the Uncompahgre Plateau, on the ledges of the mesa which forms the Colorado National Monument, south of Fruita, in Mesa County, Colorado (Weber 8678). The plants were frequent in little washes among pinon trees a few miles east of the Headquarters area, along the rim road. The leaves and stems on this collection are totally glabrous, with middle leaf spines up to 8 mm. long, and the spines of the involucre up to 11 mm. long. This collection evidently represents *C. rothrockii* of Arizona.

Kearney and Peebles *Arizona Flora*, 1951, presents the latest treatment of the *Pulchellum* group. They interpret this complex as follows:

- A. Leaves glabrous or quickly glabrate on both faces.
 - B. Spines of the middle phyllaries about 10 mm. long, longer than the body of the phyllaries. *C. rothrockii*
 - BB. Spines of the middle phyllaries not more than 5 mm. long, shorter than the body of the phyllaries. *C. bipinnatum*
- AA. Leaves persistently tomentose, at least beneath.
 - C. Spines of the middle phyllaries 1 to 2 cm. long, stout, yellowish
C. nidulum (Jones) Petrak
 - CC. Spines of the middle phyllaries shorter, slender.
 - D. Corollas bright red or carmine. . . *C. arizonicum* (Gray) Petrak
 - DD. Corollas pink-purple. *C. pulchellum*

Since the Mesa County collection represented a major extension of range (from central Arizona), it seemed reasonable to suppose that these plants might be referable to the glabrescent form of *C. pulchellum* described by Petrak from eastern Utah. However, *C. pulchellum* var. *glabrescens*, while conforming in general to our material, has involucre spines at most 3 mm. long, and in that respect seems to be closer to *C. bipinnatum* of southwestern Colorado.

* *ERIGERON HUMILIS* Grah., in Edinb. N. Phil. Journ. 1828: 175. 1828.

Erigeron unalaschkensis Vierh.

Perennial herb with a short taproot or short brittle caudex and usually some fibrous roots, sometimes apparently blooming the first year; stem generally lax, erect or suberect, about 2-25 cm. high (2-4 in ours), more or less spreading-villous, the hairs, particularly near the top of the stem, generally with some purple cross-walls; leaves loosely villous or villous-hirsute when young, the lower ones usually glabrate or nearly so by flowering time; basal leaves oblanceolate or occasionally spatulate, up to about 8 cm. long and 11 mm. wide (ours 1 cm. or less long); cauline leaves more or less reduced, mostly linear or linear-lanceolate, the lower ones generally acute, the upper ones attenuate; heads solitary, the disk 10-20 mm. wide; involucre 6-9 mm. high, more or less densely woolly-villous, the hairs with dark purple or blackish cross-walls; phyllaries relatively narrow, not more than 1 mm. wide, loose and attenuate, generally heavily tinted with blackish-purple, rarely more greenish, subequal, or sometimes a few of the outer evidently shorter than the others; ligules about 50-150, white to purplish, about 3.5-6 mm. long, 0.55-1.0 mm. wide; disk corollas 3.4-4.8 mm. long, the tube 1.3-2.0 mm., the lobes 0.4-0.6 mm.; style-appendages broadly to narrowly triangular, 0.05-0.15 mm. long; pappus of 20-30 bristles, exceeding the disk-corollas, with a few short and inconspicuous outer setae; akenes 2-nerved, more or less hairy.

Circumpolar; in America extending from the Arctic Coast, and about Lat. 75 degrees in Greenland, to Glacier Park, Montana, Fort George, Quebec, and generally only to about 68 degrees in Greenland. The Colorado record cited below represents a range extension south from Glacier National Park.

GUNNISON CO.: in moss between boulders, in boulder-field, ca. 13,200 ft. alt., associated with *Claytonia megarhiza*, summit of North Italian Mountain, Elk Range northeast of Gothic; gentle N. E. slope leading from peak; caulescent in anthesis, but later developing a short scapose stem; ray-flowers white, Aug. 26, 1954, *Jean Langenheim 3967*.

Erigeron humilis belongs to the group of species including *E. simplex* and *E. melanocephalus*, but the ray-flowers are very narrow and short, 3-6 mm. long, 0.3-1.0 mm. wide. Dr. Langenheim states that the species is at once recognizable as distinct from *E. simplex* and *melanocephalus* in having the rays stiffly erect rather than spreading. *E. melanocephalus* also has involucre hairs with dark blackish-purple cross-walls, but in that species the phyllaries themselves are green. In *E. humilis* the cross-walls of the hairs and the phyllaries themselves are purple.

* *ERIGERON LANATUS* Hooker, Fl. Bor.-Am. 2: 17. 1834.

Perennial herb from a slender branching caudex; stem about 5 cm. high or less, scapose, loosely woolly-villous with long tangled hairs, especially upwards; leaves basal, oblanceolate, up to 3 cm. long and 5 cm. wide, often 3-toothed at the apex, loosely lanate-villous to pilose; head solitary, the disk about 13-23 mm. wide; involucre 9-13 mm. high, moderately to very copiously lanate; cross-walls of the hairs clear, or some of the lower ones obscurely purplish; phyllaries a little narrower and thicker than in related species, strongly purplish, especially upwards, the outer a little

shorter than the inner; ligules about 30-80, white, sometimes blue or pink, 8-11 mm. long, 1.4-2.0 mm. wide; disk-corollas mostly 5.0-6.5 mm. long, sometimes a little shorter, the tube 1.5-2.0 mm. long when well defined, the lobes about 0.8-1.1 mm.; style appendages deltoid-ovate, acute, about 0.2 mm. long; pappus double, the inner of about 25-35 slender, white, often somewhat twisted bristles, the outer of a very few slender and inconspicuous setae; akenes 2-nerved, very finely hirtellous or subglabrous.

High mountains, Montana (Glacier Nat. Park) and Alberta.

GUNNISON CO.: summit of Conundrum Pass, August, 1954, *Joseph Barrell 8824*. Dr. Barrell notes that the species forms large compact and very beautiful mats over a foot in diameter. The species is easily recognized by the woolly involucre and the lower basal leaves, which are shallowly 3-parted at the tip, as in *Artemisia tridentata* or *Purshia tridentata*.

* *SENECIO HALLII* Britton in Trans. N. Y. Acad. Sci. 9: 11. 1889.

Plant low, densely white-tomentose; stems several from a multicapital caudex, not more than 10 cm. high in our specimens (to 20 cm. in Wyoming specimens); basal leaves 2-3 cm. long, distinctly petiolate; blade spatulate, obtuse, thick, entire; stem leaves few, reduced, linear, sessile; heads few, on peduncles 2 cm. or less long, the involucre about 5 mm. high, turbinate-campanulate; bracts broadly linear, acute, densely tomentose; ligules lacking in our specimens (in the typical form the ray corollas 8-10 mm. long, light yellow), disk-corollas 5-5.5 mm. long; achenes glabrous, about 2 mm. long.

Heretofore known only from geyser formations, Yellowstone National Park, Wyoming.

Our plants differ from the species only in being discoid; the following name is proposed for this race:

***Senecio hallii* Britton, var. *discoidea* var. nov.**

Typo similis sed discoidea.

SAGUACHE CO.: volcanic ash deposits along road to Stone Cellar R.S., and Saguache Park, near junction with main highway, 4 mi. west of Cochetopa Pass, 9700 ft. alt., July 28, 1950, *Weber 5800*. (Type at Mo. Bot. Garden.)

* *VERNONIA FASCICULATA* Michx., Flora Bor. Am. 2: 94. 1803.

Stem 0.7-2.0 m. high, glabrous; leaves very numerous, ascending, linear to oblong-lanceolate, acuminate, spinulose-denticulate, glabrous and when dry punctate beneath, the larger 1-3 cm. broad; cyme dense, with fastigate branches, turbinate or flattened, 0.5-2.0 dm. broad; heads slenderly campanulate, mostly sessile or short-stalked, 20-30-flowered; involucre 5-8 mm. high, their closely imbricated round-tipped to subacute phyllaries with exposed tips 1.6-2.0 mm. broad; pappus purplish; achenes about 3 mm. long, glabrous or essentially so.

Rich low ground and prairies, Ohio to North Dakota, s. to Missouri, Oklahoma and Texas.

SEDGWICK CO.: wet roadside depression 1.5 mi. west of Ovid, Aug. 14, 1951, *Weber 7183*.

REJECTED SPECIES

ALCHEMILLA ALPINA L., Sp. Pl. 123. 1753 (ROSACEAE).

The possible occurrence of *Alchemilla* in Colorado was suggested by Fernald (1950), who wrote: "As a boy, before coming to Cambridge, I exchanged specimens with the late C. H. Demetrio. Among the plants he sent me was a characteristic specimen of *Alchemilla alpina*, collected by himself on July 5, 1888, 'on the trail to the Lake of the Clouds, Custer County, Colorado'. Here is a challenge to Cordilleran botanists."

Acting on this "challenge", the writer made a special trip to the Lake of the Clouds on July 29, 1950. *Alchemilla alpina* was not seen, but the following notes may be useful to plant-hunters in the future. The lake(s) are just at timberline, about 11,500 ft. alt., and the trail to them winds through subalpine spruce-fir forests for the entire distance, beginning near a guest ranch west of Westcliffe. There is a large tundra area above the lakes which must be thoroughly investigated before the record may be dismissed as an error, for it is entirely possible that Demetrio may have continued over the Continental Divide. However, Fernald himself had serious misgivings as to the veracity of the record, for he wrote, on August 8, 1950 (Fernald, correspondence), "Whether or not the Demetrio label is thoroughly accurate, of course, I cannot say. Subsequently an item has turned up which will soon be found in Rhodora in an article on *Adiantum capillus-veneris*. This item leads one to think that possibly Demetrio did not get his data quite correct, since the plant he had labelled was obviously from a European, rather than an American, source, from a locality showing that he had his data confused." The item in question is discussed by Fernald (1950) and it concerns a specimen said to have been collected in Louisiana, but which represents an exclusively European race.

ARENARIA ROSSII Richardson (CARYOPHYLLACEAE)

According to Maguire (correspondence), the records of *Arenaria rossii* are based on misidentified material of *Arenaria macrantha* (Rydb.) Nelson, a species which was inadvertently omitted from the Synopsis of North American Species of *Arenaria* (Maguire 1951). The specimen involved was *E. A. Bessey*, Bald Mountain, 11,500 ft. alt., August, 1896.

ARENARIA FILIORUM Maguire (CARYOPHYLLACEAE)

The report (Maguire 1946, 1946a) of *Arenaria filiorum*, based on *C. C. Curtis*, Ironton, San Juan County, July 21-31, 1899, was based likewise on a misidentification of *Arenaria macrantha* (Maguire, correspondence).

COPTIS GROENLANDICA (Oeder) Fernald (RANUNCULACEAE)

This species was tentatively listed by Harrington in the *Manual*, p. 236. It has been definitely established now that the report resulted from a confusion of collection data. The specimen was collected by a student at the Rocky Mountain Biological Laboratory, who made collections in the Gothic area in the summer and who collected plants in northern Minnesota during the school year. Some newspaper folders which had been used for Gunnison County plants happened to be used again for collections from Cook County. The collection details had been written on the newspaper folders, with the result that a number of Cook County plants, including *Coptis groenlandica*, *Phegopteris polypodioides*, and *Amelanchier interior*, came to have Colorado collection data. Careless collection procedures coupled with a singularly bad memory in such matters, therefore, caused these plants to be submitted to the herbarium as Colorado specimens. All of the specimens in this controversial set have been destroyed. The odd coincidence was that the ecological data for the Gunnison County collections were just what one would expect for these few Minnesota species.

LUZULA SUDETICA (Willd.) DC. (JUNCACEAE)

The report of this species in the *Manual*, page 151, is in error. The specimens have proved, upon further study, to be *Luzula subcapitata* (Rydberg) Harrington. The leaves are over 5 mm. wide, while those of *sudetica* from the Arctic are always very slender. The heads of *L. subcapitata*, contrary to the statement in the key, are not always sessile or nearly so, but often have one or more spikes exerted on elongate peduncles. Jepson (1922) places *L. subcapitata* in synonymy under *L. subcongesta*. However, the bracts of *L. subcongesta* are hyaline and very obviously ciliate or lacerate; in *L. subcapitata* these are brownish, and only faintly if at all lacerate.

RUMEX PULCHER L. (POLYGONACEAE)

The plants which were at first thought to represent *R. pulcher* have been identified as *Rumex stenophyllus* Ledeb., which is discussed elsewhere in this paper.

SAXIFRAGA VREELANDII (Small) Fedde (SAXIFRAGACEAE)

See discussion under *Saxifraga foliolosa* R. Br.

VIBURNUM LENTAGO L. (CAPRIFOLIACEAE)

The only Colorado record of this eastern species is the collection of W. W. Robbins, no. 1561, from Bluebell Canyon, in Boulder County, June 13, 1906. This was a plant in flower, with well-developed leaves. There is no doubt as to the identity of the specimen; whether it was from a wild plant is questionable.

Bluebell Canyon is a small gulch just southeast of Chautauqua Park, at the southwest edge of Boulder, having its origin in the first foothills of the Front Range. The altitude is about 6000 feet. The Boulder Chautauqua was founded in 1898. Prior to that date the area was the Batchelder farm, whose buildings stood on the west side of Bluebell Canyon. The mesas were quite devoid of trees in the early days, and it is entirely possible that the owners of the farm planted a few exotic trees and shrubs in Bluebell Canyon, where they would have the best chance to survive without irrigation. Evidence for this hypothesis is the persistence, to the present time, of individual plants of *Viburnum lentago*, *Lonicera morrowi* or *lutarica*, and *Salix fragilis* in the bottom of the gulch, which is now filled with a choking growth of native species of *Crataegus* and *Prunus*. The *Viburnum lentago* seems to have disappeared.

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