

PLANTS FROM THE BIG HORN MOUNTAINS OF WYOMING.

By J. N. ROSE.

INTRODUCTORY STATEMENT.

Mr. Frank Tweedy, of the Geological Survey, made a small but very interesting collection of plants in the Big Horn Mountains of Wyoming in 1893. No attempt was made by Mr. Tweedy to get a complete representation of the flora of this region, which is extremely rich and varied. His collecting was merely incidental to his other work, and was done chiefly while reaching some mountain peak or returning from it to camp. His plants, therefore, are chiefly alpine.

The Big Horn Mountains begin near the middle of the northern boundary of Wyoming, running in a northwest and southeast direction for about one-third the distance across the State. The mountains are very much broken and very rugged on the flanks, and there are few or no trails. They contain many peaks which are 9,000 to 11,000 feet in altitude.

Mr. Tweedy speaks of the geology and topography of this region as follows:

The Big Horn range where crossed has a width of 35 miles, trending to the northwest, with elevations varying from 5,000 feet at base to 11,000 feet on the highest summits. The range gradually slopes to the northward, running out in southern Montana, and about 12 miles south of our route rises to the rugged summits of Cloud Peak, 13,500 feet in elevation. The range is a broad anticlinal arch, presenting a wide Archean core, with narrow bands of sedimentary formation on the east and west flanks dipping very abruptly to the plains below, so as to form exceedingly precipitous bluffs and slopes of from 1,500 to 2,000 feet. The interior presents a marked contrast, being generally composed of broad, flat ridges and summits covered with beautiful grassy parks and patches of heavy timber. Southward the country becomes more rugged and broken, and the timber more frequent and denser. Great areas have been swept over by forest fires, making traveling exceedingly slow and difficult. The drainage of the interior is peculiar in that the streams have north and south courses before they break through the rim in deep, rough, and often inaccessible canyons.

Mr. Tweedy fitted out near the town of Sheridan, going into the mountains up Little Goose Creek, crossing the divide near the head waters of the Big Goose Creek, and then going down Shell Creek into the Big Horn Basin.

His stations in the Big Horn Mountains are between longitude 107° and 107° 30' and latitude 44° 30' and 44° 40', chiefly on the head waters

of the east and west forks of Big Goose Creek and on the high divide between these streams and Shell Creek. The topography of the region is shown in the Dayton Sheet of the Geographical Survey, published in 1895.

The collection is composed of only 90 species, represented by 96 numbers. The date of the collection is from July 15 to 24, 1893, inclusive. Mr. Tweedy has carefully given the approximate altitudes of the species, which have been appended in the catalogue.

During 1893 I collected quite extensively in northwestern Wyoming, especially in the Yellowstone Park and the timber-land reserve to the east. The flora of the Big Horn Mountains is very similar to that of the Yellowstone National Park. Nearly one-fourth of the species enumerated below were observed by me. The similarity of the floras of the two regions is confirmed by Mr. Tweedy, who says, "The flora of this region does not differ materially from that of the adjacent main Rocky Mountain range to the west in Wyoming and northwest in Montana." Mr. Tweedy states also that the altitude of the timber line varies from 9,500 to 10,000 feet.

A large part of the collection consists of alpine plants. The following comprises those species found at an altitude of 9,000 to 11,300 feet:

<i>Anemone narcissiflora.</i>	<i>Mertensia alpina.</i>
<i>Artemisia scopulorum.</i>	<i>Myosotis sylvatica alpestris.</i>
<i>Calandrinia grayi.</i>	<i>Omphalodes howardi.</i>
<i>Carex atrata.</i>	<i>Orthocarpus pilosus.</i>
<i>Carex capitata.</i>	<i>Pedicularis parryi.</i>
<i>Carex nova.</i>	<i>Primula parryi.</i>
<i>Carex scirpoidea.</i>	<i>Ptilepida grandiflora.</i>
<i>Dryas octopetala.</i>	<i>Ranunculus eschscholtzii.</i>
<i>Erigeron lanatus.</i>	<i>Salix chlorophylla.</i>
<i>Geum rossii.</i>	<i>Salix glauca villosa.</i>
<i>Kalmia glauca microphylla.</i>	<i>Silene acaulis.</i>

The Carices have been named by L. H. Bailey; the willows by the late M. S. Bebb, who has described the single new variety contained in the collection.

CATALOGUE OF SPECIES.

Clematis alpina occidentalis (Hornem.) Gray in Newton & Jenney, Geol. Surv. Black Hills, 531 (1880); *Atragene occidentalis* Hornem. Hort. Hafn. 520 (1813).

Rocky woods, altitude 2,460 meters (8,000 feet), July 21 (No. 78).

Thalictrum fendleri Engelm. Mem. Amer. Acad. n. ser. iv, 5 (1849).

Altitude 2,150 meters (7,000 feet), July 15 (No. 15).

Anemone narcissiflora L. Sp. Pl. i, 542 (1753).

Common; altitude 2,825 to 3,390 meters (9,500 to 11,000 feet), July 20 (No. 51).

Pulsatilla hirsutissima (Pursh) Britton, Ann. N. Y. Acad. vi, 217 (1891); *Clematis hirsutissima* Pursh, Fl. ii, 385 (1814); *Anemone patens nuttalliana* Gray, Man. ed. 5, 36 (1867); *Pulsatilla nuttalliana* Spreng. Syst. ii, 663 (1825).

Altitude 2,460 meters (8,000 feet), July 20 (No. 52).

Trollius laxus Salisb. Trans. Linn. Soc. viii, 303 (1807).

Bogs and cold woods, altitude 2,460 meters (8,000 feet), July 21 (No. 85).

- Ranunculus eschscholtzii** Schlecht. *Animad. Ran.* ii, 16, t. 1 (1820).
Altitude 3,390 meters (11,000 feet), July 15 (No. 29).
- Caltha leptosepala** DC. *Syst.* i, 310 (1818).
Cold bogs; altitude 3,200 meters (10,400 feet), July 20 (No. 45).
- Delphinium menziesii** DC. *Syst.* i, 355 (1818).
Grassy slopes, altitude 2,215 meters (7,200 feet), July 21 (No. 75).
- Berberis aquifolium** Pursh, *Fl.* i, 219 (1814); *Berberis repens* Lindl. *Bot. Reg.* 14, t. 1176 (1828).
Open woods, altitude 2,460 meters (8,000 feet), July 21 (No. 79).
- Stanleya pinnata** (Pursh) Britton, *Trans. N. Y. Acad.* viii, 62 (1888); *Cleome pinnata* Pursh, *Fl.* ii, 739 (1814).
Sandy hills on Sage Creek near Corbett, altitude 2,000 meters (6,500 feet), July 21 (No. 92).
- Viola labradorica** Schrank, *Denksch. Bot. Ges. Regensb.* ii, 12 (1818); *Viola canina muhlenbergii* (Torr.) Trautv. *Act. Hort. Petrop.* v, 28 (1877); *Viola muhlenbergii* Torr. *Fl. U. S.* i, 256 (1824).
Subalpine, altitude 3,230 meters (10,500 feet), July 15 (No. 21).
- Silene acaulis** L. *Sp. Pl. ed. 2, i*, 603 (1762).
Alpine, altitude 3,390 meters (11,000 feet), July 20 (No. 42).
- Alsine obtusa**; *Stellaria obtusa* Engelm. *Bot. Gaz.* vii, 5 (1882).
Bog, altitude 2,300 meters (7,500 feet), July 20 (No. 59).
- Calandrinia grayi** Britton, *Bull. Torr. Club*, xvii, 312 (1890); *Calandrinia pygmaea* Gray, *Proc. Amer. Acad.* vii, 623 (1873); *Talinum pygmaea* Gray, *Amer. Journ. Sci.* ser. 2, xxxiii, 407 (1862).
Alpine, altitude 3,390 meters (11,000 feet), July 25 (No. 26).
- Claytonia lanceolata** Pursh, *Fl.* i, 175, pl. 3 (1814).
Altitude 2,650 meters (8,600 feet), July 15 (No. 6).
- Geranium incisum** Nutt.; Torr. & Gr. *Fl.* i, 206 (1838).
Moist meadows and wet woods, altitude 2,460 meters (8,000 feet), July 15 (No. 17).
- Geranium richardsonii** Fisch. & Trautv. *Ind. Sem. Hort. Petrop.* iv, 37 (1838).
Wet meadows and open woods, altitude 2,300 meters (7,500 feet), July 20 (No. 58).
- Lupinus argenteus** Pursh, *Fl.* ii, 468 (1814).
Meadows, altitude 2,400 meters (7,800 feet), July 15 (No. 13).
- Lupinus argenteus argophyllus** Wats. *Proc. Amer. Acad.* viii, 532 (1873).
Alpine, altitude 3,390 meters (11,000 feet), July 20 (No. 39).
- Psoralea lanceolata** Pursh, *Fl.* ii, 475 (1814).
Alkali flats near Corbett, altitude 2,000 meters (6,500 feet), July 24 (No. 94).
- Rubus strigosus** Mx. *Fl.* i, 297 (1803).
Crevices of rocks, altitude 2,400 meters (7,800 feet), July 20 (No. 82).
- Dryas octopetala** L. *Sp. Pl.* i, 501 (1753).
Alpine, altitude 3,390 meters (11,000 feet), July 15 (No. 23).
- Geum rossii** (R. Br.) Seringe, DC. *Prodr.* ii, 553 (1825); *Sieversia rossii* R. Br. *Chl. Melv.* 18, tab. c (1823).
Alpine, altitude 3,390 meters (11,000 feet), July 20 (No. 31).
- Geum triflorum** Pursh, *Fl.* ii, 736 (1814).
Altitude 2,650 meters (8,600 feet), July 15 (No. 7).
- Fragaria vesca** L. *Sp. Pl.* i, 494 (1753).
Altitude 2,300 meters (7,500 feet), July 20 (No. 55).

Potentilla dissecta Pursh, Fl. i, 355 (1814).

Subalpine, altitude 3,080 meters (10,000 feet), July 20 (No. 50).

Potentilla glandulosa Lindl. Bot. Reg. xix, t. 1583 (1833).

Rocky places, altitude 2,300 meters (7,500 feet), July 20 (No. 74).

Rosa nutkana Presl, Epim. Bot. 203 (1849).

In meadows, altitude 2,150 meters (7,000 feet), July 15 (No. 14).

Amelanchier alnifolia Nutt.; Torr. & Gr. Fl. i, 473 (1840); *Aronia alnifolia* Nutt. Gen. i, 306 (1818).

Altitude 2,150 meters (7,000 feet), July 21 (No. 73).

Saxifraga integrifolia Hook. Fl. Bor. Amer. i, 249, t. 86 (1834).

Altitude 2,770 meters (9,000 feet), July 20 (No. 34).

Ribes lacustre (Pers.) Poir, Encycl. Suppl. ii, 856 (1811); *R. oxyacanthoides lacustre* Pers. Syn. i, 252 (1805).

Rocky places, altitude 2,615 meters (8,500 feet), July 20 (No. 63); subalpine, altitude 3,230 meters (10,500 feet), July 15 (No. 25).

Ribes viscosissimum Pursh, Fl. i, 163 (1814).

Open rocky places, altitude 2,460 meters (8,000 feet), July 21 (No. 80).

Ribes oxyacanthoides saxosum (Hook.) Coville, Contr. Nat. Herb. iv, 101 (1893); *R. saxosum* Hook. Fl. Bor. Amer. i, 231 (1834).

Altitude 2,460 meters (8,000 feet), July 15 (No. 16).

Sedum stenopetalum Pursh, Fl. i, 324 (1814).

Meadows, altitude 2,400 meters (7,800 feet), July 21 (No. 89).

Mentzelia laevicaulis (Dougl.) Torr. & Gr. Fl. i, 535 (1840); *Bartonia laevicaulis* Dougl.; Hook. Fl. Bor. Amer. i, 221, t. 69 (1834).

Rocky hills near Corbett, altitude 2,000 meters (6,500 feet), July 20 (No. 95).

Valeriana sylvatica Banks, App. Frankl. Journ. ed. 2, 2 [730] (1823).

Woods, altitude 2,460 meters (8,000 feet), July 21 (No. 83).

Erigeron lanatus Hook. Fl. Bor. Amer. ii, 17, t. 121 (1834).

Alpine, altitude 3,390 meters (11,000 feet), July 15 (No. 28).

Erigeron salsuginosus (Richards.) Gray, Proc. Amer. Acad. xvi, 93 (1880); *Aster salsuginosus* Richards. App. Frankl. Journ. ed. 2, 32 [748] (1823).

Meadows, altitude 2,680 meters (8,700 feet), July 20 (No. 36); altitude 2,460 meters (8,000 feet), July 20 (No. 54).

Antennaria carpathica (Wahl.) Hook. Fl. Bor. Amer. i, 329 (1833); *Gnaphalium carpathicum* Wahl. Fl. Carp. 258, t. 3 (1814).

Altitude 2,770 meters (9,000 feet), July 15 (No. 4); altitude 2,090 meters (6,800 feet), July 20 (No. 64).

Antennaria racemosa Hook. Fl. Bor. Amer. i, 330 (1834).

Open dry pine woods, altitude 2,400 meters (7,800 feet), July 21 (No. 81).

Iva axillaris Pursh, Fl. ii, 743 (1814).

Sandy flats along Sage Creek below Corbett, altitude 2,000 meters (6,500 feet), July 24 (No. 90).

Balsamorhiza hookeri incana (Nutt.) Gray, Syn. Fl. i, pt. ii, 266 (1884); *Balsamorhiza incana* Nutt. Trans. Amer. Phil. Soc. ser. 2, vii, 351 (1841).

Grassy hills, altitude 2,460 meters (8,000 feet), July 15 (No. 18).

Ptilepida grandiflora; *Actinella grandiflora* Torr. & Gr. Bost. Journ. Nat. Hist. v, 169 (1817).

Alpine, altitude 3,080 meters (10,000 feet), July 20 (No. 40).

Artemisia scopulorum Gray, Proc. Phil. Acad. xv, 66 (1864).

Alpine, altitude 3,070 meters (10,000 feet), July 15 (No. 32).

Arnica alpina (L.) Olin, Mon. Arn. Upsala (1799); *Arnica montana alpina* L. Sp. Pl. ii, 884 (1753).

Open places, altitude 2,460 meters (8,000 feet), July 20 (No. 61).

Arnica cordifolia Hook. Fl. Bor. Amer. i, 331 (1833).

Woods, altitude 2,460 meters (8,000 feet), July 15 (No. 60).

Senecio pauciflorus Pursh, Fl. ii, 529 (1814); *Senecio aureus borealis* Torr. & Gr. Fl. ii, 442 (1843).

Altitude 2,090 meters (6,800 feet), July 20 (No. 65).

Agoseris gracilentata Greene, Pittonia, ii, 177 (1891); *Troximon gracilens* Gray, Proc. Amer. Acad. xix, 71 (1883).

Altitude 2,680 meters (8,700 feet), July 20 (No. 38). This species is not often collected.

Agoseris scorzoneraefolia Greene, Pittonia, ii, 177 (1891); *Ammogeton scorzoneraefolium* Schrad. Cat. Sem. Goett. 1 (1833); *Troximon glaucum dasycephalum* Torr. & Gr. Fl. ii, 490 (1843).

Meadows, altitude 2,680 meters (8,700 feet), July 20 (No. 37).

Kalmia glauca microphylla Hook. Fl. Bor. Amer. ii, 41 (1834).

Alpine, altitude 3,390 meters (11,000 feet), July 20 (No. 44).

Primula parryi Gray, Amer. Journ. Sci. ser. 2, xxxiv, 257 (1862).

Very common in crevices of rocks and along alpine streams, altitude between 2,825 and 3,390 meters (9,500 and 11,000 feet), July 21 (No. 84).

Peduncles sometimes 25-flowered. Mr. Tweedy remarks: "*Primula parryi* is a marked feature of the flora from 7,000 feet to the highest summits."

Dodecatheon pauciflorum (Durand) Greene, Pittonia, ii, 72 (1890); *Dodecatheon meadia pauciflorum* Durand, Journ. Phil. Acad. ser. 2, iii, 95 (1855).

Cold bogs, altitude 2,150 to 3,390 meters (7,000 to 11,000 feet), July 20 (No. 56).

Omphalodes howardi Gray, Proc. Amer. Acad. xx, 263 (1885); *Cynoglossum howardi* Gray, Syn. Fl. ii, pt. i, 188 (1884).

Alpine, altitude 3,390 meters (11,000 feet), July 20 (No. 43).

Mertensia alpina Don, Hist. Dichl. Pl. iv, 372 (1838).

Alpine, altitude 3,325 meters (10,800 feet), July 20 (No. 49).

Mertensia oblongifolia Don, Hist. Dichl. Pl. iv, 372 (1838).

Along streams, altitude 2,770 meters (9,000 feet), July 20 (No. 33).

Myosotis sylvatica alpestris Koch, Syn. Fl. Germ. Helv. ed. 3, 438 (1857); *Myosotis alpestris* F. W. Schmidt, Fl. Boem. iii, 26 (1795).

Subalpine, altitude 3,230 meters (10,500 feet), July 20 (No. 57); alpine, altitude 3,390 meters (11,000 feet), July 15 (No. 24).

Veronica alpina L. Sp. Pl. i, 11 (1753).

Alpine, altitude 2,770 meters (9,000 feet), July 15 (No. 5).

Castilleja pallida septentrionalis (Lindl.) Gray, Bot. Cal. i, 575 (1876); *C. septentrionalis* Lindl. Bot. Reg. xi, t. 925 (1825).

Altitude 2,090 meters (6,800 feet), July 20 (No. 66).

Orthocarpus pilosus Wats. Bot. King. Surv. 231 (1871).

Damp meadows, altitude 2,150 meters (7,000 feet), July 20 (No. 71); alpine, altitude 3,390 meters (11,000 feet), July 15 (No. 27).

This species is not included in Coulter's Manual of the Rocky Mountain Region. It has been collected in Wyoming before, however, by Letterman, Tweedy, and myself.

Pedicularis contorta Benth. in Hook. Fl. Bor. Amer. ii, 108 (1838).

Grassy slopes, altitude 2,150 meters (7,000 feet), July 20 (No. 67).

These specimens differ from the description in having pink instead of white flowers, and the spikes tardily glabrate instead of glabrous. This has not before been reported from Wyoming; in fact, is not included in Coulter's Manual of the Rocky Mountain Region. The range as given by Dr. Gray in the Synoptical Flora is "Oregon and Idaho." The plant, however, has been collected in western Montana by Dr. Watson.

Pedicularis parryi Gray, Amer. Journ. Sci. ser. 2, xxxiv, 250 (1860).

Alpine, altitude 3,390 meters (11,000 feet), July 15 (No. 30).

Pedicularis scopulorum Gray, Syn. Fl. ii, pt. i, 308 (1878).

Subalpine, altitude 3,230 meters (10,500 feet), July 15 (No. 22); grassy slopes, alpine, altitude 3,390 meters (11,000 feet), July 20 (No. 48); altitude 2,090 meters (6,800 feet), July 21 (No. 72).

Abronia micrantha Torr. in Frem. First Rep. 96 (1843); *A. cycloptera* Gray, Amer. Journ. Sci. ser. 2, xv, 319 (1853).

Sand hills along Sage Creek below Corbett, altitude 2,000 meters (6,500 feet), July 21 (No. 96).

Corispermum hyssopifolium L. Sp. Pl. i, 4 (1753).

Alkaline flats along Sage Creek below Corbett, altitude 2,000 meters (6,500 feet), July 21 (No. 93).

Polygonum bistortoides Pursh, Fl. i, 271 (1814).

Altitude 2,400 meters (7,800 feet), July 15 (No. 8).

Rumex geyeri (Meisner) Trelease, Mo. Bot. Gard. 1892, 78 (1892); *R. engelmanni geyeri* Meisner, in DC. Prodr. xiv, 64 (1856); *Rumex paucifolius* Nutt.; Wats. Bot. King. Surv. 314 (1871).

Crevices of rocks, altitude 2,770 meters (9,000 feet), July 20 (No. 35).

Salix barrattiana tweedyi¹ Bebb, var. nov.

"Leaves at first thinly overspread on the upper surface with floccose hairs, soon smooth and green both sides; capsules glabrous." In bogs and along mountain streams, altitude 2,460 to 3,080 meters (8,000 to 10,000 feet). Head of Big Goose Creek, Big Horn Mountains, July 15 (Nos. 11 and 12).

"*Salix barrattiana* is one of the rarest of North American willows. For more than fifty years it was known only from Drummond's specimens in the Hookerian herbarium. Type locality, 'Alpine swamps in the Rocky Mountains.' It was rediscovered by Prof. John Macoun, July 28, 1885, 'in thickets at high elevations, Kicking Horse Lake,' * * * and later, August, 1890, was collected in the same locality by Mr. James Macoun, in fine specimens of both fruit and mature leaves.

"These later collections only confirmed the characterization originally given the species by Hooker; among the numbers of the Lanatae group *S. barrattiana* still remained conspicuous for its 'silky-pubescent' leaves ('silvery-silky when young') and capsules cano-sericeus. That there should be more or less variation in this vesture

¹The description of this variety and the notes upon *S. barrattiana* and *S. glauca* as found in the text were sent me in a letter by the late M. S. Bebb in May, 1894. In this letter he speaks of the willows as follows: "I found Mr. Tweedy's collection of exceptional interest, all the forms differing more or less from familiar Rocky Mountain prototypes, and one of them, which you will see, I have designated *Salix barrattiana [tweedyi]*, not only a capital find so far as the species alone is concerned, but presenting furthermore a very striking variation from the 'silvery-silky' typical form." The varietal name used by Mr. Bebb being preoccupied has been changed to the one given above.

was to be expected from what is known of the two most nearly allied species. *S. hookeriana* was first described as having 'very smooth' capsules, but subsequent observations have shown that they are more frequently tomentose, and a like variation, though in less degree, prevails in the case of *S. richardsonii*; but in neither is this variation so pronounced as to lessen the surprise with which we find the one species of the group heretofore most conspicuous for its silky vesture appearing, as in Mr. Tweedy's specimens, so markedly glabrate. The leaves, and in fact the aments as well, bear a very close and deceptive resemblance to some forms of *S. barclayi*; but the aments are closely sessile, terminal as well as lateral, the styles longer and the stigmas bifid; the leaves alone could scarcely be distinguished one from the other."

The type specimens have been deposited in the United States National, the Gray, and the Kew herbariums.

Salix brownei petræa (Anders.) Bebb, Bot. Gaz. xvi, 107 (1861); *Salix petræa* G. Anders. in Forbes, Salict. Woburn. 193, t. 97 (1829).

Subalpine, altitude 3,230 meters (10,500 feet), July 15 (No. 20).

Salix chlorophylla Anders. Vet. Acad. Handl. Stockh. vi, no. 1, 138 (1867).

Alpine; wet cold slopes, altitude 3,080 meters (10,000 feet), July 20 (No. 47).

Salix glauca L. Sp. Pl. ii, 1019 (1753).

"Alpine form. This might with propriety, from the description alone, be referred to *S. glauca alpina* Anders. DC. Prodr. xvi, pt. 2, 281, but the author cites *S. glauca macrocarpa* Ledeb., as a synonym and apparently with the illustration given in Ledebour's Flora Rossica, fig. c, tab. 468. Our plant has little in common as a specialized form of *S. glauca*."

Subalpine, altitude 3,230 meters (10,500 feet), July 15 (No. 19).

Salix glauca villosa (D. Don) Bebb; *Salix villosa* D. Don; Hook. Fl. Bor. Amer. ii, 144 (1838).

In wet bogs and on wet, cold slopes, altitude 2,770 to 3,390 meters (9,000 to 11,000 feet), July 20 (Nos. 41 and 46).

Salix myrtilifolia curtiflora (Anders.) Bebb; *S. curtiflora* Anders. Oefvers. Vet. Akad. Foerhandl. xv, 130 (1858).

In bogs, altitude 2,560 meters (8,200 feet), July 20 (No. 62).

Populus deltoides Marsh. Arb. Amer. 106 (1785); *P. monilifera* Ait. Hort. Kew. ed. 1, iii, 406 (1789).

Sage Creek, near Corbett, altitude 2,000 meters (6,500 feet), July 21 (No. 91).

Allium brevistylum Wats. Bot. King. Surv. 350 (1871).

Bogs, altitude 2,300 meters (7,500 feet), July 21 (No. 86).

Allium schoenoprasum L. Sp. Pl. i, 301 (1753).

Bogs, altitude 2,300 meters (7,500 feet), July 21 (No. 87).

Juncooides campestre (L.) Kuntze, Rev. Gen. Pl. ii, 722 (1891); *Juncus campestris* L. Sp. Pl. i, 329 (1753); *Luzula campestris* DC. Fl. Fr. iii, 161 (1805).

Altitude 2,400 meters (7,800 feet), July 15 (No. 9).

Carex atrata L. Sp. Pl. ii, 976 (1753).

High alpine, altitude 3,450 meters (11,300 feet), July 21 (No. 88); meadows and bogs, altitude 2,460 meters (8,000 feet), July 21 (No. 76).

Carex capitata L. Syst. ed. 10, ii, 1261 (1759).

Alpine, 3,390 meters (11,000 feet), July 15 (No. 3).

Carex festiva Dew. Amer. Journ. Sci. xxix, 246 (1836).

Altitude 2,150 meters (7,000 feet), July 20 (No. 70).

Carex hoodii Boott, Hook. Fl. Bor. Amer. ii, 211, t. 211 (1839).

Altitude 2,150 meters (7,000 feet), July 20 (No. 69).

Carex nova Bailey, Journ. Bot. xxvi, 322 (1888).

Altitude 3,390 (11,000 feet), July 15 (No. 1).

Carex scirpoidea Mx. Fl. Bor. Amer. ii, 171 (1803).

Alpine, altitude 3,390 meters (11,000 feet), July 15 (No. 2).

Carex tolmiei subsessilis Bailey, Mem. Torr. Club, i, 47 (1889).

Altitude 2,400 meters (7,800 feet), July 15 (No. 10); altitude 2,150 meters (7,000 feet), July 20 (No. 68).

Savastana odorata (L.) Scribner, Mem. Torr. Club, v, 34 (1894); *Holcus odoratus* L. Sp. Pl. ii, 1048 (1753); *Hicrochloa borealis* Roem. & Schult. Syst. ii, 513 (1817); *Holcus borealis* Schrad. Fl. Germ. i, 252 (1806).

Altitude 2,460 meters (8,000 feet), July 20 (No. 53).