

5 toothed and the teeth erect. Style-branches filiform to subulate-linear. strongly hirsutulous. Achenes subterete, distinctly 5-8 costate. Pappus a single series of brownish barbellate-scarious and rather fragile or deciduous bristles.

O. alpigenum Greene l. c. 147. *Aster alpigenuus* Gray *Aster pulchellus* Eaton? Scapiform stems spreading and as-urgent, 2-4 inches long tomentose at the summit: radical leaves from lingulate-spatulate to narrowly linear, glabrous, obtuse, nerveless, 1-3 inches long, 3-4 lines wide near the apex: heads broad, fully 6 lines high and broad: bracts of the involucre not very unequal, usually pubescent, linear, acute: rays purple, 6-8 lines long, style appendages linear-subulate: achenes linear, striate glabrate below, hirsute near the top. On the highest peaks of the Cascade mountains.

O. Andersoni Greene l. c. *Aster Andersoni* Gray. Scapiform stems erect, 8-14 inches high: radical leaves lingulate-linear or slightly broader upward, grass-like, mostly acute, 2-10 inches long, 2-3 lines broad, nervose when dry glabrous; upper cauline reduced to scattered subulate bracts: heads broad, fully half inch high and wide: bracts of the involucre linear, acutish, rather loose, often tomentulose when young: style appendages filiform: rays rather numerous, purple or violet: achenes oblong-linear, soft villous. In wet mountain meadows. Coast mountains, near Waldo, Oregon, and along the whole length of the Sierra Nevadas.

19 a IONACTIS Greene Pitt. iii, 245.

Low tufted perennials, often lignescent at base, never stoloniferous, or with radical leaves. Stems clothed equally with narrow, rigid, one nerved and veinless leaves and terminating in one or more showy heads with violet rays. Involucre of well imbricated bracts of coriaceous texture without herbaceous tips, appressed even to the tips. Achenes narrow, villous. Pappus double the more copious inner series bristly, the outer short and setulose.

I. alpina Greene l. c. *Aster Scopulorum* Gray. Stems several from a suffrutescent base, simple tomentose-pubescent, naked at the summit 3-4 inches high: leaves crowded, erect, linear-oblong, mucronulate, rather rigid scabrous, 1-nerved, flat, with cartilaginous minutely serrulate-scarious margins, about 5 lines long, by 1-2 lines broad: heads solitary, 4-6 lines high; bracts of the hemispherical involucre linear, acute, 1-nerved, with scarious margins, pubescent, imbricated in about 3 series: rays violet, 12-15: exterior pappus of rather numerous setaceous bristles. Style appendages subulate-linear as long as the stigmatic portion: achenes compressed, silky-villous. On high rocky ridges of Southeastern Oregon to the Rocky mountains.

I. stenomerus Greene l. c. *Aster stenomerus* Gray. "More slender, 6-10 inches high, green, minutely scabrous: solitary, naked pedunculate head larger: leaves all linear, (half to full inch long, a line wide), acutely mucronate, hardly margined: involucre broad; its bracts barely in two moderately unequal series, linear, acute or acuminate, thinish, often pubescent: rays pale violet, over half inch long; outer pappus setulose, style appendages elongated, subulate-linear or narrower: achenes flat, with strong marginal nerves. On Rocky mountains of Montana and Idaho."

20 MACHÆRANTHRA Nees. Ast. 224.

Annual biennial, or perennial divaricately branched herbs with

pinnatifid or rarely entire leaves and solitary or corymbosely or racemously disposed heads of purple-rayed flowers. Heads many flowered, the rays numerous, in a single series, pistillate; those of the disk tubular and perfect, with 5 short erect teeth. Bracts or the obovoid or turbinate involucre closely imbricated for the most part in several series, linear rigid, somewhat carinate, unequal, with herbaceous squarrose-spreading or recurved tips: receptacle flat, somewhat alveolate; the alveoli toothed or lacerate. Style-appendages filiform subulate or linear-lanceolate, minutely hirsute. Achenes turbinate or cuneiform, often compressed, pubescent or silky. Pappus of numerous scabrous and rather rigid very unequal bristles.

M. Shastensis Gray Proc. Am. Acad. vi, 539. *Aster Shastensis* Gray. Canescent with a close scurfy tomentum: stems slender, 4-8 inches high from a perennial root, paniculately branched: leaves linear-spatulate to linear, 1-2 inches long with a few teeth near the middle: heads rather numerous, scattered, 5-6 lines high: bracts of the involucre linear, acute: the outer ones shorter and often with spreading tips: rays 12-20, violet 3-6 lines long: style appendages slender-subulate: pappus simple and soft: achenes narrow, hardly at all compressed, silky-pubescent. Southeastern Oregon (Camp Polk) to Northeastern California.

M. eradiata *Aster Shastensis* var. *eradiatus* Gray. Whole plant somewhat glaucous and canescently puberulent: stems stoutish, 6-10 inches high from a stout perennial root: leaves oblanceolate 1-2 inches long, 2-6 lines broad, attenuate below to a margined petiole, obtuse or acutish minutely apiculate, entire or sparsely serrate: heads rather numerous, 4-5 lines high: bracts of the involucre linear, acute, in 3-4 ranks, the outer successively shorter and more subulate: rays wanting: achenes sparsely pubescent. On high rocky ridge of the Siskiyou and Scott's mountains.

M. attenuata. Whole plant cinereous: stems stoutish, 1-2 feet high from a large perennial root: cauline leaves linear, reduced above to subulate bracts, all acute and apiculate: heads numerous terminating in the branchlets: involucre hemispherical, its linear bracts well imbricated in several series, the outer successively shorter and passing into the ordinary bracts of the branchlets, the inner ones attenuate above to a slender bristle: rays dark purple, numerous 5-6 lines long: style appendages slender-subulate: pappus simple, of soft capillary bristles: young achenes silky-canescens. On sandy plains and banks near The Dalles, Oregon.

20 d BRACHYACTIS Ledeb. Fl. Ross, ii, 495.

Annual or perennial low herbs with mostly entire leaves and solitary or racemose-paniculate heads of inconspicuous flowers. Heads many-flowered heterogamous; the rays very numerous and occupying more than one series, fertile. Involucre loosely imbricated, in few series of herbaceous bracts or the innermost somewhat scabrous. Receptacle flat, naked. Style appendages lanceolate. Achenes more or less compressed. Pappus simple of copious fine and soft capillary bristles.

B. frondosa Gray Proc. Am. Acad. viii, 647. *Aster frondosus* G. & T. Glabrous or nearly so: stems 1-12 inches high or more from an annual root branching from the base: leaves spatulate linear, 1-2 inches long, the uppermost passing into the involucre bracts, the lower attenuate below