

heads few terminating the branches, one-third inch high: involucre hemispherical; the bracts fewer-ranked and with slightly spreading greenish tips: akenes short, sericeous-canescenscent. — *Eriocarpum grindelioides*, Nutt. Trans. Am. Phil. Soc. l. c. 321. — Rocky Mountains and adjacent plains, north to Idaho and Saskatchewan, south to New Mexico and Arizona; first coll. by *Nuttall*.

* * Heads radiate, with rays not rarely neutral or sterile, or in one species commonly discoidal by the diminution of the ligules: involucre well imbricated, of firm texture, the bracts either coriaceous with herbaceous tips or coriaceo-foliaceous: akenes (with two exceptions) glabrous and narrow: pappus capillary but rigid: style-appendages long and slender, acute or acutish: perennials, rigid-leaved. — § *Pyrrocomma*, Gray, Pl. Wright. i. 98. *Pyrrocomma* & *Homopappus*, in part, Nutt. Trans. Am. Phil. Soc. vii. 330, 333.

+ Shrubby: rays conspicuous but sterile: appendage of the slender style-branches of the length and breadth of the stigmatic portion: akenes very glabrous, narrow, compressed, 4-nerved.

A. Berbéridis. Suffruticose, a foot or two high: flowering branches somewhat virgate, when young tomentose-pubescent, equably leafy, bearing numerous and racemose or sometimes solitary heads: leaves oval, very obtuse, spinulose and evenly multidentate, half-clasping by an abrupt somewhat adnate base (half to full inch long), coriaceous, with conspicuous midrib but obscure veins: involucre broadly turbinate; its bracts numerous, in successively shorter ranks, broadly linear or outermost oblong, smooth, all with very obtuse and short rather appressed green tips: rays numerous, a quarter to nearly half an inch long, seldom styliferous: pappus merely sordid. — All Saints Bay, Lower California, so near that it may be expected within the U. S. border, *Parry, Miss Fish*.

+ + Herbaceous: style-appendages from subulate-filiform to narrowly subulate, much longer than the stigmatic portion.

++ Heads large and discoid, the sterile rays being hardly apparent or very small for the size of the head (when styliferous the style-branches sometimes tipped with a hispid appendage!): akenes completely glabrous and smooth, slender but flattish, 4-costate or nerved, often finely striate: rigid leaves commonly spatulate or lanceolate, on the same plant either entire or sparsely spinulose-toothed. — *Pyrrocomma*, Hook.

— **A. carthamoides**, GRAY. Commonly a foot high, rather stout and leafy, scabro-puberulent when young, becoming smooth, bearing a solitary terminal large head and sometimes one or two in axils: leaves from spatulate to oblong or lanceolate: involucre hemispherical, half to three-fourths inch high, often leafy-subtended at base; its proper bracts coriaceous-rigid, from oblong to broadly lanceolate or innermost linear, more or less scarious-margined, most of them tipped with an abrupt mucro or cusp, the outer commonly loose and becoming leaf-like, either entire or spinulose-denticulate: rays almost always present and rather numerous; but their ligules inconspicuous, being short, involute, and concealed in the at length rufous or fulvous pappus. — Proc. Acad. Philad. 1863, 65. *Pyrrocomma carthamoides*, Hook. Fl. i. 306, t. 107; Torr. & Gray, Fl. ii. 243. — Dry plains and hills, Oregon, Washington Terr., and Idaho; first coll. by *Douglas*. Polymorphous species: the extremes are

Var. máximus. Robust, leafy, sometimes 2 feet high: radical leaves obovate or oval, 3 to 7 inches long; cauline oblong, with partly clasping base: heads ample, in fruit an inch high and broad: involucre of very numerous and broad or broadish bracts: rays sometimes more evolute, but small. — *Pyrrocomma radiata*, Nutt. Trans. Am. Phil. Soc. vii. 333; Torr. & Gray, l. c. — Of the same district, first coll. by *Nuttall*.

Var. Cusickii. Smaller: stems only a span or two high, ascending, few-leaved: leaves mostly spatulate-lanceolate: head three-fourths to nearly inch high in fruit, but narrow and much fewer-flowered: bracts of the involucre correspondingly fewer, lanceolate, mostly acute or acuminate. — Union Co., Oregon, flowering earlier (in June), *Cusick*. Perhaps a distinct species, but appears to pass into the smaller forms of the type.

++ ++ Heads middle-sized to small, evidently radiate; the exerted rays often infertile but styliferous: plants comparatively slender and more capituliferous.

— Pubescence either cottony-tomentose and deciduous or none: leaves firm-coriaceous or rigid; cauline and mostly the radical lanceolate, the former disposed to be sparse or small at the upper part of stem: akenes or ovaries not rarely with some villous pubescence. — *Homopappus*, Nutt., excl. *H. uniflorus*.

A. racemósus, TORR. Stems usually virgate and simple, rigid, a foot or two high, leafy: leaves lanceolate or radical, sometimes oblong-spatulate (4 to 6 inches long, tapering into a

(petiole), entire or denticulate or on same plant spinulose-serrate: heads several or rather numerous, racemously or spicately disposed along naked upper part of the stem or (either singly or 2 or 3 together) in axils of upper leaves: involucre (half-inch or less high) from hemispherical to turbinate-campanulate; its bracts rigid, well-imbricated, and with short abrupt mostly mucronate-pointed or apiculate green tips, these either erect or somewhat squarrose: rays (8 to 20) 2 or 3 lines long. — Torr. in Sitgreaves Rep. 162, as to syn., &c., probably not as to the specimen. *Homopappus racemosus*, Nutt. Trans. Phil. Soc. 1. c. 332. *Pyrracoma racemosa*, Torr. & Gray, Fl. ii. 244. The type is a form with virgate stem, bearing 3 to 9 racemously or spicately disposed and approximate or remote heads, of the larger size, with involucre half or two-thirds inch broad as well as high, and akenes (or at least ovaries) more or less beset with villous hairs. *A. lanceolatus*, var. *strictus*, Gray, Proc. Am. Acad. viii. 389, is a form with more villous akenes. — Plains of Oregon, *Nuttall, Hall, &c.*: also Northern California, *Greene*, where it varies with many and correspondingly smaller heads, these glomerate in numerous axils, and the campanulate involucre disposed to be squarrose. Also it evidently passes into

Var. glomerellus. Heads narrower and smaller, disposed to be fascicled in twos or threes in the axils of small upper leaves, or at summit of stem or short peduncles: involucre often turbinate: akenes glabrate or sometimes glabrous: herbage somewhat more disposed to be balsamic-viscid. — *Homopappus glomeratus, paniculatus, & argutus*, Nutt. l. c. 331. *Pyrracoma glomerata, paniculata, & arguta* (the latter a stouter and more leafy state), Torr. & Gray, l. c. *Aplopappus paniculatus*, Gray, Bot. Calif. i. 311. — Plains of the Columbia, E. Oregon, *Nuttall, Nevius, Cusick, &c.* N. W. Nevada, *Anderson, Lemmon.*

Var. virgatus. Slender and smaller, with strict virgate stems and narrow leaves: heads as in the type, but only half the size, few, or in depauperate plants solitary. — *A. paniculatus*, var. *virgatus*, Gray, Bot. Calif. i. 312. — Eastern part of the Sierra Nevada, California, *Bolander, Lemmon, &c.* Passes into

Var. stenocephalus. This is to var. *glomerellus* what var. *virgatus* is to the type: it has scattered heads; these narrow, comparatively few-flowered; the bracts of the oblong-turbinate involucre rigid and more pointed. — *A. paniculatus*, var. *stenocephalus*, Gray, Bot. Calif. l. c. — With preceding var., *Lemmon.*

A. apargioides, GRAY. Low, with numerous ascending or diffuse few-leaved or sometimes scapiform stems from a thick caudex, a span to a foot high, bearing solitary or few pedunculate heads: leaves lanceolate or the radical broader, from denticulate to laciniatedentate or even pinnatifid: involucre hemispherical (a third to half an inch high); its bracts lanceolate to narrowly oblong, mostly obtuse, imbricated in few rather loose ranks, outer sometimes equalling the inner: rays 20 or more, oblong, comparatively large, commonly fertile: pappus softer. — Proc. Am. Acad. vii. 354, & Bot. Calif. i. 311. — Eastern parts of the Sierra Nevada, California and adjacent Nevada, from Sierra Co. to San Bernardino Mountains; first coll. by *Bolander.*

= Pubescence not tomentose nor floccose, but rather villous and persistent: leaves thinnish, oblong, more regularly and closely spinulose-serrate, numerous and approximate on the stem or branches up to the heads or nearly: rays fertile.

A. hirtus. A foot or less high, hirsutely pubescent and villous, even to the involucre, or at base lanuginous: stems rather simple, ascending, bearing few or scattered pedunculate heads: leaves membranaceous, pectinately serrate with long and salient slender-subulate teeth; cauline an inch or two long, radical sometimes 4 inches long and with margined petioles: involucre hemispherical, half-inch or more high; its bracts rather loose, linear, acuminate or acute, all about equalling the disk, the outer mainly foliaceous: rays 20 or more, conspicuous: akenes rather short, sericeous-pubescent: pappus soft, whitish. — Baker Co., Oregon, *Cusick.* Washington Terr., *Brandegee.* Might be arranged in a following subdivision, with *A. uniflorus*, but has the habit of the next.

A. Whitnéyi, GRAY. About a foot high, somewhat minutely villous-pubescent, or foliage glabrous, branching, bearing rather numerous fasciculate-panicled and mostly sessile heads: leaves inch or less long, spinulose-dentate, those subtending the lower heads hardly smaller than the main cauline ones: involucre narrow, oblong-turbinate (about half-inch long), glabrous; its bracts lanceolate, acute, appressed, subcoriaceous, with short and sometimes indistinct green tips, well imbricated, outer successively shorter: rays 5 to 8, with oblong and small ligules, little surpassing the 10 to 20 disk-flowers: akenes oblong-linear, glabrous,

a woolly form. — Plains of the Saskatchewan to Montana, and along the mountains to Utah and Colorado; first coll. by *Drummond*. Varies much in size, especially of the head; in the larger forms much broader than high, and very many-flowered.

A. lanceolátus, TORR. & GRAY, l. c. Habit of the preceding: stems generally more leafy and bearing 3 to 15 heads; these when few subcorymbose, when more numerous racemose or paniculately disposed: involucre in the type fully half-inch high; its bracts rather closely imbricated in 3 or 4 unequal series, lanceolate, acutish, with short green tips and whitish coriaceous base; outer successively shorter, occasionally some of them longer and more herbaceous. Such forms, when heads are very few or solitary, effect a transition to the foregoing species. — Eaton, Bot. King Exp. 160. *Donia lanceolata*, Hook. l. c. *Homopappus (Actinophoria) multiflorus*, Nutt. l. c. — Plains of Saskatchewan to the borders of Brit. Columbia, Idaho, and N. Nevada; first coll. by *Drummond*. The more robust form, with few and large heads, usually corymbosely disposed, and rays 30 or 40 in number and half-inch long, passes freely into

Var. Vaséyi, PARRY in Eaton, l. c., with heads a third or quite half smaller, disposed to be racemose, and involucre closer. — Saskatchewan to Wyoming, Utah, and Colorado.

Var. tenuicaúlis (*A. tenuicaulis*, Eaton, l. c.), is an extreme very slender and marked variety, sometimes a foot high and bearing several racemose heads, sometimes more depauperate and only a span high: heads only 3 or 4 lines high: rays correspondingly reduced: involucre close, with short green tips. — Alkaline meadows, Nevada and Utah, first coll. by *Watson*. Apparently a form with lacinate leaves, in alkaline soil, E. Oregon, *Cusick*.

+ + Perennial herbs from a lignescent multicapital caudex or suffruticose base, with slender and branching stems, leafy up to the small heads: leaves all narrow and quite entire: involucre turbinate or obovate (4 or 5 lines high); its bracts well imbricated, appressed, chartaceo-coriaceous, with short and abrupt acute green tips, or these wanting in some: rays 7 to 10, with oblong ligules: disk-flowers not numerous: style-appendages ovate to narrow-lanceolate (thus distinguished from the *Ericameria* section, to which there is an approach).

A. multicaúlis, GRAY. Very dwarf, tufted, tomentulose, but early glabrate and smooth: stems 1 to 3 inches high from a ligneous caudex, simple or forked, bearing 3 or 4 leaves and few heads: leaves narrowly linear, or the lowest obscurely spatulate (about inch long): bracts of the involucre large and rather few (9 to 14), from ovate to oblong-lanceolate, cuspidate-acuminate, marked with a green spot below the slender cusp, or the outermost with a larger foliaceous tip: rays few: style-appendages ovate-triangular, half the length of the stigmatic portion: pappus scanty, somewhat fulvous. — Am. Nat. viii. 213. *Stenotus multicaulis*, Nutt. Trans. Am. Phil. Soc. l. c. 335; Torr. & Gray, Fl. ii. 238. — On rocks, Rocky Mountains of N. W. Wyoming, *Nuttall, Geyer, Parry*.

A. Hállii, GRAY. A foot or two high, paniculately branched from a suffrutescent or even more woody base, glabrous, very leafy: leaves lanceolate or linear, short (larger over inch long, 3 lines wide and spatulate-lanceolate), rather rigid, mostly scabrous (at least the margins); midrib prominent beneath and commonly some lateral veins: heads paniculate, terminating short branchlets or sometimes rather congested: involucre bracts broadish-linear, imbricated in several ranks, the outer successively shorter, the short tips merely mucronate-acute: rays about 10: style-appendages lanceolate, rather obtuse, about the length of stigmatic portion: pappus barely sordid. — Proc. Am. Acad. viii. 389, first described from mere branchlets, and these not well developed. — Base of the Cascade Mountains, Oregon and Washington Terr., *Hall, Howell, Suksdorf, Pringle*.

+ + + Annual or perennial herbs, branching, leafy: leaves not rigid, spinulosely dentate or pinnatifid, the teeth and tips commonly bristle-tipped: heads middle-sized or small: involucre hemispherical, of well-imbricated narrow bracts, the outer successively shorter: rays conspicuous, mostly numerous: pappus rather rigid, its bristles very unequal in size and strength. (Analogue of *Machæranthera* in *Aster*.) — § *Blepharodon*, DC., excl. spec.

+ + Akenes short-turbinate, not compressed, obscurely 5–10-nerved under the canescent villosity: style-appendages short and broad, ovate or deltoid: rays 18 to 25, deep golden yellow: leaves not deeply cleft.

A. aúreus, GRAY. Perennial? and branched from the base, at first lightly lanuginous, minutely scabrous-glandular, a span or two high: leaves all narrowly linear, sparingly pinnatifid-dentate, at least toward the base (an inch or less long): heads 4 lines high: bracts of the involucre linear-oblong, mostly obtuse and mucous; the outer ones with short deltoid-