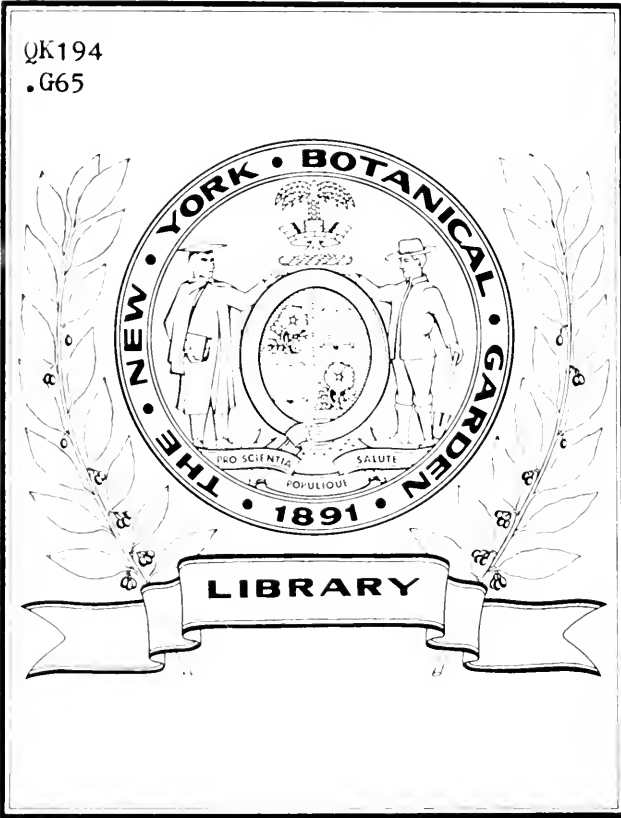


QK194
.G65

Gray, Asa
Botanical contributions. 1865

QK194
.G65



BOTANICAL CONTRIBUTIONS,

BY ASA GRAY.

Extracted from the Proceedings of the American Academy of Arts and Sciences,
Vol. VI.

[ISSUED NOVEMBER, 1865.]

Characters of some New Plants of California and Nevada, chiefly from the Collections of Professor William H. Brewer, Botanist of the State Geological Survey of California, and of Dr. Charles L. Anderson, with revisions of certain Genera or Groups. By ASA GRAY.

The diagnoses of two or three of the following species, of the collections of 1860–1862, have already been published in the Proceedings of the California Academy of Natural Sciences, Vol. 3, pp. 101–103. The plants described are from the collections of the Geological Survey when not otherwise specified.

ARABIS (Lomaspora) PLATYSPERMA: humilis e basi suffrutescens; foliis cum caule pube stellata canescentibus spathulatis integerrimis, summis oblongis arcte sessilibus obtusis; racemo paucifloro; (petalis roseis); siliquis arrectis rectisque lato-linearibus ($1\frac{1}{2}$ – $2\frac{1}{2}$ poll. longis, lin. $2\frac{1}{2}$ latis) acuminatis planis, valvis laxe reticulatis; stigmatibus sessilibus; seminibus amplissime alatis. — Sierra Nevada, on Mount Dana, alt. 13,227 feet, and above Ebbett's Pass.

STREPTANTHUS POLYGALIOIDES: *Euclisia*, *Dipteroclæna*, glaber, paniculato-ramosus; foliis filiformibus integerrimis, nonnullis basi subamplexante sagittatis; racemis spiciformibus; calyce luteo petala purpurascens subæquante, sepalis duo exterioribus maxime dilatatis subcordato-rotundatis, interioribus oblongo-lanceolatis acuminatis; siliquis (immaturis) angustissime linearibus stylo brevi apiculatis. — On very dry hillsides, in serpentine soil, along the Tuolumne River. A remarkable species, with the petals, &c., of the *Euclisia* section, but, on account of its peculiar calyx, rather to be distinguished as of a separate section. The light-yellow and apparently scarious petaloid sepals are of two very different shapes; the inner pair nearly as in other species of the genus; but the outer much dilated, apparently nearly flat, and not unlike the wings of some species of *Polygala*, about 3 lines in length and breadth, and as it were enclosing the rest of the flower; the tips of the purplish or white and purple petals, and the oblong-sagittate blunt anthers barely exerted. A pair of the filaments frequently connate. The plant is probably an annual.

STREPTANTHUS PROCERUS, Brewer. *S. flavescens*, Gray, in Proceed. Amer. Acad. 6, p. 186, as to the "very large or luxuriant form

gathered at the coal-mine near Monte Diablo by Dr. Brewer." This is doubtless a truly distinct species, growing six or seven feet high in alluvial soil, the greenish-white flowers fully half an inch long, the stem glabrous and glaucous.

THELYPODIUM (*PACHYPODIUM*, Nutt.) *BRACHYCARPUM*, Torr. (in Wilkes's S. Pacif. Ex. Exped. Bot. W. Amer. t. 1); caule virgato; foliis caulinis parvis crebriusculis sagittatis integerrimis erectis; racemo elongato angustissimo spiciformi; pedicellis calyce brevioribus; sepalis linearibus; petalis angustissime linearibus; antheris mucronatis; siliquis semi- aut sub-pollicaribus, valvis carinato-uninerviis.—Valley of Mono Lake, alt. 6,500 feet. This well-marked species having been rediscovered by Prof. Brewer, a diagnosis is here given, since that of Dr. Torrey is still unpublished, and the plate is little known. Dr. C. L. Anderson has collected it in Nevada, with a very long virgate spike, and with some mature fruit.

SMELOWSKIA? *CALIFORNICA*: cinereo-puberula, glabrata; radice ut videtur annua vel bienni; caule 1-2-pedali; racemis demum paniculatis; foliis pinnatipartitis, segmentis 5-7 oblongis obtusis sæpe 3-5-lobatis; floribus parvis luteis; calyce deciduo; siliculis pusillis ellipticis oblongisve utrinque acutis stylo brevissimo apiculatis, loculis 1-2-spermis.—On Mount Dana, alt. 10,000 feet, June, in flower; and near Mono Lake, alt. 6,450, July, with young fruit.—With its annual or biennial root, and much the habit of *Sisymbrium canescens*, this would render the genus *Smelowskia* yet less natural; but here it technically belongs. The flowers are only a line long; the elliptical, ovoid, or somewhat fusiform silicles one or two lines long; valves very obscurely one-nerved; cells 2-ovulate. Young seeds oblong.

DRABA EURYCARPA: multiceps, nana, stellato-tomentosa; foliis spathulatis integerrimis in caudice rosulato-confertis; scapo leviter exserto paucifloro; siliquis ovatis stylo subulato acuminatis glabris ($\frac{1}{2}$ - $\frac{3}{4}$ -pollicaribus).—On a peak of the Sierra Nevada south of Sonora Pass, alt. 11,500 feet. In fruit only, the seeds and most of the valves shed. The tufts of leaves (half an inch in length) rise only about an inch above the surface of the ground, and above them the large and silvery partitions of the pods are very conspicuous. Funiculi short, about 10 in each cell.

CLEOMELLA PARVIFLORA: tenuis, diffusa; foliolis cum bracteis simplicibus linearibus; floribus parvis; pedicellis filiformibus elongatis;

capsula obovato-globosa, stipite (vix calycem superante) styloque brevissimis; seminibus levibus.—Nevada, near Carson City, Dr. C. L. Anderson. The foliage nearly as in *C. tenuifolia*, but a more delicate plant, only about a span high, the flowers and pods only half the size, and the stipe much shorter than in any other species, not half a line in length. Dr. Anderson also sends *C. longipes*, Torr., from Nevada.

LINUM § HESPEROLINON. Spec. 3 Californicæ, annuæ, trigynæ, capsulis 6-locellatis; unguibus petalorum basi tri-appendiculatis. Styli a basi liberi, stigmatibus parvis. Dentes inter stamina nulli. Sepala ovato-lanceolata, herbacea, immarginata, vix uninervia. Flores brevipedicellati. Folia angustissime linearia, subfiliformia, plerumque alterna. Caulis inferne simplex, strictus.

LINUM CALIFORNICUM (Benth., Pl. Hartw. p. 299): glabrum; caule superne in cymam effusam repetito-dichotomam soluto; glandulis stipularibus geminis; sepalis margine subglandulosis; petalis albis roseisque.—Dr. Torrey, in Bot. Mex. Boundary, first noticed the trigynous character, which it shares with the following new Californian species. All three exhibit three little teeth or auricles at the base of the claw of the petals, one on each margin and one adnate to its inner face. The coincidence of these characters invalidates the technical distinction of the genus *Reinwardtia*,—in which, however, the teeth or appendages of the petals according to Planchon (in Lond. Jour. Bot. 7, p. 522), or two of the three according to Bentham and Hooker (Gen. Pl. p. 243), are dorsal.

LINUM CONGESTUM: glandulis stipularibus inconspicuis; caule foliisque fere glabris; floribus in ramis brevibus suberectis capitato-glomeratis; sepalis pubescentibus eglandulosis; petalis roseo-purpureis; stigmatibus brevibus vix incrassatis.—Marin County, coll. H. N. Bolander. Flowers about the size of those of *L. Californicum*.

LINUM BREWERI (Gray in Proceed. Calif. Acad. l. c.); glabrum; caule exili apice confertim paucifloro; foliis raro oppositis; glandulis stipularibus conspicuis; sepalis margine glandulosis; petalis aureis; stigmatibus acutis.—Dry hills of the Monte Diablo range. Plant only a span high, in flower; the fruit not seen.

There might seem to be a fourth species of the group, *L. trisepalum*, of Kellogg, in Proceed. Acad. Calif. 3, p. 42, fig. 10. But his plant is *Helianthemum scoparium*, Nutt.! And his *L. decurrens* is evidently *L. perenne*.

LUPINUS MEIONANTHUS: undique sericeo-incanus; caulibus ut videtur herbaceis vel suffruticosis adscendentibus e radice perenni; foliolis 6-9 concoloribus oblanceolatis obtusis; stipulis parvis setaceis; bracteis calyce brevioribus; floribus minimis (vix lineas 3 longis) verticillatis in racemum spiciformem congestis; calyce pedicello longiori ebracteolato, labiis fere integris corollam glabram subæquantibus; carina apice brevi lato obtuso inflexa ciliata; leguminibus ovatis incanis 1-2-spermis. — Nevada, near Carson City, Dr. C. L. Anderson. It would be unsafe to describe a new Lupine before the old species are settled, except in a case like this, — a silvery-canescens species with remarkably small flowers. These are blue or purple, with a yellow spot on the vexillum. Leaflets 6 to 11 lines long, mostly equalling the petiole. Legumes half an inch long. Seed with a small hilum.

TRIFOLIUM ANDERSONII: (§ *Lupinaster*) undique albido-villosissimum, cæspitoso-depressum; caudicibus crassis lignescens stipulis majusculis scariosis vestitis; foliolis 4-6 oblongo- seu obovato-cuneatis mucronatis integerrimis; pedunculis folia adæquantibus; capitulo globoso multifloro; floribus sessilibus; dentibus calycis tubo campanulato sublongioribus subulato-setaceis; corolla roseo-purpurea haud scariosa. — Mountains of Nevada, near Carson City, Dr. C. L. Anderson (1862 and 1864). A most peculiar species, forming tufts a few inches in height, at first nearly acaulescent, but the stout caudices or stems sometimes attaining the length of five or six inches, and ascending or decumbent, leafy, beset, as is the whole plant, with very soft silky-villous hairs; the calyx, &c., very densely so. Petioles and peduncles $1\frac{1}{2}$ to 2 inches long. Leaflets half an inch in length. Head very compact, with an alveolate-squarrose receptacle, the outermost very short bracts forming a vestige of an involucre. Flowers half an inch long; the corolla apparently pink, with paler wings and keel, these adnate by their claws to the tube of filaments. Ovary tomentose, scarcely stipitate: ovules about 5. Legume globular, 1-2-seeded.

TRIFOLIUM BIFIDUM (Gray in Proceed. Acad. Calif. supra cit.): villosiusculum seu glabellum; caulibus e radice exili (annua?) diffusis gracilibus; stipulis ovato-lanceolatis setacco-acuminatis integris; foliolis lineari-cuneatis lateribus rariter dentatis apice bifidis vel exisis mucrone interjecto; pedunculis folia bis terve excedentibus; capitulo nudo 6-12-floro; floribus pedicellatis demum reflexis; calycis 5-partiti dentibus subulato-setaceis parce hirsutis corollam roseam scarioso-per-

sistentem subæquantibus. — In a ravine between Monte Diablo and the San Joaquin. Heads about the size of those of the small form of *T. gracilentum*, to which species this is allied.

TRIFOLIUM MONANTHUM: *Involucraria*, pygmæum, parce villosulum, e radice exili (annua?) ramosum; stipulis ovato-lanceolatis subfoliaceis integerrimis 3-5-nervatis cuspidato-acuminatis; foliis obovato-cuneatis nunc retusis mucronato-dentatis; pedunculo folium haud superante; involucro unifloro (rarius bifloro) fere diphylo calyce cylindraceo dimidio brevior; corolla albo-purpurascente elongata. — Moist bank by Soda Springs, Tuolumne River, alt. 8,700 feet. A very distinct little species, only about an inch high, the stems or branches terminated by a peduncle of 3 to 9 lines in length. Leaflets 2 or 3 lines long. Corolla half an inch long, twice or thrice the length of the calyx (the teeth of which are broadly lanceolate, spinulose-pointed, and shorter than the tube), somewhat glandular on the elongated tube, not scarious or inflated after flowering. Legume stipitate, two-seeded. Leaves of the involucre mostly two-cleft.

TRIFOLIUM AMPECTENS, Torr. & Gray, occasionally white-flowered, instead of a nearly sessile 4-6-seeded legume, as in the specimens of Douglas, has it stipitate and with only one or two large seeds (indeed with the ovary biovulate) in those of Coulter, Bigelow, and Brewer. Generally there is a central pedicellate flower, under which is a minute truncate involucl, like the involucre of the following plant; sometimes indeed this involucl is two-flowered, showing a tendency in the head to become proliferous.

TRIFOLIUM DEPAUPERATUM, Desv. (*T. stenophyllum*, Nutt. Pl. Gamb. p. 151?), now identified in California, adds another to the Clovers common to that country and to Chili. Dr. Brewer collected two forms on successive days (April 18 and 19) in the vicinity of Sonoma. One, which is slender and erect from an annual root, well accords with specimens of Gay's *Flora Chilena*, except that the flowers are rather larger and a few more in the head; and the leaflets are longer and narrower; while Fremont gathered (in 1845, no. 235) the exact counterpart of the Chilian plant. Dr. Brewer's other form is more tufted and decumbent, the root as if perennial. The involucre in *T. depauperatum* is minute and truncate, or reduced to a mere scarious ring. The central flower is commonly pedicellate and with an obsolete involucl, just as in *T. ampectens*, and the calyx, corolla, &c., so accord with that spe-

cies, that, although the differences are constant so far as yet observed, it may confidently be inferred that one has been derived from the other.

In *T. microcephalum*, Pursh, well-developed heads show a receptacle bearing the flowers in three verticils.

ASTRAGALUS LENTIGINOSUS (Dougl., Gray, Rev. Astrag., p. 194), var. FLORIBUNDUS: subglaber; caulibus productionibus (pedalibus) adscendentibus e pleris axillis floriferis; pedunculis breviusculis spicato-plurifloris; floribus albis nunc apice purpureo tinctis; leguminibus junioribus rectis acutissime acuminatis glabris. — Nevada, near Carson City, Dr. C. L. Anderson. Flowers and legumes considerably smaller than those of the nearly allied *A. diphyssus*, the teeth of the cylindrical calyx shorter. The mature legumes in one specimen are somewhat mottled.

ASTRAGALUS ANDERSONII: undique pube mollissima subvillosa canescens; caulibus e radice perenni adsurgentibus (pedalibus) foliosis; stipulis discretis triangulari-lanceolatis; foliis 7-12-jugis ovalibus oblongisve rarius obovatis; pedunculis folium superantibus; spica cylindrica vel oblonga densius multiflora; calycis dentibus setaceis tubo campanulato subæquilongo corolla cærulescente dimidio breviori; legumine oblongo-lineari (semi-sub-pollicari) chartaceo-coriaceo tomentuloso arcuatim incurvo subcompresso dorso sulcato septo ad suturam ventralem intruso bilocellato 12-20-spermo. — Near Carson City, Nevada, Dr. C. L. Anderson (1863 and 1864). A soft-downy and hoary species, not particularly related to any other North American species known to me, but with much the aspect of *A. chatodon* Torr.,* of the same region farther north. Leaflets 3 or 4 lines long. Flowers of about the same length, usually crowded in a spike of one or two inches in length (in fruit from 2 to 6 inches; the pedicels very short. Braets setaceous, equalling the calyx tube. Corolla apparently ochroleucous tinged with blue or purple, becoming white or yellowish. Flowers more or less deflexed after anthesis. So are the pods, which curve upwards or are almost hamate when fully ripe. They are not at all stipitate. Seeds small.

* Vide Gray, Rev. Astrag. p. 194. The specific name *chatodon* being preoccupied by Bunge, this may be named, in honor of the discoverer, the Rev. Mr. Spalding, *A. Spaldingii*.

ASTRAGALUS CYRTOIDES, Gray, Rev. Astrag., p. 201; forma magis pubescens; foliolis sæpius obovatis vel obcordatis, cum fructu; — nempe, legumine cartilagineo dorso haud intruso prorsus uniloculari sublineari utrinque acutato tereti e stipite pendente calyceem longe superante sursum curvato hami- vel falciformi nunc demum annulari, suturis marginantibus angustis, ventrali acutissima. — Nevada, near Carson City, Dr. C. L. Anderson, who collected flowering specimens in 1863, and mature fruit in 1864, which enables me now to complete the account of this species. The fruit will be seen to accord with the *Podosclerocarpi*, but the habit and structure of the flowers show the nearest affinity with *A. racemosus*, Pursh. with which the species was associated in my revision of our *Astragali*. The legume is an inch or more in length, on a stipe nearly half an inch long; it is of a very firm cartilaginous texture, tomentulose, curved in the form of a pruning-hook or sickle, or at length even into a complete ring, the nerviform replum in old pods separable, that on the ventral side forming a narrow acute margin or edge.

ASTRAGALUS TENER, Gray, l. c., p. 206: forma foliis fere linearibus raro emarginatis; floribus late violaceis. — Oakland, coll. Wm. Holder. Immature legumes more or less reflexed, half an inch long, lanceolate-linear, silky-puberulent, on a very short stipe which is hidden in the tube of the calyx, several-seeded, 2-locellate, the transverse section obovate, the partition reaching to the ventral suture.

ASTRAGALUS INEPTUS: (*Oroboides*?) cinereo-pubescens; caulibus e radice perenni diffusis ramosis (spithamæis et ultra); stipulis scariosis discretis; foliolis 6-9-jugis oblongis emarginatis supra fere glabris; racemis oblongis densifloris brevi-pedunculatis folio brevioribus; corolla alba vel ochroleuca apice pupurascente, ala rectiuscula; legumine immaturo ovato acuminato subincurvo puberulo membranaceo inflato haud stipitato polyspermo septo intruso fere bilocellato. — Dry, rocky mountain near Sonora Pass, alt. 9,000 feet. — A low, homely species, of which mature fruit is still a desideratum. The root apparently perennial. Leaflets 4 to 6 lines long, slightly fleshy, grayish underneath with a fine lax pubescence. Flowers half an inch long, on very short pedicels, narrow, the tips of the narrow wings and sometimes of the short keel tinged with purple. One or two forming legumes occur; they are scarcely above half an inch in length, thin-walled, and evidently inflated at maturity, moderately grooved at the dorsal suture,

the thin septum extending so as nearly or quite to touch the ventral suture.

ASTRAGALUS WHITNEYI: (*Inflat.*) striguloso-puberulus; caulibus e radice perenni conferte ramosis spithamæis; stipulis brevibus adversus petiolum connatis; foliolis 5-9-jugis lineari-oblongis; pedunculis folium adæquantibus subcapitato-plurifloris; calycis dentibus triangulatis tubo campanulato quadruplo brevioribus; corolla læte purpurea, carina falcato-incurva alas adæquante vexillo paullo brevioribus; legumine pendente glaberrimo (maculoso) vesicario ovali subpollicari apice obtusissimo basi in stipitem e calyce leviter exsertem attenuato. — On the same mountain with the preceding species, in loose soil, near the summit, alt. 10,000 feet. — This species, which may appropriately bear the name of the distinguished Director of the California Geological Survey, would appear to be a near relative of the incompletely known *A. Hookerianus*, Gray, *Astrag.*, l. c., p. 215; but the pubescence is strigulose, the stipules concreted and not scarious, and the pods very much smaller and glabrous. The young pods on the flowering specimens are not quite an inch long (including the short stipe): a loose one which seems as if full grown is not larger, and is mottled with purple. The flowers are half an inch long, and apparently blue or purple; in Dr. Brewer's notes upon the fresh plant, they are said to be "bright red-violet."

ASTRAGALUS PLATYTROPIS: multiceps e rhizomatibus elongatis, nanus, vix caulescens, sericeo-argentatus; foliolis 3-5-jugis obovatis; pedunculis scapiformibus folium adæquantibus apice capitato-paucifloris; calycis dentibus subulatis tubo campanulato paullo brevioribus; corollæ (albæ seu lutescentis apice purpuratæ), carina dilatata recta apice hinc rotundata alas vexilloque æquilonga; legumine globoso-ovato membranaeco vesicario-inflato (vix pollicari) estipitato cinereo-puberulo polyspermo bilocellato, septo versus medium seminifero. — With the preceding species, in loose gravel and sand near the summit (alt. 10,000 feet). — Leaves and flowering stems or scapes rising only two or three inches above the soil. Stipules triangular or ovate, canescent. Leaflets 3 or 4 lines long. Flowers 5 or 6 in a small head, barely 4 lines in length; the broad keel tipped with purple; the rest of the corolla apparently white or yellowish. Forming legumes canescent, when older glabrate, scarcely grooved at the sutures; both sutures are septiferous, the funiculi being adnate to the ventral portion of the sep-

tum, in the manner of the *Diphysi*, — to which this remarkable species would belong by its fruit; but its habit is of the *Lotiflori*, and the short wings and standard are peculiar.

ASTRAGALUS PYCNOSTACHIUS: caule valido foliisque pube molli canescentibus; stipulis scariosis discretis; foliis multijugis oblongis apice obtuso vel retuso mucronatis; pedunculis folium æquantibus; spicis etiam fructiferis densissimis oblongis vel cylindraceis; calycis pubescentis dentibus subulatis tubo brevi-campanulato brevioribus; corolla ut videtur pallida; leguminibus ovatis coriaceis glabris turgide lentiformibus stylo cuspidatis haud stipitatis calycem 2–3-plo excedentibus in spicam retrorsum congestis 1–3-spermis (ovulis 5), sutura neutra intrusa. — Baulinas Bay, in salt marshes within reach of tide, H. N. Bolander. — I have not seen the base of the stem: it must be more than a foot high, and rather stout. Leaflets 3 to 6 lines long, equally canescent-downy on both sides. Peduncles from all the upper axils, 2 or 3 inches long. The very compact spike an inch long in flower, 2 inches long in fruit. Flowers about 4 lines long, on very short pedicels: the corolla apparently white or ochroleucous. Legumes 4 or 5 lines long, the valves strongly convex, rather thin coriaceous, and with a few transverse veins; the sutures acute, the ventral one only prominent. The species would be arranged among the *Scytocarpi*; but it is quite different from any other North American *Astragalus*.

The following new triphyllous species, from a region east of the Rocky Mountains, may be added.

ASTRAGALUS TRIDACTYLICUS: (*Triphylli*.) habitu foliisque *A. triphylli* Pursh; floribus bis terve minoribus; calycis dentibus tubo æquilongis; corolla pallide purpurea; legumine globoso-ovoideo puberula calyce deciduo nudato; stipulis extus villosis. — Flores lin. 5 longi. Legumen lin. 3–4 longum, turgidissimum, 12-ovulatum. Semina matura 3–4, ratione leguminis magna. — Near Boulder City, Colorado Territory, in dense tufts or mats, on gravelly knolls, Dr. C. C. Parry, 1864.*

* Dr. Parry's collection of 1864 contains the following other *Astragali* which deserve notice: —

ASTRAGALUS JUNCEUS, Gray, Rev., p. 230, with the teeth of the calyx in one specimen somewhat larger and sharper, so that this very rare species may pass into *A. diversifolius*.

ASTRAGALUS FENDLERI, Gray, just like the original, No. 157 of Fendler's collection, but probably passing into *A. flexuosus*.

ASTRAGALUS GLABRIUSCULUS, Gray (*Phaca*, Hook.), verging towards *A. aboriginum*, of which it is probably only a variety.

The genera *Horkelia*, Cham. & Schlecht., *Ivesia*, Torr. & Gray, and *Sibbaldia*, L., border so closely upon *Potentilla* that, for lack of absolute distinctions, they are not unlikely all to be referred to that already vast genus.* Such a combination, however, will hardly be thought satisfactory, even if unavoidable. The Linnean genus, *Sibbaldia*, appears to have the least claims to its rank, having no peculiarity of habit, and comprising pinnate as well as trifoliolate species, which may well be regarded as *Potentillas* with the stamens, and in a less degree the carpels, reduced in number. If kept distinct, the deeply lateral styles will aid in separating *Sibbaldia* from the following.

Horkelia, however, if strictly limited, is pretty well marked in habit, and decidedly so in technical characters. These are the campanulate calyx and the (10) dilated filaments. This last and most distinguishing feature was omitted from the original generic character, and also from that of Endlicher.

Ivesia (striking out *I. gracilis*) I think should also be kept distinct from *Potentilla*, and probably from *Horkelia*. It cannot fail to be retained as a genus, if *Sibbaldia* is. There are now several species, all with the same peculiarity of foliage, which is quite unlike anything in *Potentilla*. Its characters are the campanulate or cyathiform calyx, the definite (5 to 20) stamens with slender filaments, and the few, in one instance even solitary, carpels.

In thus arranging these plants, it will be seen that there is one ambiguous and very troublesome species, viz. *Horkelia tridentata*, Torr., which, with the calyx and nearly the habit of *Horkelia*, has slender filaments. They are not, however, filiform, nor inserted, with the petals, at the bottom of the calyx, as represented in the plate. They are short, and inserted in the throat of the calyx, as in *Horkelia*, from which they differ only in being subulate. My specimen is insufficient.

HORKELIA, Cham. & Schlecht.

Calyx campanulatus, 10-fidus. Petala unguiculata seu spatulata (alba vel rosea). Stamina 10, fauci calycis inserta: filamenta brevia, dilatata, plerumque deltoidea petaloidea persistentia. Carpella plurima, nunc pauciuscula, in receptaculo villosa parvo elevato insidentia:

* This has been done in the yet unpublished second part of Bentham and Hooker's *Genera Plantarum*.

stylus cum ovarii apice articulatus. — Pinnatifoliæ, plurifoliolatæ; foliis subsparsis sæpius incisus vel partitis, superioribus confluentibus.

§ 1. Genuinæ.

* Foliolis subrotundis cuneatisve dentatis incisisque.

+ Calycis segmentis accessoriis vera adæquantes vel iis subconformia. Cymæ subfolioso-bracteata, floribus alaribus longius pedicellatis.

1. HORKELIA CALIFORNICA, Cham. & Schlecht. *H. grandis*, Hook. & Arn. *H. capitata*, Torr. Bot. Whipp., non Lindl. — California. Accessory calyx-lobes, or some of them, only occasionally bitid at the apex or toothed. In one specimen, from Los Angeles, Wallace, in a single flower only, there is a broadly subulate sterile filament, longer than the fertile ones, between each petal and its anteposed stamen!

Var. β . CUNEATA. *H. cuneata*, Lindl., I cannot distinguish as more than a smaller variety of Chamisso's species, with accessory calyx-lobes more conformed to the true ones, leaflets smaller, more cuneate, &c.

Var. γ . SERICEA: pube molli sericea subcanescens. — Oakland, near San Francisco.

+ + Calycis segmentis accessoriis quam vera multo minoribus.

2. HORKELIA PARVIFLORA, Nutt. Oregon, Nuttall. Nevada, Dr. Newberry, Dr. C. L. Anderson.

3. HORKELIA CAPITATA, Lindl. Oregon, Douglas.

* * Foliolis angustis lobatis seu profunde incisus, laciniis lobisve linearibus; stipulis laciniatis vel pectinatis. Calycis segmentis accessoriis linearibus vel subulatis. Cymæ demum perfectæ multifloræ.

4. HORKELIA FUSCA, Lindl. Subviscoso-pubescent; foliis demum glabratis; petalis anguste cuneatis obcordatis. — Oregon, Douglas.

5. HORKELIA CONGESTA, Hook. *H. hirsuta*, Lindl. Villosa-barbata, superne denudata; petalis late obovatis vel rotundatis ungue angusto. S. Oregon, Douglas, Nuttall. N. California, Newberry.

6. HORKELIA TENUILOBA. *H. fusca* var. *tenuiloba*, Torr. Bot. Whipp. Pacif. R. R. Surv. 4, p. 84. Villosa-canescens; foliis brevibus (lin. 3-4 longis) ambitu cuneatis profunde palmato-4-8-partitis, sinu medio sæpe profundiori, lobis linearibus; calycis segmentis accessoriis linearibus vera lanceolata subæquantibus; petalis anguste oblongo-spathulatis emarginatis; filamentis lanceolatis. — Santa Rosa

Creek, California, Dr. J. M. Bigelow. — Pubescence more like that of *H. congesta*, but softer, shorter, and less shaggy. Flowers small; petals 3 lines long, narrow, not unguiculate.

§ 2. *Ambigua* (an *Ivesia* ?); filamentis subulatis.

7. *HORKELIA TRIDENTATA*, Torr. Bot. Whipp. l. c., t. 6. California, Dr. J. M. Bigelow.

IVESIA, Torr. & Gray, pro parte.

Calyx campanulatus vel basi cyathiformis, 10-fidus. Stamina definita (5, 10, 15, 20): filamenta gracilia (tenuiter subulata vel filiformia). Carpella pauca, quandoque solitaria, in receptaculo parvo villosa: stylus subterminalis. — Pinnatifolia, millefoliolata, foliis parvis palmatis seu pedatipartitis ereberrimis nunc quasi-verticillatis vel rachin undique imbricantibus, petalis late obovatis vix unguiculatis post anthesin spatulatis.

* Flavifloræ, 5–10-andræ, glabellæ; foliis plerisque radicalibus; scapo apice congestifloro.

1. *IVESIA GORDONI*, Torr. & Gray in Newberry, Rep. Pacif. R. R. Exped. 6, p. 72. (*Horkelia Gordonii*, Hook. Kew Jour. Bot. 5, p. 341, t. 12. *H. millefoliata*, Torr. in Sitgreaves Zuni Exped.) Spithamæa e caudice crasso, viscido-pubens vel glabrata; foliis confertis 5–9-partitis, segmentis obovato-spatulatis obtusis; cyma capitata pluriflora; calycis mox turbinati lobis ovatis demum triangularibus quam accessoriis oblongi demum sublineares longioribus; staminibus 5; receptaculo longe villosa; carpellis 10–14. — Besides the New Mexican habitats, we have what appears to be a dwarfed and alpine form (from which the above character is mainly drawn) of the same species, collected by Professor Brewer in the Sierra Nevada, at Ebbett's and Sonora Pass, near Soda Springs, &c., at the altitude of 8,700 to 10,800 feet; in flower and with young fruit. The fruiting specimens are very well represented by Hooker's figure. The golden-yellow petals, at first almost orbicular, become spatulate or even oblanceolate after anthesis, and then shorter than the accrescent calyx-lobes, as delineated and described by Hooker. Stamens only 5, alternate with the petals.

2. *IVESIA LYCOPODIODES*, sp. nov. Nana (sesqui-tripollicaris), fere glabra; foliis in caudice crasso caespitose-confertis, pinnis quasi verticillatis ereberrimis, foliis minimis 5–7-sectis, segmentis obovato-roundis crassiusculis rachin undique imbricantibus; scapo capitato-

3 - 5-floro ; staminibus 5 ; receptaculo longe villosa ; carpellis 5 - 10. — High alpine region of the Sierra Nevada, on Mount Dana, alt. 11,000 to 12,000 feet. (Also Bear Mountain, Mariposa, Miss Errington, ex Torr.) Leaves only an inch long ; the leaflets and their divisions less than a line in length, nearly sessile, so crowded on the rachis and imbricated that the leaves may be likened to the shoots of a minute tufted *Lycopodium*. Flowers like those of the preceding species, except in size, only a quarter of an inch in diameter. Fruit not seen.

3. *IVESIA PYGMEA*, sp. nov. Habitu precedentis, sed minutim glandulosa ; foliis minus confertis, segmentis oblongis setam nunc setulas 2 - 3 accessorias gerentibus ; bracteis calycibusque parce hirsutis ; staminibus 10 ; receptaculo breviter piloso ; carpellis circiter 7. — Among rocks in the Sierra Nevada, from 11,000 feet (where it abounds) up to 12,000 feet ; Prof. Brewer, coll. 1864. — This, more than the last, resembles *I. Gordoni* on a diminished scale ; and it is possible that all three may run together. This, however, in the specimens, is distinguished by some hairiness, especially on the calyx, by the bristle which conspicuously tips each little leaflet or segment, by the less villous receptacle, and by the 10 geminate stamens.

* * Albifloræ, 15 - 20-andræ ; caulibus gracilibus magis foliatis ; cyma paniculata ; foliis albido-lanatis myosuroideis ; filamentis gracilimis.

4. *IVESIA PICKERINGII*, Torr. in Bot. Wilkes Pacif. Exped. (Calif. & Oregon), t. 4. Pedalis ; foliis primum myosuroideis, foliolis demum patentiusculis 3 - 5-partitis sectisque, segmentis oblongis ; pedicellis calyce (fructifero obconico-campanulato) brevioribus ; lobis accessoriis calycis ovato-lanceolatis ; staminibus 20 manifeste triseriatis ; antheris mucronulatis ; carpellis 4 - 6. — Coll. by Dr. Pickering, &c., on the journey from Oregon to California, probably on the Sacramento. (Character from a fragment, and from the plate cited.)

5. *IVESIA SANTOLINOIDES*, sp. nov. Spithamæa ; foliis myosuroideis ; foliolis minimis 3 - 5-sectis (segmentis ovalibus obtusis) appressis rhachin artissime imbricantibus ; pedicellis primariis elongatis filiformibus ; floribus parvis ; calycis tubo cyathiformi lobis propriis dimidio brevioribus, lobis accessoriis parvis ovatis ; staminibus 10 ? - 15 ; antheris didymis haud apiculatis ; carpello unico in fundo calycis sub lana occulto. — In the Sierra Nevada. This is to *I. Pickeringii*, what *I. lycopodioides* is to *I. Gordoni* : its myriad minute leaflets or segments

(barely half a line in length) most closely imbricated all around the rachis, so that the leaf ($1\frac{1}{2}$ to 2 inches long) resembles a mouse-tail, when young clothed with soft silky down, which conceals the parts beneath. When old the leaflets are more apparent, but they seem to remain permanently imbricated. Flowers, when expanded, scarcely 3 lines in diameter; the petals exceeding the calyx, roundish-flabelliform, and scarcely at all unguiculate, becoming obovate after anthesis. Fruit not seen.

Iresia gracilis, Torr. & Gray, in Newberry, Rep. l. c., t. 11, = *Potentilla Newberryi*, Gray.

EPILOBIUM OBCORDATUM: nanum, glabrum; caulibus (3-5-polliearibus) decumbentibus 1-5-floris; foliis oppositis lato-ovatis ovalibusque subintegerrimis opacis glaucescentibus; alabastris mutantibus; calycis tubo ultra ovarium pruinoso-puberulum producto infundibuliformi lobis lato-lanceolatis subdimidio brevioribus; petalis magnis late roseis obovato-bilobis patentibus; stylo stamina superante declinato; stigmatibus breviter quadrilobis; capsulis pedicellatis clavato-oblongis. — In the Sierra Nevada, at Squaw Valley and Ebbett's Passes, alt. 8,000 - 8,500 feet. — A charming alpine species, connecting the *Chamaenerion* with the other sections of the genus, and with large and showy flowers, having the aspect of an *Ænothera* or a *Clarkia*. The leaves are numerous, mostly longer than the internodes, closely sessile, and only from one third to two thirds of an inch in length. [Also found recently by Dr. Torrey.]

EUCHARIDIUM BREWERI: foliis oblongo-lanceolatis; petalis latissime cuneato-obcordatis cum lobo intermedio lateralibus longiori valde angustiori; filamentis apice eximie clavatis; antheris villosis-ciliatis; stigmatibus 2-4-partitis (sæpius bipartitis segmentis elongatis bilobis); capsula elongata (ultrapollicari); seminibus magis alatis. — Dry summit of Mount Oso, at the elevation of about 3,200 feet. — This would be a fine acquisition to the gardens, as the flowers are larger and fuller than those of *E. concinnum*, the petals fully three fourths of an inch wide, very broadly cuneiform-obcordate with a narrow linear-spatulate median lobe (not exceeding two lines in width) in the deep sinus. The filaments, also, instead of being filiform, are conspicuously dilated at the summit, where they are broader than the linear anther, apparently clavate rather than petaloid. The villosity of the anthers, which is here very striking, is found sparingly in *E. concinnum*.

MITELLA (MITELLARIA, licet stam. petalis altern.) BREWERI: foliis omnibus radicalibus rotundato-remiformibus incise duplicato-crenatis brevi-petiolatis; scapo (spithamæo) nudo; calyce explanato 5-undulato; staminibus 5 petalis pectinato-pinnatifidis alternis. — Mount Hoffmann, in a damp place, at the elevation of about 11,000 feet. The outline and crenation of the leaves and the short (shaggy-hirsute) petioles distinguish this at a glance from *M. pentandra*, with which it accords in the structure of the flower, in the two two-lobed sessile stigmas, &c.; but here the very short filaments are inserted before the calyx-lobes, instead of before the petals. This is all that was needed thoroughly to suppress *Drummondia* of De Candolle (*Mitellopsis*, Meisn.).

SAXIFRAGA BRYOPHORA: *Arabidia, S. stellari et leucanthemifolia proxima;* foliis abbreviatis oblanceolatis lineari-oblongisve aveniis integerrimis ciliatis sessilibus sæpissime rosulatis; scapis aphyllis paniculato-ramosis, ramis elongatis flore unico perfecto terminatis, pedicellis lateralibus plurimis racemosis filiformibus mox refractis proles gemmiformes (flores mutatos) gerentibus; sepalis lato-ovatis; petalis lanceolato-ovatis basi abruptis binaculatis; stylis vix ullis. — Ebbett's Pass, and on a peak near Mount Dana, alt. 9,000 feet, on wet rocks. — Leaves half an inch or less than an inch long. Scapes a span high, usually with divergent branches; the fertile and gemmiferous pedicels half an inch or less in length; some of the gemmæ are mere altered flower-buds; others are rosulate tufts from which a shoot is proceeding. This bears much the same relation to *S. leucanthemifolia* that *S. stellaris* var. *comosa* does to ordinary *S. stellaris*. But the small and quite entire leaves, and the reflexed filiform pedicels of the gemmæ are peculiar.

Some new materials and observations make it desirable to revise the genus.

LITHOPHRAGMA, Nutt., Torr., & Gray.

* Petala lamina tripartita, segmentis angustis: folia omnia partita vel infima lobata: radix (quandoque caulis) bulbifera.

1. **LITHOPHRAGMA GLABRA,** Nutt. Glabella; racemo axillisque foliorum sæpe bulbiferis; pedicellis calyce campanulato puero longioribus; ovario basi tantum calyce adnato; seminibus muriculatis. — Blue Mountains of Oregon, Nuttall. Pine forests on small tributaries of the Upper Sacramento, California, Fremont. Rocky Mountains in Colorado Territory, mixed with *Saxifraga cernua*, Hall and Har-

bour.— It must have been through some mistake that, in the Flora of North America, this species was placed in the section with an adherent ovary.

2. *LITHOPHRAGMA TENELLA*, Nutt. Glanduloso-hirsutula; foliis minus dissectis; pedicellis calyce primum obconico dein campanulato æquilongis; ovario infra medium adnato; seminibus lævibus.— Rocky Mountains. The only specimens are the original, scanty, and apparently depauperate ones of Nuttall. The plant resembles a diminutive *L. parviflora*, with less divided leaves, and a campanulate calyx, the base of which is certainly adnate to the lower part of the ovary. The seeds are much smaller and oval.

3. *LITHOPHRAGMA PARVIFLORA*, Nutt. (*Tellima parviflora*, Hook. Fl. Bor.-Am. 1. p. 239, t. 78.) Scabro-hirta; pedicellis suberectis calyce obconico (fructifero nunc clavato) creberrime glanduloso-hirtello sæpius brevioribus; ovario ultra medium adnato; seminibus lævibus oblongis.— Rocky Mountains and Oregon, to Vancouver's Sound.

The plant referred to this species in Ives's Colorado Expedition, collected by Dr. Newberry on hills along Cedar Creek, in the western part of New Mexico, is, from the calyx, &c., more like *L. tenella* on a larger scale, but probably is of a different species, not to be made out satisfactorily with the extant materials. It bears some granules or bulblets on the base of the stem, which have not been detected in any of the following species.

* * Petala lamina dilatata triloba, raro integra: folia radieulia reniformi-rotundata subdivisa vel crenato-lobata, superiora 3–5-fida vel partita: bulbilli ad radices, etc., nulli. Flores majusculi.

4. *LITHOPHRAGMA AFFINIS*, sp. nov. Scabro-hirta, 1–1½-pedalis; floribus modice pedicellatis; calycis creberrime glanduloso-hirtelli tubo turbinato ad apicem fere ovarii adnato; stylis granulosis; petalis maxime dilatatis apice trilobis; seminibus lævibus.— This has been confounded with *L. heterophylla*, and it is apparently as common in California around and north of San Francisco, where Dr. Brewer has abundantly gathered it, at several stations. To it belongs the specimens (named *L. heterophylla*) collected by Dr. Bigelow in Whipple's Expedition, a part of Dr. Parry's, collected at Monterey, in the Mexican Boundary Survey, Thurber's from Napa County, and specimens from Ross, long ago distributed by the St. Petersburg Academy. It is at once distinguished from the next by the calyx tapering to an

acute base, and the ovary almost wholly inferior. It is commonly a larger plant; the petals are from one third to nearly half an inch in length, their middle lobe occasionally lacinate-toothed. The pedicels are usually about the length of the fruiting calyx.

5. *L. HETEROPHYLLA*, Hook. & Arn. sub *Tellima*. Scabro-hirta, subpedalis; pedicellis brevissimis; calyce lato-campanulato minus hirta, fructifero basi quasi truncato; ovario libero stylisque glabris; petalis trilobis; seminibus muriculatis. — California, common near the coast, and northward. — The difference in the seeds (which are smaller and rounder as well as muriculate) may assure us that the case of this and the foregoing is not one of dimorphism. There appears also to be a slight difference in the anthers.

6. *LITHOPHRAGMA BOLANDERI*, sp. nov. Major (1-2-pedalis, foliis sæpe 1-2-poll. latis), hirsutulo-scabrida; racemo elongato plurifloro; pedicellis brevissimis seu calyce lato-campanulato (fructifero basi quasi truncato) dimidio brevioribus; ovario ima basi excepta libero; petalis nunc integerrimis nunc leviter trilobatis vel dente utrinque instructis; seminibus muricatulo-scabridis. — California, in a shady ravine, S. E. of Monte Diablo (Dr. Brewer), and farther north in the Mendocino district, H. N. Bolander. — The largest species: petals white, 3 or 4 lines long, more commonly all entire, sometimes all but one of the flowers more or less toothed or even lobed. Styles, as in the next, very short and glabrous. A slender form, in herb. Torrey, was collected in the valley of the Sacramento by Dr. Stillman.

7. *LITHOPHRAGMA CYMBALARIA*, Torr. & Gray (*Saxifraga Californica*, Nutt. mss.). Exilis, glabella; caule scapiformi (6-14-poll. cari, foliis $\frac{1}{2}$ - $\frac{2}{3}$ -poll. diam.) 4-7-floro; pedicellis calyce campanulato-cyathiformi (basi acuto) longioribus; ovario basi adnato; petalis spathulatis oblongisve integerrimis; seminibus muricatulo-scabridis. — Near Santa Barbara, Nuttall, Parry, Brewer, in cañons. Cauline leaves sometimes a pair and opposite or nearly so, sometimes alternate, occasionally almost obsolete. Lobes of the calyx *much shorter* than the tube except in Nuttall's very depauperate specimen. Petals, in good flowers, 3 or 4 lines long.

CYOPTERUS CINERARIUS: parvus; caudice repente; petiolis basi scarioso-dilatatis sursum scapisque gracilibus (1-3-poll. caribus) glaberrimis; folio decomposito ambitu subcordato glauco-cinereo pruinoso-puberulo, segmentis lobisque confertissimis; umbellulis 1-4 (sæpe

solitariis) capitatis involucellum completum multifidum (lobis ex ovato subulatis) subsuperantibus; floribus albidis roseisque; calycis dentibus parvis obtusis; fructibus 10-alatis, alis suberoso-scariosis maxime undulatis; semine ventre intus profunde excavato.— In volcanic ashes, on dry hills in the high Sierra Nevada, at Sonora Pass, and above Lake Mono, alt. 9–10,000 feet. Leaves and scapes emerging from a subterranean creeping rhizoma; the lamina of the former mostly less than an inch in diameter, the divisions extremely crowded, the ultimate lobes a line or rarely two lines long, oblong, obtuse, mucronate. Scape commonly exceeding the leaves. Involucl nearly herbaceous. Pedicels extremely short. Fruit 3 lines long, with complete, rather broad, white (or purplish-tinged) and much undulate wings: vittæ 3 in each interval and a few on the commissure. Seed deeply excavated at the commissure, the cross-section strongly reniform, more so than in *C. montanus*, &c. (noticed in *Pl. Fendleriana*, p. 57); so that the fruit is decidedly campylopermous.

CYOPTERUS FENICULACEUS, Nutt., as I suppose it to be, also collected by Dr. Brewer in the Sierra Nevada, is almost equally campylopermous. It is hoped that the primary divisions in this order may yet be established upon other characters than the form of the seed.

CYOPTERUS? NEVADENSIS: depresso-cæspitosus, glaucus, fere glaber; petiolis brevibus, basibus scarioso-dilatatis caudices breves vestientibus; lamina foliorum 3–7-partita, segmentis rigidis lato-lanceolatis cuspidatis, lateralibus raro 2–3-fidis; scapo ($\frac{1}{6}$ – $\frac{1}{2}$ -pollicari) folia parum superante umbellam capitatam quasi simplicem gerente; involuclis 4–5 lateralibus 3-fidis flores (flavidos?) adæquantibus involnerum simulantibus.— At and near the summit of Mount Dana, one of the highest peaks in the Sierra Nevada, alt. 13,227 feet. In flower only, the genus quite uncertain. Plant only an inch or two in height, tufted. Leaves and scapes obscurely puberulent. Umbel 3 or 4 lines in diameter, composed of 3 to 5 sessile umbellets, each adnate to the base of a foliaceous 3–5-cleft involucl (the divisions ovate); these involucls imitating a complete common involuclere. Pedicels scarcely any. Ovary showing obscure rudiments of wings. Calyx-teeth lanceolate-subulate. Styles long and slender.

SPHENOSCIADIUM, nov. gen. *Angelicarum*.

Calycis margo obsoletus. Petala spathulato-obcordata, cum lacinula setaceo-acuminata inflexa. Styli filiformes. Fructus cuneatus: meri-

*carpia compressa sursum sensim quinquealata; alis suberosis, marginalibus latioribus; valleculis univittatis; commissura bivittata. Carpo-phorum bipartitum. Semen more *Cymopteri* sectione transversa plani-usculo-lunata. — Herba Californica; radice fusiformi; caule valido fistuloso usque ad umbellas cum foliis sub-bipinnatisectis glabro; um-bellis tomentosissimis involucriatis; involucellis multipartitis flores albos sessiles densissime capitatos subæquantibus.*

SPHENOSCIADIUM CAPITELLATUM. — In the Sierra Nevada, near Ebbett's Pass, alt. 7–8,000 feet, by a stream; in flower. Nevada, near Carson City, Dr. C. L. Anderson; with fruit. Root rather strong-scented, acrid. Stem 2 to 5 feet high, striate. Petioles spathaceous-dilated. Divisions of the leaves ovate- or oblong-lanceolate, about an inch long, coarsely and sharply few-toothed or incised; veinlets finely reticulated. Umbel 7–10-radiate; the umbellets are globose heads, 4 or 5 lines in diameter, in fruit about three fourths of an inch; the flowers (pubescent) sessile on a dilated receptacle, to which the short involucrel is somewhat adnate. Fruits 3 lines long, pubescent; the mericarps (including the wings) obovate-cuneate or obscurely obcordate; the narrow base strongly 5-ribbed; but the corky ribs enlarge towards or at the summit into thickish wings, the lateral ones being the broadest, sometimes nearly as broad as the seed. A thick vitta in each interval, and two submarginal ones on the commissure.

Lonigera (Xylosteon) Breweri: caule erecto; foliis ovalibus vel obovatis pubescentibus breviter petiolatis; pedunculis folio sublongioribus; ovarii urceolato-oblongis basi coadunatis; bracteolis minimis; corolla lurido-purpurea campanulata late gibbosa ultra medium bilabiata; fauce styloque hirsutissimis. — In a ravine of the Sierra Nevada, near Mount Dana, at the elevation of about 10,000 feet. — Allied to *L. nigra* of the Old World; but the leaves (only an inch or less in length) rounder, much more pubescent, and of a different venation; the ovaries narrower, and crowned with subulate calyx-teeth, the corolla more gibbous, the style hirsute, &c.

GALIUM ANDREWSII: pulvinato-cæspitosum; rhizomatibus longis filiformibus; foliis crebris quaternis subulatis setuloso-apiculatis rigidis nitidulis glabris aut fere nudis aut cum angulis caulium pl. m. spinuloso-ciliatis, costa valida; pedunculis 1–3-floris nudis; floribus albidis; fructu lævi. — Var. *a. gracilius*; foliis lineari- vel aciculari-subulatis margine aut parce aut rarissime spinuliferis: pedunculis folia adæquan-

tibus.— β . compacte pulvinatum; pedunculis brevissimis unifloris, foliis subulatis creberrimis. — γ . compactum; pedunculis foliis brevioribus 1–3-floris; foliis latioribus lanceolato-subulatis ad margines angulosque acutissimos caulium crebrius spinuliferis. — California, Dr. Andrews, Mr. Shelton (Herb. Torrey). Near Fort Tejon, Dr. Horn, Dry Hills, Atascadero (var. α), and Santa Inez Mountains near Santa Barbara (var. β), near Kirka Pass (var. α), and near Monterey? (var. γ), Dr. Brewer. — The laxer forms have the aspect of *G. orientale*, the more condensed, of *G. Pyrenaicum* and *G. Cyllenium*, Boiss.; and the species is very different from any other North American one. The Chilean *G. hypnoides*, Clos, is similar, but its leaves are nearly destitute of costa, and it is said to have a distinct limb to the calyx. The fruit apparently dry; no involucre or whorl of bracts on the peduncle. Plants from two inches to a span high.

GALIUM BLOOMERI: glaberrimum, inerme, erecto-diffusum; foliis quaternis ovatis cuspidato-acuminatis subtrinerviis opacis, floralibus sæpe tantum oppositis; floribus abortu dioicis, masculis cymulosis brevipedunculatis, fœmineis subsolitaris subsessilibus; corolla ut videtur ochroleuca; fructu (juvenili) hirsutissimo. — Nevada Territory, near Virginia City, Mr. H. G. Bloomer, to whom, as its discoverer, and an ardent devotee to Botany, I have much pleasure in dedicating this very well-marked species. The specimens are a foot or less in height, from a perennial or suffrutescent base. Stems paniculately branched. Leaves 3 to 5 lines long, closely sessile, rather rigid, veinless, the midrib evident, the larger leaves with a pair of lateral ribs, which vanish near the middle. Corolla a line and a half in diameter. The nature of the verticil is well shown in some of the floral leaves, which are reduced to a pair, sometimes slightly connate by a transverse membranous line, and sometimes with a smaller bifid or bidentate leaf interposed on each side, this evidently answering to a connate pair of stipules.

GALIUM HYPOTRICHUM: humile, pube minuta cinerea scabridum, inerme; foliis quaternis ovatis apiculatis subtrinerviis, floralibus oppositis; floribus submonoicis vel hermaphroditis parce cymulosis; pedicellis flore longioribus post anthesin recurvis; fructu (juvenili) juxta basin setis longis crinito, cæterum laevi. — Sonora Pass, in the Sierra Nevada, alt. 8,000 to 9,000 feet, in dry and rocky places. — A span high, apparently tufted, in habit, foliage, &c., much resembling the

preceding species; the flowers smaller, apparently white or yellowish. The bristly hairs on the forming fruit are rather few, much longer than the ovary, and all confined to its base. The floral leaves, in simple pairs, often show minute interposed stipules.

KELLOGIA GALIODES, Torr. in Bot. S. Pacif. Ex. Exped. coll. N. W. Amer. Phænog. t. 4.—This interesting plant, which, we believe, was discovered in the northern part of California, has now been collected by Dr. Brewer [and more recently by Dr. Torrey himself], in the foot-hills of the Sierra. It is, as it were, an *Asperula* with opposite leaves and scarious interposed stipules.

MACHÆRANTHERA (*HESPERASTRUM*; ligulæ steriles) *SHASTENSIS*: nana, e caudice perenni multicaulis, tomentuloso-canescens; caulibus 1-2-cephalis; foliis integerrimis obtusis, inferioribus spatulatis subtrinnatis, superioribus oblongis subamplexantibus; involucri campanulati squamis lanceolato-linearibus sæpius acutis, extimis apice herbaceis, interioribus tenuioribus inappendiculatis; ligulis "roseo-violaceis"?—Northern California, on Mount Shasta, at the height of 9,000 feet. Very little of this was found. It is a dwarf alpine plant (3 to 6 inches high, the lower leaves less than an inch long, the upper cauline successively smaller), with the aspect, styles, and generally the character of *Machæranthera*, except the perennial root and completely neutral rays, or of *Aster*, excepting the last-named particular. As it has neither the peculiar appendages to the style nor to the anthers of *Lessingia* and *Corethrogyne*, I cannot refer it to the latter genus, but on the whole conclude to append it to *Machæranthera*. The ovaries are scarcely compressed. Involucre 3 or 4 lines in diameter.

ASTER BLOOMERI: depressus, cæspitoso-diffusus; ramis foliosis apice monocephalis; foliis parvis (3-6 lin. longis) oblongo-linearibus imisve lineari-spathulatis sessilibus uninerviis aveniis hispidulo-scabris et ciliolatis; involucri hemisphærici squamis subtriseriis linearilanceolatis acuminatis dorso vel apice herbaceis minute granuloso-glandulosis laxiusculis; ligulis pallide violaceis?—On high slopes of Mount Davidson, near Virginia City, Nevada, H. G. Bloomer. A peculiar little species, to be ranked, perhaps, with the *Ericoidei*, but not obviously related to any other. Stems tufted from a somewhat ligneous caudex, the branches very leafy nearly to the heads; the leaves uniform. Heads about 4 lines in diameter, exclusive of the rays. Appendages of the style subulate. Achenia pubescent. Pappus soft.

ERIGERON (CELMISIA) ANDERSONII: Lana tenui arachnoidea mox decidua glabratum; caulibus e rhizomate nudo adurgente erectis simplicissimis apice nudo monocephalis; foliis coriaceis linearibus acutis, radicalibus elongatis (spithamæis) 3-5-nerviis deorsum attenuatis, caulinis brevibus basi latioribus in bracteas subulatas decrecentibus; capitulo hemisphærico majusculo ($\frac{2}{3}$ -pollicari); involucri lanulosi squamis lineari-lanceolatis subherbaceis parum biseriatis; ligulis uniseriatis exsertis lato-linearibus (caruleis vel purpureis); styli ramis fl. herm. filiformibus, parte hispida quam stigmatosa 3-4-plo longiori; acheniis oblongo-linearibus villosis 4-6-costatis; pappo uniseriali, setis æqualibus barbellulatis. — Nevada, near Carson City, Dr. C. L. Anderson. Lake Tenaya in the Sierra Nevada, Prof. Brewer, a single depauperate specimen. Stems a span to a foot high: the rigid leaves soon glabrous. Bristles of the pappus all alike, but with a few minute setulæ intermixed, as in most *Erigerons*. This is a North American representative of the Andine group of species, sometimes referred to *Aster*, which Schultz has recognized as identical with *Celmisia*, and Weddell has referred to *Erigeron*. I am constrained by the uniserial pappus, etc., to adopt the same view, rather than to refer this plant to *Aster*. But the long and filiform appendages of the style (resembling those of some of its South American relatives) are most unlike those of the true *Erigerons*. The several species of *Celmisia* differ greatly in the form of the style.

ERIGERON CONCINNUM, Torr. & Gray, var. *APHANACTIS*, ligulis abortivis stylo brevioribus eradiatum. — Near Carson City, Nevada, Dr. C. L. Anderson. Virginia City, H. G. Bloomer.

ERIGERON BLOOMERI; nanum, multiceps e radice fusiformi; foliis plerisque radicalibus confertis fere filiformibus cum scapis monocephalis pube minuta appressa cinereis; involuero lanato-villoso, squamis subæqualibus disco parum brevioribus; ligulis plane nullis; acheniis plano-compressis hirsutulis; pappo simplicissimo. — Nevada, near Virginia City, H. G. Bloomer; near Carson City, Dr. C. L. Anderson. Scapes about three inches high, twice the length of the leaves, naked above, 2-3-leaved towards the base. Heads about twice the size of those of *E. filifolium*, the involucre clothed with copious white and soft hairs. Pappus a little shorter than the tubular corollas. Achenia flat, with a nerve only on each margin. Appendages of the style short and acute.

ERIGERON BREWERI: *Pseuderigeron*, pube minuta cinereum ; caulibus e rhizomate tenni repente adsurgentibus gracilibus usque ad apicem corymboso-1-5-cephalum foliosis ; foliis oblanceolatis seu linearispathulatis uninerviis integerrimis ; pedunculis brevibus ; involuero fere glabro disco maturo dimidio brevioribus, squamis 2-3-seriatis inæqualibus ; ligulis elongatis uniserialibus (ut videtur violaceis) ; acheniis parce hirtellis ; pappo duplici, exteriori brevi setuloso. — Yosemite Valley, alt. 4,000 feet ; in flower. Near Carson City, Nevada, Dr. C. L. Anderson ; in fruit. Stems mostly simple from the base, a span to a foot high. Leaves an inch or less in length, mostly narrow-spatulate and obtuse. Heads smaller than those of *E. foliosum*, Nutt. (*E. Douglasii*, Torr. & Gray) ; the involuere more imbricated, as in *E. Bigelovii*, but decidedly shorter. Pappus as long as the disk-corolla. Appendages of the style very short and obtuse. Achenia linear, flat, 2-nerved.

LINOSYRIS (CHRYSOTHAMNUS) HOWARDII, Parry, in litt. : fruticosa, semi-sesquipedalis ; ramis junioribus lanoso-dealbatis ; foliis linearibus acutatis uninerviis glabratibus (primum tenuiter arachnoideis), floralibus capitula corymboso-congesta superantibus vel subæquantibus ; involuero 5-floro cylindræo, squamis laxiusculis lanceolatis omnibus modo *L. Parryi* attenuato-acuminatis ; corollæ pallide flavæ tubo parve villosulo ; acheniis linearibus pubescentibus. Var. *a.* foliis angustissime linearibus elongatis ; involuero tenuissime arachnoideo glabrato. — Colorado Territory, on gravelly hills near "Hot Springs" of Middle Park, where it is often associated with *L. Parryi*, Gray, coll. C. C. Parry, 1863. It is more shrubby than that species, its smaller and fewer-flowered heads in terminal, fastigate, almost capitate clusters, &c. A little of it was included under Hall and Harbour's No. 293.

Var. *β.* NEVADENSIS : foliis pl. m. latioribus brevioribus (inferioribus subspathulato-linearibus), apice cuspidato sæpius incurvo ; involucri squamis præsertim ad margines magis arachnoideis subviscosis. — Mount Davidson, Nevada, above Virginia City, H. G. Bloomer. Near Carson City, Dr. C. L. Anderson. Ebbett's Pass, within the borders of California, alt. 9,000 feet, Prof. Brewer ; a dwarf form, only 5 or 6 inches high.

APLOPAPPUS BLOOMERI : suffruticosus, pedalis, subresinosus, glaber ; ramis fastigiatis usque ad apicem foliosis corymboso- (vel subpaniculato-) polycephalis ; foliis subspathulato-linearibus basi attenuatis

rigidis uninerviis vel inferne obsolete trinerviis; capitulis folioso-bracteatis; involuero subturbinato 3-4-seriali, squamis coriaceis lanceolatis pl. m. resinosis et villoso-ciliatis, exterioribus folioso-vel subulato-caudatis, intimis tenuioribus inappendiculatis; floribus radii 3-4 ligula oblonga exserta, disci 15-20; acheniis linearibus pubescentibus. — On Mount Davidson, Nevada, H. G. Bloomer. Near Carson City, Dr. C. L. Anderson, with a very narrow-leaved and more loosely corymbose-headed form. Leaves from one to barely 2 inches long. Heads crowded, about half an inch long; and the ligules 4 or 5 lines long. Anthers and style exserted; the short branches of the latter bearing long subulate-filiform appendages, as in *Linosyris* section *Chrysothamnus*, *Aplopappus* section *Ericameria*, and in the following species, to which it is nearly related.

APLOPAPPUS SUFFRUTICOSUS (*Macronema suffruticosa*, Nutt.): spithameus e basi depresso-ramosa lignosa, glandulo-o-puberulus, subviscidus; ramis usque ad apicem foliosis sæpissime monocephalis; foliis linearibus seu lineari-subspathulatis acutatis uninerviis; involuero folioso-bracteato fere hemisphærico, squamis tantum biserialibus aequalibus laxis lineari-lanceolatis, extimis folioso-appendiculatis, intimis tenuioribus inappendiculatis, floribus radii 3-8 ligulis discum subsuperantibus, disci circa 30; acheniis linearibus pubescentibus. — Collected by Prof. Brewer in the eastern part of the Sierra Nevada, on Pyramid Peak, near Carson's Pass, alt. 8-10,000 feet. — This has no just claim to a separate generic rank, but must be referred, with the preceding, to *Aplopappus*.

APLOPAPPUS MACRONEMA, *Macronema discoidea*, Nutt., of which fine specimens were distributed in Hall and Harbour's Rocky Mountain collection, is distinguished from the last by the arachnoid-woolly branches, somewhat simpler involuere, and broader leaves, as well as by the absence of rays. The achenia are not glabrous, as described.

CHRYSOPSIS (AMMODIA) BREWERI: viscoso-subpubescens, laxè paniculato-ramosa; foliis oblongis seu ovato-lanceolatis membranaceis basi lata tenuiter trinervi arete sessilibus; capitulis (nunc nudis graciliter pedunculatis nunc foliis 1-2 fulcratis) discoideis; involuero quam discus dimidio brevioribus, squamis lanceolatis acuminatis tenuibus; acheniis obovatis plano-compressis hirtellis; pappo exteriori setuloso satis copioso. — Near Sonora Pass and Ebbett's Pass, in the Sierra Nevada, common at the elevation of 4,000 to 8,000 feet. — This is a

close congener of *C. (Ammodia, Nutt.) Oregona*; but is at once distinguished by the above characters, and by its laxer inflorescence. The involucre is less imbricated and much shorter, scarcely exceeding the achenia, which are broad and flat. There is an evident setulose outer pappus, like that of *Chrysopsis villosa*, &c. A new examination of the Oregon species shows the same, only scantier. So I venture to regard Nuttall's *Ammodia* as a discoid section of *Chrysopsis*.

CHRYSOPSIS BOLANDERI: § *Achyræa, C. pilosæ* affinis, villosior; radice perenni; foliis superioribus acutioribus, summis conformibus capitula sessilia involuerantibus vel fulerantibus paullo superantibusque; corollis disci extus parce arachnoideis; pappo exteriori e paleolis linearibus subulatisque achenio angusto cano-sericeo vix dimidio brevioribus. — Hills of Oakland, near San Francisco, abundant, H. N. Bolander. From the general character, and the foliose-bracted sessile heads, this would seem to be Nuttall's *C. sessiliflora* (from Santa Barbara), of which I find I have no specimen, though I must some time have examined it. But the present plant shows an outer pappus as conspicuous as that of *C. pilosa* itself, although of longer and narrower scales. A few scattered, long, arachnoid hairs are borne on the upper part of the disk-corollas.

SOLIDAGO GUIRADOXIS: *Virgatæ*, glaberrima; caule gracili stricto; foliis anguste linearibus elongatis integerrimis, imis lanceolatis in petiolum marginatum longe attenuatis; panicula angustissima oligocephala; capitulis parvis; involucri squamis subulatis, costa crassa; ligulis 8–9 flores disci 10–12 haud superantibus; acheniis puberulis. — Along a brook at the base of San Carlos, coll. Guirado. Stem $2\frac{1}{2}$ or 3 feet high, from a ligneous rhizoma. Lowest leaves 6 inches long, less than half an inch wide; the principal cauline leaves 3 inches long and only 2 or 3 lines wide, above gradually reduced to linear-subulate bracts, venulose. Heads $2\frac{1}{2}$ lines long, erect, sometimes in almost a simple raceme. A very distinct species, named for the collector, a very intelligent young native Californian assistant in the surveying party, Guirado.

WYETHIA (ALARGONIA) GLABRA: *W. helenioides* proxima, sed glabra, pl. m. viscosa; foliis caulinis in petiolum brevem attenuatis; pappo calyciformi e paleis 5–8 ovatis vel triangulatis nunc basi nunc ad medium usque coalitis. — Marin County: specimen with the large head foliose-involuerate, as in many specimens of *W. helenioides*; the

cauline leaves obtuse and tapering into a short and margined petiole. Pass El Robles in Salinas Valley, south of San Luis Obispo, with a naked head (said to have the disk sometimes 4 inches in diameter, but in the specimens much smaller), and the cauline leaves more petioled. I have a radical leaf (about $1\frac{1}{2}$ feet long and $4\frac{1}{2}$ inches wide) and a head of this, collected by Dr. Andrews, probably near San Francisco.

W. helianthoides, Nutt. (of which, however, I have not present access to any specimen), *W. robusta*, Nutt., and *W. angustifolia*, Nutt., belong probably to one species. The following, with the aristiform pappus of the above, has the woolliness and aspect of *W. helenioides*, but much smaller heads.

WYETHIA MOLLIS: arachnoideo-lanata, ætate subdenudata; caule 1-3-cephalo; foliis oblongis ovalibus ovatisque omnibus petiolatis integerrimis; involucri squamis ovato-lanceolatis cum ligulis elongatis 10-12; acheniis linearibus e pappo breviter coroniformi longius biaristato vel in radio triaristato. — Mono Lake and summit of Sonora Pass in the Sierra Nevada. Also near Carson City, Nevada, Dr. C. L. Anderson; and in great patches on Mount Davidson at Virginia City, H. G. Bloomer. The Nevada specimens much more densely clothed with a coat of floccose white wool than those of Prof. Brewer: this may readily be rubbed off, and partly wears away from the old leaves. Radical leaves a foot or less in length, besides the stout petiole: cauline leaves 4 to 6 inches long. Scales of the involucre about an inch long, the outer and larger ones a little surpassing the disk, very woolly. Ligules an inch and a half long. Achenia about half an inch long, the subulate awns 3 or 2 lines long. — Mr. Nuttall regretted, as all must do, that this genus could not retain De Candolle's name of *Alarçonia*.

HELIANTHUS BOLANDERI: *Amui*; caule hirsuto bipedali et ultra ramoso; foliis omnibus alternis ovato-lanceolatis seu ovato-rhomboidis crebre sæpius grosseque serratis e basi attenuata trinerviis longe petiolatis; involucri squamis foliaceis lineari-lanceolatis sensim attenuatis acutissimis patentibus vix imbricatis hirsutis discum superantibus ligulas 10-12 subæquantibus; acheniis sericeis; pappi paleis 2 aristæformibus. — At the Geysers, Lake County, near Clear Lake, H. N. Bolander. The root is pretty clearly annual; and the species (with leaves somewhat like those of *H. petiolaris*, but much more serrate, &c.) is very different from any other we have. Heads small, the brown-purple disk less than an inch in diameter, the involucre resembling that of *H. decapetalus* or *H. trachelifolius*.

HELIANTHUS EXILIS: *Annui*, hirsutus, nunc tantum scaber; caule gracili pedali et ultra ramoso; foliis (oppositis superioribus alternis) lineari-oblongis lanceolatisve subintegerrimis basi obscure trinerviis in petiolum brevem attenuatis; capitulis pro genere minimis; involucri squamis 10-12 lanceolatis foliaceis laxis ligulis 5-8 subdimidio brevioribus; paleis receptaculi aristato-cuspidatis; acheniis glabris; pappi paleis ovato-lanceolatis. — In wet places about Clear Lake, H. N. Bolander. A glabrate form from Owen's Valley, Dr. Van Horn. Leaves an inch or an inch and a half long. Heads on almost filiform peduncles; the brown-purple disk only half an inch broad. Chaff of the receptacle truncate-tricuspidate with the middle point projected into a rigid awn, all but the outer chaff carinate-winged on the back.

PUGIOPAPPUS BIGELOVII. Gray in Torr. Bot. Whipp. Exped., Pacif. R. R. Rep. 4, p. 104. Add. char. gen.: Achenia plano-obcompressa; radii fertilia, ala suberosa cincta, calva; cætera inania, disco epigyno cylindrico styli basin cingente apiculata, paleis pappi pugioniformibus demum deciduis. — Prof. Brewer collected this very little known plant on dry hills at San Buenaventura, in the southern part of California, and also received it from Fort Tejon, collected by Dr. Van Horn, with some fruit.

CHEENACTIS XANTIANA (*C. glabriuscula* var. *megacephala*, Gray in coll. Xantus, Fort Tejon, Jour. Bost. Nat. Hist. Soc., non Bot. Whipp.): *C. heterocarphae* affinis, sed robustior, magis glabrata, caule fistuloso; *C. glabriusculam* var. *megacephalam* æmulans sed pappo duplici, paleis 4 interioribus lanceolatis corollam subæquantibus 4 exterioribus brevissimis late cuneato-obovatis vel obcordatis; ab utraque differt involucri squamis angustioribus laxioribus, corollis ut videtur carnis, marginalibus parum ampliatis cæteras haud superantibus. (Capitula majora fere pollicaria.) — This, the No. 45 of the collection made by Xantus near Fort Tejon, I confounded, as is noted above, with a different species; but we now have it, in fine state, from Dr. Anderson, who found it near Carson City, in Nevada.

Var. **INTEGRIFOLIA**: foliis anguste linearibus integerrimis rariusve 1-2-lobatis. — Near Fort Tejon, Dr. Van Horn.

CHEENACTIS TANACETIFOLIA: humilis, lana tenui canescens, mox glabrata; foliis plerisque radicalibus bipinnatipartitis, segmentis lobisque confertis parvis oblongis seu ovalibus obtusissimis; caulibus scapisve (3-4-pollicaribus) monocephalis; involucri squamis lineari-

subspathulatis; corollis aureis, marginalibus ampliatis; pappo duplici e paleis 4 oblongis obtusissimis corolla (disci paullo, radii dimidio) brevioribus et 4 alternantibus minimis ovalibus. — Lake County, near Clear Lake, H. N. Bolander. A very distinct species, with Tansy-like leaves in a radical tuft, heads rather smaller than those of *C. lanosa*, and bright yellow flowers; it makes the third known species with a short outer pappus.

ACTINOLEPIS MULTICAULIS, DC., var. *PAPPOSA*: acheniis disci etiam pappo donatis. — Prof. Brewer's specimens, from three stations, all in Santa Barbara County, uniformly have a pappus to the disk, like that of the ray flowers. This is the same in specimens otherwise exactly resembling the plant on which the genus was founded, and in a more woolly form, gathered in Santa Maria Valley, which however, except in the pappus, would not be distinguished from Dr. Parry's specimens, figured in the Botany of the Mexican Boundary Survey. *Actinolepis* might accordingly be reduced to a section of *Bahia*: but the reception of the external achenia into a concavity at the base of the involucreal scales may still enable us to keep the genus.

ACHYROPAPPUS WOODHOUSEI: humilis, ramosissimus, subviscoso-puberulus; foliis fere omnibus oppositis tripartitis, segmentis linearibus obtusis integerrimis vel intermedio trilobo; capitulis brevi-pedunculatis; involucri squamis obovato-oblongis; (floribus albidis?) ligulis parvis; cor. disci tubo gracili; pappi paleis 8-10 lanecolatis acutis (alternis saepe brevioribus) nervo valido excurrente modo *Palafoxiæ* instructis. — New Mexico, Dr. Woodhouse, in herb. Durand. Apparently only a span high; the leaves all less than an inch long. Rays linear-oblong, a line and a half in length, scarcely exceeding the disk. Branches of the style tipped with a short and obtuse puberulent cone. This kind of style and the opposite divided leaves prevent us from referring the plant to *Palafoxia*, of which it has the pappus, nor will it fall into *Florestina*.

BURRIELIA LEPTALEA: fere glabra; caule vel ramis subradicalibus 1-3 capillaribus simplicissimis monocephalis; foliis perpaucis filiformibus parvis; involucri squamis 4-5 ovalibus oblongisve; ligulis totidem exsertis at disco maxime elevato brevioribus; acheniis parce hispidulis bi- (raro tri-) aristatis; aristis flores adaequantibus inferne sensim leviter dilatatis superne tenuissimo scaberrimo. — Santa Lucia Mountains, on very dry hillsides along the Nacimiento River. Allied

to *B. microglossa*, and, like that species, having an acute appendage surmounting the branches of the style, and a very slender, subulate, naked-pointed receptacle! The rays are more apparent, the involueral scales wider, and the pappus more slender and rough.

LASTHENIA (MONOLOPIA) AMBIGUA: gracilis, arachnoideo-lanata; caule spithamæo ramoso; foliis alternis spathulato-linearibus lanceolatisve subintegerrimis; involucri angusto-campanulati squamis 8-9 acuminatis ultra medium connatis; ligulis ovalibus brevibus; corollis disci tubo hirsutissimo, limbo sensim ampliato glabrato; acheniis linearibus δ -gonis subglabris (exterioribus ad angulos hirtellis) nunc calvis nunc fere omnibus pappo brevi e paleis tenuibus eroso-truncatis coronatis. — Near Fort Tejon, Dr. Van Horn, in coll. Brewer. Nearly related to *L. (Monolopia, Benth.) bahiæfolia* of Hartweg's collection, which has a broader and more woolly involucre, disk-corollas with a narrower tube which is villous only in a ring at the junction with the broadly expanded limb, and hairy achenia, all, so far as known, destitute of pappus. In the present species the discovery of the pappus, conspicuous enough in some heads but wanting in others, confirms the suspicion that the *Monolopie* are epappose *Heleniæ*.

HULSEA ALGIDA: viscoso-villosula; caule (spithamæo) folioso monocephalo; foliis lineari-lingulatis aut repando- aut laciniato-dentatis sessilibus, imis subspathulatis, basibus dilatatis scariosis apicem caudicis crebre vestientibus; capitulo maximo; involucri squamis linearibus apice attenuatis albo-lanatis; ligulis 50-60. — High peaks of the Sierra Nevada, on Mount Dana, at 11,500 feet, and Wood's Peak, 10,500 feet. Stems several from an ascending caudex, leafy nearly or quite to the head. Leaves $1\frac{1}{2}$ to 3 inches long, 3 to 6 lines wide. Head an inch in diameter. Achenia 3 to 4 lines long. Nearly related to *H. Californica*, of which I possess only a portion of an involucre (which is similar) and some flowers and achenia, the latter much smaller than in the present plant.

HULSEA VESTITA: caulibus abbreviatis e caudice subterraneo erecto folia conferta obovato-spathulata subintegerrima albo-tomentissima scapisque monocephalos gerentibus; involucri squamis oblongo-linearibus viscoso-pubescentibus; ligulis 20-30; pappi paleis conspicuis. — In dry volcanic ashes, near the summit of a volcanic hill south of Lake Mono, alt. about 9,000 feet. A remarkable species of this now well-established genus. Leaves thickly coated with matted white wool

(which may at length be deciduous?), broadly-spatulate or cuneate-obovate, one or two inches long, including the long-attenuate base or petiole. Scapes from 2 to 4 inches high, naked or with a few small linear bracts, viscous-pubescent, but entirely destitute of the white wool, as is the involucre also. Head about as large as that of *H. nana*, the involucre similar. The broad and truncate, eroded, silvery paleæ of the pappus are one fourth or nearly one third the length of the silky-villous achenia.

RIGIOPAPPUS, Nov. Gen. *Heleniæarum*.

Capitulum pluriflorum, heterogamum; floribus radii 5–8 fœmineis, ligula parva discum vix superante; disci hermaphroditis, corolla tubulosa angusta 3–4-dentata, dentibus brevissimis. Involucrum biseriale, floribus brevius, e squamis subulato-linearibus rigidis foliis ramealibus conformibus. Receptaculum planum nudum. Styli rami fl. herm. parte stigmatosa brevi glabra (more *Asteroidearum*) complanata in appendicem gracilem subulatam hirtellam producta. Achenia gracilia, linearia, compressa, hispidula, transverse rugulosa. Pappus simplex, e paleis 4–5 rigidis subcorneis aristiformibus (angusto-subulatis corollam superantibus achenio ipso paullo brevioribus) constans. — Herba annua, gracilis, puberula; foliis alternis linearibus; ramis floriferis ex apice caulis simplicis paucis filiformibus monocephalis inferne aphyllis; floribus luteolis vel albidis?

RIGIOPAPPUS LEPTOCLADUS. — Dalles of the Columbia River, Oregon, Dr. Lyall, coll. Oregon Boundary Commission; communicated from the Herbarium of the Royal Gardens, Kew.

HEMIZONIA, DC., Torr. & Gray, § HEMIZONELLA.

Capitulum modo *Harpæcarpi* pauciflorum; floribus radii 4–5, ligula brevissima styli ramos haud superante, disci ad unicum raro duos intra cupulam 3–5 dentatam reducti. Achenia omnia perfecta; radii pl. m. obcompressa, subincurva. — Herbae annuae, tenellæ, foliis linearibus hirsutis fere eglandulosis. Acheniis exceptis ad *Harpæcarpum* referendæ.

HEMIZONIA (HEMIZONELLA) MINIMA: caule tenuissimo subpollicari 1–3-cephalo; foliis brevibus, summis capitula sessilia involucran-tibus eaque vix superantibus; acheniis glabris, radii obovatis erostris. — Dry soil, near Soda Springs, alt. 8,680 feet. Leaves 1½ to 2 lines

long, mostly opposite; the lower oval or oblong, minute. Doubtless this plant grows larger, but probably still remains different from the following species in its much obcompressed and broad achenia, the summit rounded and entirely destitute of any beak. Involucre, as in the other species, hispid-glandular on the back, completely enclosing the achenia.

HEMIZONIA (HEMIZONELLA) PARVULA: bi-tripollicaris, pilis albidis magis hispida; caule patentim ramoso; foliis angusto-linearibus, superioribus capitula sessilia involucrentibus eaque longe superantibus; acheniis glaberrimis angustis fusiformi-falcatis subtrigono-obcompressis, rostro brevi incurvo. — Klamath Valley, Oregon, Mr. Kronkite. Leaves half an inch to an inch long, half a line wide. It is this species which by the achenia most approaches the genus *Harpæcarpus*, but these are still decidedly obcompressed instead of compressed; and it would be very inconvenient now to admit compressed and obcompressed achenia into the same genus. Obviously these little plants are much reduced *Hemizonia*.

HEMIZONIA (HEMIZONELLA) DURANDI: caule a basi ramoso 3-6-pollicari; capitulis e dichotomiis plerisque pedunculatis folia fulcrantia adæquantibus; acheniis intus præsertim parce pilosis, floris centralis trigono apice truncato, radii obovato-oblongis trigono-obcompressis arcuatis, rostro brevi inflexo. (*Harpæcarpus madarioides*, Durand, Pl. Pratten. in Jour. Acad. Philad., non Nutt.) — Nevada County, California, Mr. Henry Pratten. Washoe County, Nevada, Mr. Stretch, communicated by Dr. Torrey. — Heads a line and a half in length, larger than in the foregoing species. I think this was also collected by Fremont, in his second expedition. But I possess no specimen of it.

WHITNEYA, Nov. Gen. *Heleniæarum* v. *Senecioneæarum*, epapposum.

Capitulum multiflorum, heterogamum; floribus radii ligulatis fœmineis, disci tubulosis hermaphroditis. Involucrum biseriale, e squamis 10-12 æqualibus oblongo-lanceolatis acutis herbaceo-membranaceis. Receptaculum convexo-conicum, epaleatum, dense hirsutum. Ligulæ magnæ. Corollæ disci infundibuliformes, lobis breviusculis ovatis. Antheræ ecaudatæ. Stylus radii elongatus, disci ramis brevibus lineari-subulatis complanatis obtusiusculis extus hirtellis. Achenia oblonga, obcompressa, calva. — Herba *Arnica* facie, montium Californiæ in-

cola: caule simplici e rhizomate gracili repente folisque oppositis tomento tenui argentatis; capitulo specioso; floribus aureis.

WHITNEYA DEALBATA. — Dry woods on the Yosemite trail, alt. 7,000 feet. Stem simple, a foot high, naked above, and bearing a single head, or with an additional monocephalous peduncle from the axil of the uppermost leaves. Leaves entire, mucronate; the radical or subradical ones obovate or oval, 3-5-nerved at the base, tapering into a flat or winged petiole; the cauline usually a single pair, smaller and narrower, sessile, and sometimes connate. Rarely there are two alternate bracts. Lateral peduncles, when they occur, usually bibracteate. Involucre half an inch long, equalling the disk, tomentulose. Tube of the corolla glandular-pubescent. Ligules over an inch long, lanceolate-oblong, 7-9-nerved, minutely three-toothed at the apex. Branches of the style in the disk-flowers tapering into a bluntish hairy apex, but not tipped with any distinct cone or appendage. Achenia hirsute-pubescent; those of the ray flat, 3-nerved on the inner face, and obscurely so on the outer face; those of the disk apparently similar and fertile, but immature in the three specimens collected. — This handsome Composita, doubtless belonging either to the *Senecioneæ* or *Helenicæ* (although destitute of pappus), is dedicated to the eminent Geologist in charge of the Californian State Survey, Professor Josiah D. Whitney, under whose superintendence a most interesting and extensive collection of dried plants of California, especially of the high sierras, has been made.

RAILLARDIA, Gaudichaud, § RAILLARDELLA.

Achenia magis compressa. Pappus niveus. Styli rami appendice tenuiori superati. Receptaculum planum seu convexum. — Herbæ acaules, pumilæ, regionum alpinarum Californiæ montium incolæ, rhizomatibus subterraneis repentibus apice folia rosulata lanceolata subnervia scapumque gracilem monocephalum proferentibus.

RAILLARDIA (RAILLARDELLA) ARGENTEA: foliis spatulato-lanceolatis utrinque argenteo-sericeis; involuero cylindrico 7-15-floro cum scapo nudo glanduloso, squamis longe ultra medium coalitis; receptaculo plano glabro. — Sonora Pass, 8,000-10,000 feet, and Ebbett's Pass, at about the same altitude, on dry slopes. — Leaves one or two inches long, tapering into a short petiole, subcoriaceous; the silvery-silky pubescence perhaps somewhat deciduous with age. Scape $1\frac{1}{2}$ to

5 inches long, leafless and bractless. Involuere over half an inch in length, of 7-12 linear scales, which coalesce to near their acute tips, but are readily separable. Corolla light yellow. Branches of the style linear and gradually produced into a slender subulate appendage. Achenia linear, compressed, silky-pubescent, scarcely narrowed at the base. Bristles of the pappus softly plumose, bright white, nearly equaling the corolla.

RAILLARDIA (RAILLARDELLA) SCAPOSA: foliis subspathulato-linearibus ciliolatis cum scapo elongato inferne nunc 1-2-phylo subviscosis; involuero cylindraceo-campanulato 20-30-floro, squamis vix ultra medium coalitis; receptaculo convexo subpiloso. — On a peak of the Sierra Nevada, N. N. E. of Soda Springs, in sunny places, at an elevation of 10,000 feet. Leaves narrower and mostly longer than in the preceding species, $2\frac{1}{2}$ to 4 inches long, including the slender tapering base or petiole, wholly destitute of silvery pubescence, glabrous except a slight glandular pubescence along the margins, and viscid. Scape very slender, eight inches to a foot high. Head nearly an inch long. Receptacle showing somewhat of the hairiness and convexity of the genuine species of *Raillardia*.

These two species are, perhaps, the most interesting botanical discovery made by Professor Brewer. I had long since remarked that *Argyroxiphium* and *Wilkesia*, — very peculiar *Compositæ* of the Sandwich Islands, — represent there the *Madicæ* so characteristic of California and Oregon. We have here, in turn, two Californian plants so intimately allied to a most characteristic Hawaiian genus, *Raillardia* that, notwithstanding the difference in habit, I cannot venture to distinguish them generically.

ARTEMISIA POTENTILLOIDES: *Seriphidium*, undique incano-sericea, subpedalis; foliis radicalibus bipinnatisectis, caulinis plerisque pin-natipartitis, segmentis 3-11 linearibus nunc latiusculis; capitulis 3-6 hemisphæricis (majusculis) corymbosis; pedunculis gracilibus; involucri squamis circa 10 æqualibus obovatis, marginibus hyalinis; receptaculo convexo hirsutissimo; floribus compluribus flavis. — Nevada, near Carson City, Dr. C. L. Anderson. — A most distinct species, with a tuft of simple ascending stems and bipinnately-divided silvery leaves from a thickish caudex; the cauline leaves few and small, an inch or less in length, the uppermost reduced to simple linear bracts. Heads 4 lines in diameter, depressed; the flowers all hermaphrodite and fertile.

CALAIS ERIOCARPHA: *C. cyclocarpæ* et *Bigelovii* similis; foliis *Turaxaci*; acheniis paullo gracilioribus acute costatis; pappi paleis (quandoque 3-4) ovalibus integerrimis extus lanatis arista sesquibrevioribus.—Nipoma, on low hills. The woolly paleæ of the pappus present a striking feature.

CALAIS APHANTOCARPHA: *C. Bigelovii* similis; acheniis paullo gracilioribus; pappi paleis 5 minimis deltoideis subito in aristam tenuem scabram achenio longior productis.—Bushy Knob, southeast of Monte Diablo. Leaves and scapes (one to two feet high) and the whole aspect not unlike *Leontodon autumnale*. Achenia of *Eucalais*, the outermost villous. Pappus of *Scorzonella*, the paleæ being reduced to a mere basal dilatation of the slender awn, but only five in number.

STEPHANOMERIA LACTUCINA: caule subsimplici e radice perenni tenuiter puberulo ad apicem usque æqualiter folioso oligocephalo; foliis lanceolatis seu linearibus parce spinuloso-dentatis vel integerrimis; capitulis subcorymbosis; involucri (semipollicaris) squamis lanceolatis subimbricatis; floribus circiter 10.—Dry hill near Big-tree Road in the Sierra Nevada, alt. 6,000 feet. A somewhat anomalous and large-flowered species of this genus, with the aspect rather of a reduced form of *Mulgedium pulchellum*. Stem not much branched. Leaves from $1\frac{1}{2}$ to $2\frac{1}{2}$ inches long, sessile, not clasping. Scales of the involucre somewhat broadly lanceolate, the outer ones of various lengths, and thus gradually passing into the inner ones, making the involucre somewhat imbricated. "Flowers delicate rose-color." Mature achenia not seen; but the ovaries wholly as in *Stephanomeria*. Pappus bright white, 4 or 5 lines long.

STEPHANOMERIA? CICHORACEA: tomento tenui mox evanido glabrata; caule rigido elato, ramis virgatis superne nudis racemoso-oligopolycephalis; foliis caulinis lanceolatis coriaceis rariter pinnatifido-dentatis vel denticulatis, dentibus spinescentibus; involucre circiter 12-floro e squamis plurimis lanceolatis gradatim imbricatis (exterioribus subsquarrosis) constante; receptaculo favoso; ligulis brevibus ut videtur roseis; acheniis levibus; pappo sordido rigidulo breviter plumoso.—In the collection of Dr. Van Horn, from Fort Tejon, comm. to Professor Brewer. A plant of wholly doubtful genus, with the habit of *Cichorium Intybus*, but more leafy up the stems or branches; the leaves from 2 to 6 inches long, rigid, the larger ones furnished,

especially toward the base, with some coarse salient teeth. Flowers larger than in any genuine *Stephanomeria*; the involucre fully half an inch in length, of more rigid and imbricated scales than in that genus; the ligules about three lines long, scarcely exceeding the tube of anthers. Achenia, still young, short, truncate, costate, with wide intervals, not at all narrowed at the summit. Bristles of the pappus 15 to 20, uniserial, somewhat coalescent at the base, 3 lines long, equalling the tube of the corolla, barbellate-plumose after the manner of a *Liatris*. Plant apparently as much as three feet high; the base of the stem not seen.

CREPIS ANDERSONII: glaber (capitulis exceptis); caudice perenni folia oblongo-spathulata vel oblongo-lanceolata laciniato-pinnatifida seu dentata subruncinata scaposque corymboso-ramosos proferente, ramis monocephalis; involucre glanduloso-pubero vel glabrato 2-3-seriali, squamis lanceolatis, interioribus attenuato-acuminatis discum fructiferum adæquantibus; acheniis fusiformibus sensim brevi-rostratis angulato-pluricostatis. — Nevada, in the vicinity of Carson City, chiefly in low grounds. Leaves 2 to 5 inches long, including the tapering base or petiole, sometimes only denticulate or dentate, sometimes pinnatifid and with the lobes lacinate-toothed. Scapes from 10 to 24 inches high, angled and strongly striate, usually leafless and with a few linear bracts. Heads three fourths of an inch in length, or sometimes smaller; the involucre more imbricated than in *C. occidentalis* and *C. runcinata*. Flowers golden yellow. Achenia about 3 lines long, smooth, angled with salient ribs and deep furrows. Pappus soft and white.

HIERACIUM BREWERI: humilis (triuncialis ad subpedalem); foliis uniformibus oblongo-spathulatis integerrimis cum caule usque ad apicem folioso pilis longis mollibus albo-villosissimis; panicula corymbosa polycephala; capitulis parvis 10-15-floris; involucre subimbricato cylindræo vix glanduloso cum pedicellis parce piloso; floribus flavis; acheniis oblongo-linearibus haud apice vix basi angustatis. — Silver Valley in the Sierra Nevada, alt. 7,350 feet, and (a dwarfed alpine state) Silver Mountain, alt. 11,000 feet. Somewhat resembling the most hairy forms of *H. Scouleri*, Hook.; but dwarf, very leafy to the top, and canescent with very soft shaggy hairs, except the inflorescence; the latter of very numerous heads in a crowded panicle. Involucre 3 lines long.

To the account of these new *Compositæ* of Western North America I append the characters of a striking new genus belonging to the Sandwich Islands, recently discovered by Mr. Horace Mann.

HESPEROMANNIA. Nov. Gen. *Mutisiacearum*.

Capitulum homogamum, multi- et æqualiflorum, discoideum, floribus hermaphroditis. Involucrum campanulato-turbinatum, multiseriale; squamis chartaceo-rigidulis obsolete nervatis, mucronato-acutis, interioribus lineari-lanceolatis, exterioribus sensim brevioribus. Receptaculum planum nudum. Corollæ subcoriacea, angustæ, subregularis (leviter bilabiata, $\frac{3}{4}$, extus intusque glabræ, tubo 5-nervi), laciniis longis linearibus erectis. Filamenta imo tubo corollæ inserta, e fauce exserta: antheræ lineares, brevissime caudatæ, caudis truncatis ultra articulum haud productis. Stylus filiformis, ramis brevissimis angustis acutiusculis. Achenium oblongo-lineare, angulatum, erostre, glabrum. Pappus multiserialis, setis rigidulis scabris. — Arbuscula inermis, glaber: foliis obovato-oblongis subserratis penninerviis breviter petiolatis ad apices ramorum brevium confertis: capitulis terminalibus subumbellatis brevi-pedunculatis ea *Chuquiragæ insignis* æmulantibus; floribus flavis.

HESPEROMANNIA ARBORESCENS. — On the highest part of Lanai, one of the Sandwich or Hawaiian Islands; coll. Horace Mann and W. T. Brigham.

This is specially interesting as being the only known *Labiatiflora* from any of the proper Pacific Islands. These *Compositæ*, so characteristic of South America, appear to be wanting even in Juan Fernandez. As the present plant does not fall into any published genus, it would appropriately bear the name of its discoverer, Mr. Horace Mann, the latest and one of the most ardent explorers of the botany of the Sandwich Islands, who has gleaned not a few novelties in a field which has been harvested by numerous botanists, from Nelson and Menzies, in the times of Cook and Vancouver, down to Remy in 1851 – 1853. The name of *Mouita*, however, having been already bestowed upon a genus of *Simarubeæ*, in commemoration of the arduous botanical services of Mr. Gustavus Mann in Tropical Africa, I venture, in the generic appellation here proposed in compliment to our Western young botanist of the same name, to compound the word by a distinguishing prefix.

The genus belongs to the *Flotowia*, according to Weddell's neat arrangement: and agrees with *Chuquiraga* and *Doniophyton* in having the long filaments free from the corolla down almost to its base. But the merely scabrous copious pappus, and naked and glabrous receptacle, as well as the corolla glabrous within, and the achenia, wholly separate it from these andine genera. On the other hand, it quite as much resembles the Brazilian and Cuban *Stiftia* and *Anastrapia*; but in the latter of these genera the filaments are adnate almost, and in the former quite, to the sinuses of the corolla; while the anthers in both of them are long-tailed, and the lobes of the corolla more or less revolute.*

Two well-marked new Ferns, which the explorations of the California State Geological Survey have brought to light, are characterized by Professor Eaton as follows:—

PELLÆA BREWERI, *D. C. Eaton* (sp. nov.): caudice brevi assurgente; stipitibus bi-tripollicaribus confertis fulvo-nitentibus teretibus fragillimis basi paleis angustissimis fulvis obtectis; frondibus tri-quadrillicaribus oblongis pinnatis, pinnis brevi-petiolatis membranaceis pellucidis plerumque bipartitis, segmento superiori majore, segmentis pinnisque superioribus ovatis vel triangulari-ovatis basi cuneatis, venis liberis pluries furcatis; sporangiis ad apices venularum paucis indusio continuo tenui revoluta velatis.—Rupestris inter montes *Sierra Nevada* Californiae, altitudine 7,000–9,000 ped. super mare. Prof. W. H. Brewer, n. 1919, 2102, 2038.

ASPIDIUM (POLYSTICHUM) CALIFORNICUM, *D. C. Eaton* (sp. nov.): elatum, insigne; frondibus oblongo-lanceolatis pinnatis, pinnis confertis lanceolatis falcatis acutissimis basi superiori auriculatis, imis vix minoribus, inferioribus pinnatifidis, mediis pinnatilobatis, supremis gradatim minoribus spinuloso-serratis, lobis ovato-oblongis spinuloso-apiculatis subtus paleis angustis conspersis supra glabris, venis pinnatis liberis, pinnis fere omnibus soriferis; soris confertis; indusiis teneribus orbiculatis ciliatis pedicello brevi gracili suffultis; rhachi stipiteque paleis difformibus instructis aliis magnis lato-lanceolatis aliis minoribus

* In *Stiftia chrysantha* I do not find the tube of the corolla 10-nerved, nor the branches of the style acute; the latter are rather spatulate and very obtuse.

anguste linearibus ciliatis. — In montibus Californiae prope *Santa Cruz*, H. N. Bolander. Frons fere bipedalis, 5 – 6 poll. lata. Stipes pedalis et ultra. E grege *A. lobati*, sed aspectu et elegantia *A. munitum* referens.

New York Botanical Garden Library

QK 194 .G65 gen
Gray, Asa/Botanical contributions. 1865.



3 5185 00135 0444

