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V.

CONTRIBUTIONS TO NORTH AMERICAN BOTANY.

BY ASA GRAY.

Presented June 9, 1880.

I. *Notes on some Compositæ.*

As the portion of the Synoptical Flora of North America which contains this order, now under elaboration, cannot immediately be published, it will be advantageous to fix some of the results already reached by a few notes and characters.

VERNONIA. The North American species, although few, are difficult, both on account of variation and probable hybridization. The principal change from Torrey and Gray's Flora now made is the restoration of *V. altissima*, Nutt., standing between *V. fasciculata* (to which some of it had been referred) and *V. Baldwinii* or *V. Noveboracensis*. A good new species comes in under the name of

VERNONIA LETTERMANNI, Engelm. in litt. *V. Jamesii* et *V. fasciculatæ* affinis, glaberrima, lœvis; foliis angustissime linearibus eveniis integerrimis planis; capitulis numerosis paniculato-cymosis pedunculatis lanatis cylindraceis 10–14-floris (semipollicaribus); involucri bracteis acutis vel acuminatis adpressis inappendiculatis, externis ovato-subulatis, intimis angusto-lanceolatis purpureis; acheniis secus costas parum scabris.—Arkansas, on Cooper's Creek, Dr. J. M. Bigelow, and on sand-bars of the Washita, Lettermann.

AGERATUM LITTORALE is the name adopted for the *Cœlestina maritima* of Torr. & Gray, Fl. ii. 64, which is not *Ageratum maritimum*, HBK., that being a true *Ageratum* with diminutive pappus. A species of the Florida coast is likely to occur on shores of the Gulf and West Indies; but this has not yet been identified elsewhere.

EUPATORIUM AMBIGUUM, Hook. This name comes up in place of *E. parviflorum*, Ell., non Swartz. *E. BETONICUM* and *E. DISSECTUM* are *Conoclinium betonicum*, DC. (of which var. *subintegrum* is probably *E. Hartwegi*, Benth.), and *C. dissectum*, Gray, Pl. Wright.

BRICKELLIA SQUAMULOSA, Gray, Proc. Am. Acad., xv. 30, comes into our flora, being found by Mr. Greene to occur abundantly in New Mexico. It is woody only at the base, sending up long and simple stems which bear narrowly linear leaves, 2 or 3 inches long and less than two lines wide the first year; they flower the next year, when they bear only squamiform and minute leaves or bracts.

GARBERIA FRUTICOSA, Gray, in Proc. Acad. Philad., Nov. 1879, 379. Having followed Bentham and Hooker in the restoration of Cassini's genus *Trilisia*, I found Nuttall's *Liatris fruticosa* still more worthy of generic distinction. But, in taking up Nuttall's subgeneric name of *Leptoclinium* (in Proc. Am. Acad. xv. 48) I overlooked the patent fact that Gardner had used that name, somewhat illegitimately, for an allied Brazilian genus. Whereupon, as the above reference shows, I promptly took the opportunity of dedicating our genus, to the rediscoverer of the plant, Dr. A. P. Garber, of Columbia, Pennsylvania, a most devoted and acute botanist, who has done more for the development of the botany of subtropical Florida of late than any one, except Mr. A. H. Curtiss, who is still in the field.

APLOPAPPUS. The primary sections of this extended genus, as here accepted, are *Prionopsis*, *Aplopappus* proper (which is made to include *Eriocarpum*, Nutt., *Pyrrocoma*, Hook., *Homopappus*, Nutt., and *Sideranthus*, Nutt.), *Isopappus*, *Stenotus*, *Ericameria*, and *Macronema*.

APLOPAPPUS INTEGRIFOLIUS, T. C. Porter, is taken up from an unpublished name of a plant collected in Wyoming by J. M. Coulter and also by Burke, a species between *A. lanceolatus* or *paniculatus* and *A. uniflorus*. *A. Parryi*, which inclines on the one hand toward *Solidago*, especially in a reduced form (var. *depauperatus*), is included in the *Stenotus* section. *A. nanus* takes in *A. cervinus* of Watson as a variety, and the following new species are brought together into a subsection of the *Ericameria* section, which is transitional between that and the section *Macronema*.

APLOPAPPUS WATSONI. Viscidulo-pubescent, spithamæus; ramis fastigiatis subherbaceis e basi lignosa; foliis lanceolatis seu angusto-spathulatis oblongisve mucronato-acuminulatis membranaceis (vix pollicem longis); capitulis pauciusculis subglomeratis; bracteis involueri lanceolato-linearibus acutis vel acuminatis plerisque tenuiter chartaceis vel paucis herbaceis, omnibus erectis; ligulis 4-8; floribus disci vix numerosioribus; appendicibus styli ramorum setaceo-filiformibus. *Aplopappus suffruticosus*, Eaton, Bot. King, 159, pro parte.—Northern Nevada, Watson, Palmer, &c.

APLOPAPPUS GREENEI. Suffruticosus, pedalis, tenuiter viscoso-puberulus, cæterum glaber; caulis usque ad capitulum subsolitarium foliosis; foliis spathulato-oblongis parvulis (lin. 6-10 longis 2-3 latis); involucri subglandulosi bracteis angusto-lanceolatis acutis superne vel apice tantum foliaceis et patentibus; ligulis 3-7; fl. disci 13-16; styli ramis *Macronemæ*.—N. California, on the Scott Mountains of Siskiyou Co., E. L. Greene. Mountains of Union Co., Oregon, Cusick.

APLOPAPPUS MOLLIS. Præcedenti affinis, pube molli incana tomentosus; involucri bracteis (intimis linearibus scariosis exceptis) oblongis vel brevi-lanceolatis mucronatis, apice erecto foliaceo; ligulis 3-5.—High mountains of Union Co., Oregon, with the preceding, Cusick.

SOLIDAGO is divided into three primary sections or subgenera, viz. *Virgaurea*, *Euthamia*, and *Chrysoma*. The *Chrysastrum* section of Torrey and Gray is reduced to a subsection of the first, and is made to include *S. petiolaris*.

S. BIGELOVII is a New Mexican species founded on *S. petiolaris*, var., Gray in Bot. Mex. Bound. 79, collected by Bigelow, Wright, and Parry, and placed next to *S. Lindheimeriana* of Scheele, which was in Pl. Lindh. referred to *S. speciosa*, var. *rigidiuscula*.

S. SPATHULATA, DC. is the *S. spiciformis*, Torr. & Gray, an older and better name.

S. SPECTABILIS is the *S. Guiradonis* var. *spectabilis* of Eaton in Bot. King; but it and its relatives are of uncertain limitation.

S. CHAPMANII. *S. odoræ proxima*, validior, rigidior; caule superne scabro-puberulo; foliis brevibus oblongis vel ellipticis apice obtuso vel rotundato, summis rotundatis.—Pine barrens of Florida, Chapman (*S. odora* of his Flora, in part), Dr. Garber.

S. WRIGHTII. *Corymbosæ?* cinereo-puberula, scabrida; foliis caulinis oblongis seu lanceolato-ellipticis acutiusculis integerrimis rigidiusculis haud triplinerviis (radicalibus ignotis); capitulis subcorymboso-glomeratis; involucri bracteis lanceolatis acutiusculis, extimus puberulis; floribus radii 6-8, disci plus 20; acheniis pubescentibus. *S. petiolaris*, var., Gray Pl. Wright. i. 94. *S. Californica*, var., Rothrock, in Wheeler Rep. vi. 145.—W. Texas to Arizona, Wright, Bigelow, Rothrock.

APHANOSTEPHUS, DC. This genus, first brought into its present shape in Plantæ Wrightianæ, i. 93, has now five recognized species, which are arranged and characterized thus:—

* Pappus brevissime coroniformis, margine primum ciliolato-fimbriato cæterum integro; corollæ disci tubus parum incrassatus.

A. ARIZONICUS. Puberulus, subintegritfolius; pedunculis apice clavatis; ligulis brevibus; acheniis angustis teretibus costis circiter 10 angustis striatis. *A. ramosissimus*, Rothrock in Wheeler Rep. vi. 147.—Arizona, on the Gila, Rothrock.

A. RAMOSISSIMUS, DC. Hispidulo-pubescent; foliis inferioribus saepe laciniatis vel pinnatifido-incisis; pedunculis gracilibus; ligulis longioribus; acheniis parum pauci-costatis.—Texas and adjacent Mexico.

A. HUMILIS, Gray. Diffusus, pube molli cinereus; foliis saepius dentatis vel pinnatifidis; pedunculis gracilibus; acheniis brevioribus costato-angulatis.—S. W. Texas and Mexico.

A. RAMOSUS. Praecedenti affinis, parum pubescent; foliis omnibus linearibus integerrimis. *Keerlia ramosa*, DC. Prodr. v. 310.—Mexico, Keerl.

* * Pappus conspicuus, e corona dentata vel laciniata; corolla tubo basi demum incrassato indurato diu persistente in achenio valde angulato-costato. *Leucopsisidium* et *Keerlia skirrobasis*, DC.

A. ARKANSANUS, Gray.—Plains of Arkansas and Texas.

Var. HALLII. Minor; foliis imis saepius pinnatipartitis; corona pappi profundius 4–5-lobata, lobis subulato-acuminatis!—Hempstead and Austin, Texas, E. Hall, no. 303, 304.

A proposed new genus of the group to which *Aphanostephus* and *Keerlia* belong is

GREENELLA, Nov. Gen. *Comp-Astroidearum*. Capitulum heterogamum, radiatum, multiflorum; fl. radii 12–16 fœmineis, disci hermaphroditis, omnibus fertilibus. Receptaculum convexiusculum, nudum, parum alveolatum, alveolis dentatis. Involucrum latum; bracteis imbricatis pauciseriatis oblongis coriaceis margine (saltem interiorum) scariosis, apice obtuso, dorso viridi-herbaceo, exterioribus brevioribus. Ligulæ oblongæ exsertæ. Corollæ disci tubuloso-infundibuliformes, tubo proprio brevi, limbo 5-lobo. Antheræ inclusæ. Styli rami fl. herm. longe exserti, appendicibus linearibus complanatis obtusiusculis hirtello-puberis parte stigmatifera quadrata 4-plo longioribus instructi. Achenia oblongo-turbinata, canescens-puberula, 8-costata, basi apiceque truncata, pappo brevi coroniformi multisetuloso-dissecto superata.—Herba parvula, Arizonica, e radice ut videtur bienni vel perenni ramosa, diffusa fere glaberrima; foliis alternis integerrimis parvis, imis lanceolatis hispidulo-ciliolatis, superioribus linearibus decrescentibus

margine lœvibus; capitulis ramulos nudos terminantibus; ligulis albis majusculis; corollis disci forte albidis.

GREENELLA ARIZONICA. Near Tucson, S. Arizona, Rev. Edward Lee Greene (an enterprising botanist and most acute observer, to whom the genus is dedicated, and who discovered the plant in the year 1877); also J. G. Lemmon, who collected it in a more advanced state in the spring of 1880. If the ray-flowers of this plant were yellow instead of white, it would be referred to the genus *Xanthocephalum*, and the habit is nearly that of *X. linearifolium* and *X. sericocarpum*. But it shows no trace of the glutinosity or balsamic exudation which so largely prevails in the homochromous *Asteroideæ*. And *Xanthocephalum* has not the peculiar, large and long, much exserted style-appendages which are characteristic of the present plant.

CHÆTOPAPPA, DC. — *Chætopappa et Distasis*, DC.; Benth. & Hook. Gen. ii. 268. The species are

C. ASTEROIDES, DC. — Arkansas and Missouri to the borders of Mexico.

Var. IMBERBIS. Aristis pappi plane nullis; paleis latioribus quandoque coroniformi-concretis. — E. Texas, C. Wright.

C. PARRYI. Major, rigidior, hispidula, nunc glabrata; involucro turbinato; ligulis 6–7; appendicibus styli fl. disci brevibus obtusissimis; acheniis glaberrimis, fertilibus fusiformibus subcompressis 4-nervatis; pappi fl. radii paleis firmioribus cuneiformi-quadratis apice truncato laciniato-fimbriatis, aristis aut nullis aut 1–3 tenellis; acheniis disci plerisque inanis haud aristatis. *Distasis modesta*, Gray in Bot. Mex. Bound. 78. — Mt. Carmel on the Rio Grande, Parry.

C. MODESTA. Involucro late campanulato, bracteis pluribus obtusi oribus; ligulis 9–20; fl. disci 40–60 plerisque fertilibus; appendicibus styli angustioribus acutiusculis; acheniis magis compressis; pappi paleis 5 oblongis eroso-truncatis aristis sat validis alternantibus. *Distasis modesta*, DC. Prodr. v. 279. — Texas and adjacent Mexico.

An anomalous Asteroideous Composita was collected on the adobe plains of S. W. Colorado by Mr. Brandegee, of which additional specimens are desired. It has the general aspect of some of the pauci-radiate Erigerons, such as *Erigeron Bigelovii*; and the characters are of that genus, except that the simple pappus consists of irregular awn-bearing paleæ.

TOWNSENDIA, Hook. Ever since the discovery of a considerable number of species, this very characteristic genus of the Rocky

Mountain region has been particularly difficult. The result of a recent study of it, in the form of the following synopsis of the species, may assist our botanists.

- * Involuci bracteæ insigniter sensim acuminatæ: capitulum amplum.
- + Annuæ vel biennes, caulescentes, pube hirsutula decidua demum glabratæ: bracteæ involuci lato- seu ovato-lanceolatæ, marginibus plerumque latissime albido-scariosis: ligulæ læte violaceæ vel cœruleæ.
- ++ Pappus abbreviatus, persistens, corneus, ex aristis 2 subulatis et squamellis demum rigidis sæpius coroniformi-concretis: achenium lato-obovatum glabratum: involucrum fere *T. grandifloræ*.

T. EXIMIA, Gray, Pl. Fendl. 70.—Northern New Mexico and Colorado, Fendler, Bigelow, &c.

- ++ + Pappus saltem disci plurisetosus generis: achenium angusto-obovatum.

T. GRANDIFLORA, Nutt. Mox decumbenti-patens, angustifolia; involuci bracteis acumine cuspidato; pilis achenii sub lente glochidiato-capitellatis: pappus radii e squamellis brevibus.—Wyoming and Nebraska to New Mexico.

T. PARRYI, Eaton in Am. Nat. viii. 212. Erectus, nanus, simplex; foliis spathulatis: involuci latissimi bracteis angustioribus tenuioribus minus attenuatis, extimis parum acuminatis; acheniis canesceni-pubescentibus, pilis apice acutis vel 1-2-dentatis; pappo radii ut disci plurisetoso.—Rocky Mountains of Wyoming and E. Idaho, Hayden, Parry.

Var. *ALPINA*. Forma depressa, cinereo-pubescentia, parvifolia; caule florifero abbreviato vel fere nullo; bracteis minus acuminatis; ligulis "roseo-purpureis."—High divide between Stinking Water and the Yellowstone (confounded with *T. spathulata*), Parry.

+ + Perennis e caudice stoloniformi, depressa, pilis longis arachnoideis lanosissima; capitulo intra folia rosulata spathulato-obovata sessili: bracteæ involuci lineares, molles: pappus disci et radii plurisetosus, tenuis.

T. CONDENSATA, Parry in Am. Nat. viii. 213 (char. ex D. C. Eaton).—Wyoming, on an alpine peak of the Owl Creek range, T. D. Putnam.

- * * Involuci bracteæ parum vel haud acuminatæ: capitulum minus vel angustius.

— Pili achenii gracilia, copiosa, simplicissima, nonnulla apice 2–3-fida, lobis vel denticulis parum patentibus acutis vel acutiusculis: capitula mediocria, involucro minus imbricato, pedunculo saepius nudo: ligulae roseo-purpureae, rarius albæ: annuae vel biennes, occidentales.

++ Pappus radii plurisetosus disci conformis vel brevior.

T. FLORIFER. Spithamæa, cinereo-hirsuta; caulis e radice annua gracilibus; foliis linearibus imisve subspathulatis acutis nunc apiculato-acuminatis; involuci bracteis linear-lanceolatis parum inæqualibus. *T. strigosa*, Gray in Wilkes Exped. xvii. 344, non Nutt. *Erigeron florifer*, Hook. Fl. Bor.-Am. ii. 20. *Aplopappus florifer*, Hook. & Arn. Bot. Beech. 351. *Stenotus florifer*, Torr. & Gray, Fl. ii. 238.— Sandy banks of the Columbia River and its tributaries (as far north as Wenass Valley, Lyall), and in the dry region east of the Cascades.

T. SCAPIGERA, Eaton. Humilior, hirsuto-pubescent; caulis scapiformibus (inferne 1–2-foliatis); foliis radicalibus spathulatis, lamina saepius lata brevi; involuci bracteis latiuscule lanceolatis. Bot. King, 145, t. 17. *Aplopappus florifer*, var. Hook. & Arn. l. c.? — Mountains of N. Nevada and N. E. California, Watson, Lemmon, Mrs. Austin.

Var. **CAULESCENS**, Eaton, l. c., is a summer form, becoming sparingly leafy-stemmed, slender, and with rather smaller heads.— Monitor Valley, Nevada, Watson.

Var. **AMBIGUA** is still more leafy-stemmed, with white rays, and the pappus in the ray shorter than that of the disk.— Rabbit Valley, Utah, Ward.

++ ++ Pappus radii setoso-squamellatus latitudine achenii brevior.

T. WATSONI. Pube brevi adpressa subcinerea: caulis e radice gracili patentibus saepe ramosis parceque foliatis; foliis anguste spathulatis; capitulis sat numerosis brevi-pedunculatis; bracteis involuci oblongo-lanceolatis; pilis achenii brevibus obtusis vel apice dentibus 2–3 obtusis instructis. *T. strigosa*, Eaton, l. c., non Nutt.— Utah, on the shore of Stanbury Island, Great Salt Lake, Watson.

— + Pili achenii aut omnes aut plurimi glochidiato-capitellati, i. e. apice breviter bidentati, dentibus obtusis recurvis subglandulosis?

++ Capitulum sat magnum ($\frac{3}{4}$ -pollicare); involucro pluriseriatim imbricato: plantæ fere glabræ, depresso-acaulescentes e radici perenni: folia plana, inferne longe attenuata, coriacea, capitulum longe superantes.

T. WILCOXIANA, Wood. Foliis linear-spathulatis (1–3-pollicaribus);

capitulo saepius unico subpedunculato; involuci bracteis lanceolatis, intimis linearibus acutiusculis; pappo radio et disci conformi e setis gracillimis elongatis. Bull. Torr. Club, vi. 163, & Bot. Gazette, iii. 50.— Colorado and Indian Territory, E. K. Smith, Dr. Wilcox, and Arizona, Lemmon.

T. ROTHROCKII, Gray. Foliis lato-spathulatis brevibus circa capitulum sessile rosulato-confertis; involucro breviore latiore, bracteis oblongis plerumque obtusis; pappus radii e setulis squamellatis latitudinem achenii haud excedentibus, nunc 1 vel 2 longioribus. Rothrock in Wheeler Rep. vi. 148, t. 7.— Alpine region of the mountains around South Park, Colorado, Rothrock.

++ ++ Capitula majuscula ($\frac{2}{3}$ - $\frac{1}{3}$ -pollicaria), plerumque sessilia; involucro pluriseriatim imbricato: pappus radii saepius plurisetosus: plantae sericeo- vel striguloso-pubescentes, radice perenni, *T. incana* forte excepta.

T. SERICEA, Hook. Depresso-acaulescens, demum multiceps et pulviniformis; foliis linearibus seu linearis-spathulatis circa capitulum (pollicare vel minus) arcte sessile confertis eumque aequantibus vel superantibus; bracteis involuci angusto-lanceolatis plerisque acutis; ligulis albis vel purpureo tinctis; pappo saepius conformi plurisetoso (forma **PAPPOSA**, Gray, Pl. Fendl. 69), vel radii pauci-setoso, vel breviore validiore, vel squamellato latitudinem achenii parum excedente. Fl. Bor.-Am. ii. 16, t. 119; Mechan, Flowers, ser. 2, i. t. 47. *Aster ? exscapus*, Richards.— Saskatchewan and Rocky Mountains, lat. 54° , to New Mexico and Arizona; fl. April and May. Very variable in breadth of leaves, size of heads, &c.; commonly with pappus of ray and disk nearly alike, only at the North found with the ray-pappus reduced, either to a few unequal aristiform bristles, as figured by Hooker, or to a circle of setiform squamellæ. In one form the heads are only half an inch long.

Var. **LEPTOTES** (an spec.?): forma ambigua; capitulis vix semipollicaribus, primario sessili, sequentibus subpedunculatis; foliis angustis.— Middle Park, Colorado, Parry.

T. ARIZONICA. Depresso-subcaulescens, multipiciti-ramosa, 2-3-pollicaris, pube minuta sericeo-canescens; foliis spathulatis brevibus (semipollicaribus) capitulum parum sessile hemisphaericum (semipollicare) fulcrantibus vix superantibus; bracteis involuci lanceolatis plerumque obtusis; pappo radio et disci conformi e setis rigidiusculis achenio (lin. 2-3 longo) aequilongis.— Arizona, at Fort Trumbull, &c., Palmer.

T. INCANA, Nutt. Depresso-caulescens vel subcaulescens e radice forte monocarpico; caulibus demum $1\frac{1}{2}$ -4-pollicaribus ramosis; foliis striguloso-cinereis vel canescentibus angusto-spathulatis linearibusque, summis capitulum sessile (semipollicare) fulcrantibus vix superantibus; involuci bracteis sericeis parum obtusis; pappo radii eo disci subdimidio breviore. Trans. Am. Phil. Soc. l. c. *T. Fremontii*, Torr. & Gray in Jour. Bost. Soc. Nat. Hist. v. 108.—Rocky Mountains of Wyoming to Utah and Nevada.

++ ++ ++ Capitula minora ($\frac{1}{3}$ -pollicaria) inter folia rosulata sessilia: herba depresso-multiceps e radice perenni gracili, villoso-lanata: folia spathulata, conferta: pappus radii et disci conformis e setis gracilibus conjunctim deciduis.

T. SPATHULATA, Nutt, l. c.—Rocky Mountains in Wyoming, Nuttall, Parry.

++ ++ ++ ++ Capitula parvula ($\frac{1}{4}$ -pollicaria), hemisphærica, saepius brevi-pedunculata: involucrum e bracteis pauciseriatis lato-lanceolatis parum acutis: herbæ caulescentes demum ramosæ, æstivales.

= Glabratæ, virides, perennes.

T. GLABELLA. Subsimplex, pollicaris vel bipollicaris e rhizomate gracili; foliis crassiusculis spathulatis petioli gracili, summis pedunculo paullo brevioribus; involucro glabro; pappo plurisetoso conformi sed radii dimidio breviore, vel diverso in radio brevi-squamellato.—La Pagosa, S.W. Colorado, Newberry.

= = Pube tenui strigulosa cinereæ: herbæ primum exiles simplices, demum laxe ramosæ 4-10-pollicares: pappus radii semper brevis, coroniformi-squamellatus, setis 1-2 brevibus raro additis.—§ *Nanodia*, Nutt, l. c. (Species nimis affines.)

T. FENDLERI, Gray, Pl. Fendl. 70. Radice gracili ut videtur perenni; foliis linearibus; involuci bracteis inæqualibus triserialibus acutis.—Gravelly hills of New Mexico and S. Colorado.

T. STRIGOSA, Nutt. l. c. Radice monocarpico gracili; foliis primariis spathulatis, sequentibus linearibus; capitulis parum minoribus, involuci bracteis latioribus acutiusculis tantum biserialibus, exterioribus brevioribus.—Gravelly hills and plains, Wyoming to New Mexico and Arizona.

T. MEXICANA, Gray, Pl. Fendl. 70, parum differt involuci bracteis æquilongis obtusissimis.—Saltillo, &c., Mexico, Gregg, Parry.

ERIGERON. This genus shades off into *Aster* in more than one direction; and its subgenus *Cœnotus* fairly runs into *Conyza*. It can

be limited only by taking into account a combination of characters, and insisting here upon one, there upon another. The general differences between it and *Aster* are found,—1. in the simpler involucre, of equal neither foliaceous nor appendiculate narrow bracts; 2. in the very numerous and narrow rays of the typical species; 3. in the very short, broad, and obtuse style-appendages; 4. simpler stems, naked above or with few more pedunculate heads; 5. less copious and more fragile pappus; 6. smaller achenia; their nervation is of little importance, but mostly there are only the marginal nerves. We adopt the genus with the extension which Bentham and Hooker, following our lead, now give to it. The various nominal genera which have been predicated on the pappus and the number of ray-flowers are nearly unavailable for good subgenera. The following arrangement, in which the needs of the student are much considered, commences with some of the most Asteroid forms, and ends with the species which merge in *Conyza*. The three primary sections here adopted are not very strictly characterizable; the two larger are connected by a small intermediate group.

§ 1. EUERIGERON. Flores fœminei omnibus ligulatæ ligulis elongatis, in perpaucis nulli.

Series 1. Perennes.

1. Species Am.-Bor.-Orientales, glabratæ, parvifloræ; ligulis 20–25 plerumque albis; acheniis 2–4-nervatis; pappo simplicissimo.—
§ *Erigeridium*, Torr. & Gray.

E. HYSSOPIFOLIUS, Michx. Fl. ii. 123. *Aster graminifolius*, Pursh. Fl. ii. 545.—Northern New England to Hudson's Bay, &c., west to shore of Lake Superior.

E. NUDICAULIS, Michx. l. c. *E. vernus*, Torr. & Gray, Fl. ii. 176. *E. integrifolius*, Bertol. Misc. vi. t. 3, non Bigel. *Aster vernus*, L. *Stenactis verna*, Nees, DC.—Pine barrens near the coast, Virginia to Louisiana.

2. Species Californicæ, etc., ligulis nullis; pappo simplici.

* Subcaulescens, pedunculis scapiformibus monocephalis.

E. BLOOMERI, Gray, Proc. Am. Acad. vi. 40.—Sierra Nevada, California to W. Oregon.

* * Foliosissimæ, humiles; capitulis sæpius solitariis.

E. SUPPLEX, Gray, Proc. Am. Acad. vii. 353.—N. E. California, Bolander, &c.

E. MISER, Gray, Proc. Am. Acad. xiii. 372.—Sierra Nevada near Summit.

* * * Foliosissimæ, elatiores glabræ; capitulis subcymosis.

E. INORNATUS. *E. foliosus*, var. *inornatus*, Gray, Bot. Calif. i. 330.—California to Washington Terr.

3. Species occidentales; caulis saepe ramosis foliatis e rhizomatibus vel caudice gracilibus; capitulis parvulis, involucro magis imbricato (bracteis 2-3-seriatis, exterioribus brevioribus); ligulis 12-40; acheniis binerviis (exterioribus nunc 3-nerviis); foliis viridibus nec canescensibus.

* Californicæ; caulis erectis inferne simplicibus apice subcymosoramosis; pappo simplici.

E. FOLIOSUS, Nutt.; Gray, Bot. Calif. i. 329. *E. Douglasii*, Torr. & Gray, Fl. ii. 177. *Diplopappus? occidentalis*, Hook. & Arn. Bot. Beech. 350. Et var. STENOPHYLLUS, Gray, l. c. *E. stenophyllus*, Nutt.—California, especially the western parts.

E. BREWERI, Gray, Proc. Am. Acad. vi. 541.—Sierra Nevada, in woods.

* * Texano-Neo-Mexicanæ, humiles; caulis a basi ramosis; pappo duplo.

E. BIGELOVII, Gray, Bot. Mex. Bound. 78.—On the Rio Grande near Fronteras, Wright, Bigelow.

4. Species occidentales, haud canescentes; caulis foliosis ima basi herbaceis; capitulis subcorymbosis; bracteis involuci æquilongis; ligulis 15-50.

E. CORYMBOSUS, Nutt. in Trans. Am. Phil. Soc. n. ser. vii. 308. Ligulæ 30-50, lineares, violaceæ. Pappus exterior e squamellis setuloso minutis.—Rocky Mountains of Wyoming to Washington Terr. and E. California.

E. DECUMBENS, Nutt. l. c. Ligulæ 15-40, lato-lineares, albæ vel purpurascentes. Pappus exterior vix ullus.—Idaho to Utah and the borders of California.

5. Species argenteo-canescentes, montanæ; caulis foliosis moncephalis 4-12-pollicaribus e caudice multicipiti lignescenti; ligulis albis circiter 50; foliis angustis; acheniis 6-10-nervatis.

E. CANUS, Gray, Pl. Fendl. & Proc. Am. Acad. viii. 650.—Northern New Mexico and E. Colorado.

E. ARGENTATUS, Gray, Proc. Am. Acad. l. c. *E. cæspitosus*, Eaton, Bot. King, pro parte. — Arid interior region of S. Utah and Nevada.

6. Species montano-occidentales, humiles e caudice multiplici ligne-scente vel incrassato; foliis angustis integerrimis (*E. composito* excepto); involucro haud lanato.

* Folia filiformia, ima nunc spathulato-linearia nec ultralineam lata.

+ *Corollæ disci tubo viloso-hirsuto*: achenia 2-4-nervata: involu-crumb e bracteis subinæqualibus: caules sæpe ramosi, capitula spe-ciosa sæpius albo-ligulata longius pedunculata gerentes: pappus fere simplex.

E. STENOPHYLLUS, Gray in Pacif. R. Rep. iv. 42.—N. W. Texas, Bigelow.

E. UTAHENSIS. *E. stenophyllum*, var.? *tetrapleurus*, Gray, Proc. Am. Acad. viii. 650. — Arid region of S. Utah, Mrs. Thompson, Capt. Bishop, Parry, Palmer.

+ + Corollæ disci fere glabræ: achenia binervata.

++ Pappus simplex: caules superne sæpius ramosi foliati: ligulæ 30-80, violaceæ vel albæ.

E. FILIFOLIUS, Nutt.; Torr. & Gray, Fl. ii. 177. *Chrysopsis canescens*, DC. Prodr. v. 328.—British Columbia to California, in the dry interior.

++ ++ Pappus satis duplex, serie exteriore setulosa vel squamellata brevi manifesta: caules floridi sæpius simplices, superne pedunculi-formes monocephali: ligulæ nunc ochroleucæ, saltem flavæ!

E. PEUCEPHYLLUS. Facie et involucro subimbricato *E. filifolium* simulans, pube cinerea adpressa magis strigillosa, demum glabratus; foliis filiformibus; ligulis 30-40 (lin. 2-3 longis) nunc pallide cæruleis nunc ochroleucis vel luteis; pappo exteriore squamellato. *E. ochro-leucus*, Auct. pro parte, Gray, Bot. Calif. i. 328, etc. *Diplopappus filifolius*, Hook. Fl. ii. 21, ex char.—British Columbia and Idaho to the Sierra Nevada, California.

E. OCHROLEUCUS, Nutt. Magis hirsutus, nunc glabratus; foliis e linear-filiformibus ad linear-spathulata inferne hirsuto-ciliatis; capitulo majore; involuci bracteis æquilongis; ligulis plus 40 (lin. 3-5 longis) nunc albidis nunc luteis; pappo exteriore fere setuloso.—Idaho and E. Oregon.

Var. **HIRTELLUS**. Hirsutior, immo hispidus pilis patentibus; ligulis aureis. *Chrysopsis hirtella*, DC. Prodr. v. 327? — E. Oregon and Idaho. Douglas? Cusick, Nevius, Howell.

+ + Folia palmati- (rarius pinnati-) partita, radicalia, vel 2-3 in caule scapiformi monocephalo, angusta, integerrima.

E. COMPOSITUS, Pursh. *E. pedatus*, Nutt. — Subalpine or alpine on the Rocky Mountains, Sierra Nevada to the Arctic regions, and Greenland.

Var. **DISCOIDEUS**, Gray, Am. Jour. Sci., ser. 2, xxxiii. 237.

Var. **TRIFIDUS**. Foliis parvulis 2-3-fidis, lobis oblongis vel ovatis. — Northern Rocky Mountains.

Var. **PINNATISECTUS**. Foliis pinnati-partitis in segmenta 7-11 integerrima vel 2-3-fida. — High mountains of Colorado, Hall, Hooker & Gray, Rothrock.

+ + + Folia ex angusto-linearibus ad lanceolata, ima spathulata, omnia integerrima.

++ Virides, pube hirsuta parca vel evanida: caules simplices, 2-6 pollicares e caudice multiplicati, superne nudi, monocephali: ligulæ nec numerosissimæ nec angustæ.

= Species alpinæ; pappo simplici; pube haud glandulosa.

E. RADICATUS, Hook. — A still obscure species.

E. NANUS, Nutt. *E. nanus* & *E. radicatus*, Nutt. in Trans. Am. Phil. Soc., l. c. — High Rocky Mountains.

E. URSINUS, Eaton, Bot. King, 148. *Aster glacialis*, Nutt. l. c. — High Rocky Mountains, occurs in several forms.

= = Species alpestris; pappo exteriori setuloso parum manifesto.

E. GLANDULOSUS, Porter, Fl. Colorad. 60. E caudice valido cæspitoso 3-5-uncialis, hispidulo-glandulosus, subscaber; caulis scapiformibus rigidiusculis; foliis radicalibus spathulato-lanceolatis (lin. 2 latis poll. 2 longis); capitulo majusculo; involucri bracteis subinæqualibus scabro-glandulosis parum hirsutis; ligulis violaceis lin. 5 longis. — Mountains of Colorado.

++ ++ Viridulæ, vix cinereæ, pube tenui substrigulosa plerumque adpressa: ligulæ pauciusculæ (25-30) nec angustæ: pappus fere simplex.

= Caules floridi simplices monocephali, sat validi, superne aphylli, capitulum majusculum superati.

E. NEVADENSIS, Gray, Proc. Am. Acad. viii. 649.—Sierra Nevada and adjacent mountains in W. Nevada.

Var. PYGMÆUS, Gray, l. c. An ambiguous form, of the higher peaks of the Sierra Nevada.

= = Caules debiles, diffusi, demum ramosi: capitula parvula, ligulis lin. 3 longis albis vel purpureo-roseis.

E. EATONI. Substrigoso-pubescent; caulis e radice subfusiformi 3–9-pollicaribus; foliis linear-lanceolatis seu angusto-linearibus (poll. 2–3 longis lin. $\frac{1}{2}$ –2 latis) supra glabrat; involucri bracteis subhirsutis fere æqualibus. *E. ochroleucus*, Eaton, in Bot. King, 152, non Nutt. — Wind River Mountains (C. Richardson) to the Uinta and Wahsatch, at 7,000 to 10,000 feet (Watson, Eaton, M. E. Jones), and S. Utah, Palmer.

E. TENER. Cinereo-puberulus; caulis exiguis laxis e caudice multiplicati; foliis spathulatis seu lanceolatis, radicalibus lamina $\frac{1}{2}$ –2-pollicari in petiolo sat longo, caulinis superioribus linearibus parvis; involucro lin. 2 longo, bracteis inæqualibus. *E. cæspitosus*, var. *tener*, Gray, Bot. Calif. i. 328.—High mountains of Nevada and adjacent part of California; also of Central Utah, Watson, Brewer, Parry.

++ ++ ++ Cinereo-canescentes, pube brevi molli vel hispidula haud adpressa: caules e caudice valido ramoso plurimi, foliosi, aut simplices aut superne ramosi, capitula mediocria pauca vel solitaria gerentes: folia latiuscula.

= Ligulæ 18–30, latiusculæ, oblongo-lineares, purpureæ, modo *Asteris*.

E. ASPERUGINEUS. Pube hispidula minuta cinereus; caulis simplicibus 2–6-pollicaribus saepius monocephalis; foliis caulinis inferioribus radicalibusque obovato-rotundis vel spathulatis (lin. 3–5 latis) petiolo longiusculo, superioribus lato-linearibus; involucro e bracteis paucis æqualibus; pappo simplicissimo. *Aster asperugineus*, Eaton in Bot. King, 142.—E. Humboldt Mountains, Nevada, Watson.

= = Ligulæ numerosæ uniserialis, albæ, nunc pallide roseæ: involucrum pl. m. villoso-hirsutum.

a. Pappus simplex.

E. CANESCENS, Torr. & Gray.—Northern Rocky Mountains.

b. Pappus duplex, exterior brevis setuloso-squamellatus.

E. CÆSPITOSUS, Nutt. in Trans. Am. Phil. Soc. l. c.; forma parvula.

Diplopappus grandiflorus, Hook. Fl. Bor.-Am. ii. 21, forma validior macrocephala.—Rocky Mountains from the Saskatchewan to Colorado and Utah.

++ ++ ++ Hispidæ vel hirsutissimæ pilis longis patentibus: caules simplices vel superne ramosi, foliosi, spithamæi: capitula majuscula; involucro hispido-hirsuto: ligulæ 50–60, etiam 80, longæ et angustæ, mox deflexæ: pappus aperte duplex.

E. PUMILUS, Nutt. Gen. ii. 147. Robustior; ligulis albis; pappo exteriori e setulis (vix squamellis) brevibus setis interioris vix latioribus. — Plains of Dakota to Colorado and the mountains of Utah.

E. CONCINNUS, Torr. & Gray, Fl. ii. 174. Hirsutior; foliis minus rigidis; caulis saepius ramosis floribundis; ligulis violaceis raro albis; pappo exteriori paleaceo-squamellato, paleis aut subulatis aut oblongis. Var. *CONDENSATUS*, Eaton in Bot. King, 151; forma nana; paleis pappi paucioribus latioribus. — Var. *APHANACTIS*, Gray, Proc. Am. Acad. vi. 540: ligulis abortivis vel brevissimis, vel fl. fœmineis plane nullis. — Arid districts, Rocky Mountains to the Sierra and Cascades, and from Brit. Columbia to Arizona.

7. Species alpinæ vel alpestres: folia latiora fere semper integerima: involuci laxi lanosissimi pilis longissimis multiseptatis: achenia saepius binervia: ligulæ ad 100 angustiusculæ: pappus fere simplex.

E. UNIFLORUS, L. — Alpine region of the Rocky Mountains and Sierra Nevada, north to the Arctic coast.

E. GRANDIFLORUS, Hook. Fl. Bor.-Am. ii. 18, t. 123. — Alpine and alpestrine regions of the Rocky Mountains.

Var. *LANATUS*. Depressus, ad *E. uniflorum* tendens, sed involucro squarroso-patente nec adpresso, foliis latioribus rarissime trifidis. *E. lanatus*, Hook. l. c. 17, t. 121. — High alpine summits.

Var. *ELATIOR*, Gray, Am. Jour. Sci., ser. 2, xxxiii. 237. Caule saepius pedali apice ramoso 2–5-cephalo folioso; foliis aut oblongis aut ovato-lanceolatis basi lata sessili. — Alpestrine, along streams in the Rocky Mountains of Colorado, first collected by Dr. Parry.

8. Species sylvaticæ vel agrestes, paucæ alpestres, latifoliæ: caules foliosi, superne ramosi, raro monocephali, basi nec flagelliformi nec repentes: involucrum haud lanatum: ligulæ plerumque violaceæ vel purpureæ.

* Capitula maxima (disco pollicem diametro) caules breves lignescentes decumbentes terminantia: pappus fere simplicissimus: ligulæ numerosissimæ et latiusculæ.

E. GLAUCUS, Ker.; Torr. & Gray, Fl. ii. 172, ubi synon. — Seashore of Oregon and California.

* * Capitula majuscula, disco semi- vel $\frac{2}{3}$ -pollicari: ligulæ 100 vel plures, angustæ: caules erecti, 1–2-pedales: folia integerrima: pap-

pus exterior manifestus, setulosus vel subulato-squamellatus. (Species nimis affines.) — § *Phœnactis*, Nutt. in Trans. Am. Phil. Soc. l. c. pro parte.

E. SPECIOSUS, DC. — Brit. Columbia to Oregon near the coast.

E. MACRANTHUS, Nutt. l. c. Involucrum glabrum vel subglabrum: capitula nunquam magna. — Rocky Mountains from Wyoming to S. Utah and New Mexico.

E. GLABELLUS, Nutt. Gen. ii. 147. *E. asper*, Nutt. l. c. — Saskatchewan and Minnesota to the Rocky Mountains, southward to Colorado and Utah. A polymorphous species as here received. The annexed is an ambiguous form, which but for the involucre would be appended to the foregoing.

Var. **MOLLIS**, Gray, Proc. Acad. Philad. 1863, 64. Pube (etiam involuci) brevi molli patente subcinereus; caule folioso. — Colorado Rocky Mountains, at 8,000 to 9,000 feet.

* * * Capitula majuscula vel mediocria: ligulæ minus numerosæ 50-70 vel pauciores, latiusculæ: corollæ disci sursum paullo ampliatæ, dentibus majoribus: pappus simplex: caules erecti mono-oligocephali: folia inferiora quandoque parce serrata. Transitus ad *Asterum*.

← Subalpinæ vel alpestres, occidentales, foliis læte viridibus: caules e rhizomate haud stolonifero subpedales ad bipedales, macriores (4-8-pollicares) monocephali.

E. SALSUGINOSUS. Rhizomatibus brevibus crassiusculis; foliis glabratris vel subglabris oblongis seu lanceolatis, imis obovatis vel spathulatis, superioribus apiculato-acuminatis, summis subulatis: involucro laxo glanduloso-pubero seu viscido, bracteis attenuatis apice patentibus; ligulis purpureis seu violaceis. *Aster salsuginosus*, Richards. App. Frankl. ed. 2, 32; Hook. Bot. Mag. t. 4942. *A. Unalaschensis*, Less. in Linn. vi. 124. — Var. **ANGUSTIFOLIUS**: forma macra, angustifolia, Californica. — Wet ground, Kotzebue Sound to northern Rocky Mountains and subarctic plains eastward, along the higher mountains to California, Utah, and New Mexico.

Var. **HOWELLII**. Caule magis æqualiter folioso; foliis ovatis eximie acuminulatis; ligulis tantum 30-35 latioribus albis. — Cascade Mountains, Oregon, May, 1880, Joseph and T. J. Howell.

E. COULTERI, T. C. Porter. Rhizomatibus gracilibus; foliis pubescenti-hirsutis vel glabratris pallide viridibus sæpius oblongis parce acute denticulatis vel integerrimis; involuci bracteis minus attenuatis vix patentibus undique vel basi villosis et glandulosis; ligulis angusti-

oribus albis vel purpureo tinctis. — Porter & Coulter, Fl. Colorad. 61 ; Rothrock in Wheeler Rep. vi. 154. — Rocky Mountains of S. Colorado, at 10,000 to 11,300 feet, Coulter. Wahsatch Mts., M. E. Jones, Rothrock. S. Utah, Ward. Sierra Nevada, California, Bolander, Greene, Lemmon.

— + Orientalis, stolonifero-cæspitosus ; capitulis mediocribus paucis umbellato-cymosis rariusve solitariis.

E. BELLIDIFOLIUS, Muhl. — Canada to Louisiana, west to Illinois. There are indications of an allied species in Oregon.

* * * * Capitula minora (disco lin. 3-4 lato) pl. m. cymosa : ligulæ numerosissimæ, angustæ, purpureæ vel purpurascentes : pappus simplex : plantæ sparsæ e surculis stolonibus filiformibus provenientes perennantes (vel biennes ?).

E. PHILADELPHICUS, L. ; Torr. & Gray, Fl. ii. 171, ubi synon. — Nearly throughout the United States and British America.

E. QUERCIFOLIUS, Lam. ; Torr. & Gray, l. c., ubi synon. — S. Carolina to Texas.

9. Species humiles, caulis repentibus seu ramis procumbentibus foliosis apice radicantibus perennantes : ligulæ numerosissimæ, angustæ, pallidæ : capitula solitaria, longe vel scaposo-pedunculata : pappus e setis pauciusculis.

* Pappus simplex : folia sæpe undulato-dentata seu lobata.

E. SCAPOSUS, DC. Prodr. v. 287 ; Benth. Pl. Hartw. 17. E. longipes, DC. l. c. 285. *Aster rivularis*, Schlecht. — Mexico.

Var.? CUNEIFOLIUS. Hirsuto-pubescentes ; ramis plerisque prostratis repentibus ; pedunculis axillaribus scapiformibus ; foliis cuneatis vel obovatis obtuse grosseque 5-9-dentatis, basi angustata integerima ; pube cinerea adpressa ; involucro lin. 4 diametro. *E. scaposus*, Torr. & Gray, Fl. ii. 170 ; Gray, Pl. Lindh. i. 11 (vix var. latifolium DC. ex char.). — Sandy sea-shore, Texas.

* * Pappus duplex, exterior subulato-setulosus : caules floridi scapiformes, steriles flagelliformi-procumbentes, foliosi, apice demum radicantes et proliferi : folia integerima, caulina angusta.

E. FLAGELLARIS, Gray, Pl. Fendl. 69. — W. Texas to New Mexico, S. Utah, Colorado.

Series 2. Species annuæ vel biennes, vix unquam montanæ.
* Achenia angusta minus compressa, apice truncato albo-coronulato : pappus simplex.

E. BELLIDIASTRUM, Nutt. Trans. Am. Soc. l. c. — Low plains of Nebraska to New Mexico.

* * Achenia compressa generis: pappus duplex, exterior brevissimus, setulis squamellisve numerosis nunc in coronulam pl. m. concretis. — § *Phalacroloma*, Torr. & Gray, Fl.

← Pappus conformis: folia pleraque integerrima: plantæ humiles.
++ Ligulæ 30–40, albæ.

E. MODESTUS, Gray, Pl. Fendl. 68, excl. syn., & Pl. Lindh. ii. 220.
— Sterile plains, W. Texas.

++ ++ Ligulæ circiter 100, angustæ.

E. DIVERGENS, Torr. & Gray, Fl. ii. 175, et var. CINEREUS.
E. cinereus, Gray, Pl. Fendl. *E. nudiflorus*, Buckley in Proc. Acad. Philad. — Nebraska to California and Mexico.

E. TENUIS, Torr. & Gray, l. c. — Arkansas, Louisiana, and Texas, in low grounds.

← + Pappus interior setosus in radio nullus, vel parcissimus caducus: ligulæ 50–80, albæ, nunc pururascentes (lin. 3 longæ): caules erecti, 1–4-pedales, folia plurima indivisa et capitula parvula sat numerosa gerentes. — *Phalacroloma*, Cass.

E. ANNUUS, Pers.; Torr. & Gray, l. c. ubi synon. — Canada to Virginia and west to Oregon.

E. STRIGOSUS, Muhl.; Torr. & Gray, l. c. — Canada and Saskatchewan to Texas and California.

Var. BEYRICHII, Torr. & Gray. — Arkansas and Texas.

← + + Pappus radii ut disci perfectus, interior caducus, exterior e squamellis insigniter concretis: folia caulina pinnatipartita: ligulæ numerosissimæ angustæ. — *Stenactis*, Cass. *Polyactis*, Less. *Polyactidium*, DC.

E. DELPHINIFOLIUS, Willd. New Mexico, Arizona, Mexico.

§ 2. TRIMORPHÆA. Flores fœminei sœpissime biformes, exteriores angustissime et breviter aut brevissime ligulati, interiores corolla filiformi tubulosa stylo multo breviore: folia subintegerrima. — *Trimorphæa*, Cass.

* Caules humiles sœpius monocephali e rhizomate perenni: ligulæ exsertæ, tubo pilis parcis elongatis pluriseptatis instructo.

E. ALPINUS, L. — Alpine region of the northern Rocky Mountains, Drummond.

* * Caules spithamæi ad sesquipedales e radice bienni vel subperenni, majores ramosi oligo-polycephali: ligulæ parum exsertæ vel inclusæ.

← Purpureæ: corollæ eligulatæ filiformes numerosæ.

E. ACRIS, L. — Anticosti and Labrador to the Rocky Mountains, south to Colorado and Utah, and to the northwest coast.

Var. DRÆBACHENSIS, Blytt, Norg. Fl. 561. Glaber vel subglaber; involucro nudo vel basi tantum hirsuto; ligulis aut subexsertis aut minutis filiformibus pappo etiam per anthesin brevioribus. *E. elongatus*, Ledeb. Fl. Alt. *E. Kamtschaticus*, DC. Prodr. *E. glabratus*, Hook. Fl. Bor.-Am. ii. 18, maxima parte, non Hoppe. — Same distribution, and numerous intermediate forms.

↔ + Albidæ, filiformes: flores interiores eligulatæ haud visæ!

E. ARMERIÆFOLIUS, Turcz. *E. lonchophyllum* & *E. glabratus* var. *minor*, Hook. *E. racemosus*, Nutt. — Saskatchewan and along the Rocky Mountains to Colorado, the Wahsatch, and the Sierra Nevada.

§ 3. CÆNOTUS, Nutt. Flores fœminei uniformes numerosi; ligulis inconspicuis semper tubo suo brevioribus, aut parum exsertis stylum vix superantibus, aut minimis etiam obsoletis: flores disci sæpius pauci, corolla quadridentata: herbæ annuæ et biennes, microcephalæ. (Transitus ad *Conyzam*.)

* Floccoso-lanatæ, incanæ, nec viscida vel hirta: pappus simplex.

E. ERIOPHYLLUS, Gray, Pl. Wright. ii. 77. — S. Arizona.

* * Leviter arachnoideæ, mox nudatæ, pube subviscida.

E. SUBDECURRENS, Schultz Bip. *Conyza subdecurrens*, DC. Prodr. v. 379. *C. Coulteri*, Rothrock in Wheeler Rep. vi. 155, non Gray. — S. Arizona on Mt. Graham, Rothrock. Mexico, recently collected by Schaffner, Parry, and Palmer.

* * * Pube nec lanata nec viscida hirsutæ vel hispidæ: caules foliosissimi.

← Inquilinæ, involucro cinereo-pubescente.

E. LINIFOLIUS, Willd. *E. ambiguus*, Schultz Bip. in Phyt. Canar. *E. Bonariensis*, DC. pro parte. *Conyza ambigua*, DC. *C. sinuata*, Ell. — Waste grounds, coast of S. Carolina to Florida.

↔ + Indigenæ, microcephalæ, involucro fere glabro.

E. CANADENSIS, L. — Everywhere common, now a cosmopolite weed.

E. DIVARICATUS, Michx. — River-banks of the Mississippi and its tributaries, to Texas.

ASTER. The revision of this vast genus is not yet completed, owing to the great difficulty which is experienced in settling the synonymy and the limits of some of the earlier as well as of the later known species. It is intended to accept the genus in the wide extent assigned to it in the *Genera Plantarum* of Bentham and Hooker, at least so far as North America is concerned, and also to include *Brachyactis*. The subgenera may be arranged in two series; the first of perennials, the second of annuals and biennials; and an endeavor has been made to dispose of the perennial Asters under the following subgenera.

§ 1. AMELLASTRUM, best marked by its broad and obovate very flat achenia with callous-nerved or thickened margins, and no lateral nerves. Here *A. alpinus* and the variety *flaccidus*, and the wholly Old World *A. Amellus*, L.

§ 2. MEGALASTRUM. This was indicated in Pl. Wright. ii. 75, and it connects the genus with *Townsendia*. The head, as the name denotes, is very large, and the leading character is found in the unusually coarse and rigid bristles of the pappus. The species are *A. tortifolius*, Gray (*Aplopappus tortifolius*, Torr. & Gray), and *A. Wrightii*, Gray (*Townsendia* § *Megalastrum Wrightii*, Gray in Bot. Mex. Bound. 78), Texano-Arizonian species, more or less suffrutescent.

§ 3. HELEASTRUM. DeCandolle's genus of that name, well restored as a section by Bentham, which also has unusually coarse and rigid pappus-bristles, the stronger ones somewhat clavellate at tip; the coriaceous-foliaceous bracts of the involucre are somewhat equal in length; the achenia narrow, mostly slender, little compressed, and 8-10-nerved. *A. eryngiifolius*, Torr. & Gray, and *A. spinulosus*, Chapman, are referred here, along with the original *A. paludosus*, Ait. All three are low pine-barren species of the Southern Atlantic States.

§ 4. HESPERASTRUM was indicated in the Botany of California, under § *Machærantha*. The single species, *A. Shastensis*, of Mt. Shasta, California, is truly perennial, has narrow and hardly at all compressed achenia traversed by 5 strong nerves and intermediate striæ; but the pappus is soft. The leading peculiarity is in the neutral rays, after the manner of *Corethrogynne*, of which it has somewhat the habit. But the style-appendages are slender and naked.

§ 5. BIOTIA, a well known group, with appendages to the involucral bracts so short or obscure that the section might be placed next to the sections *Dællingeria* and *Orthomeris*, while on the other hand it is nearly related to *Sericocarpus*, also to the *Calliastrum* group of the

§ 6. EUASTER, or ASTER PROPER. This includes all the remaining perennial Asters which have partly herbaceous or foliaceous, or at least herbaceous-tipped involucral bracts, and a simple pappus.

§ 7. DÆLLINGERIA, adopted from Bentham and Hooker, is marked by the short involucre of thin coriaceous inappendiculate bracts, and a double pappus, the outer like that of many species of *Erigeron*, the larger bristles of the inner commonly clavellate-thickened at apex; the rays, as in § *Biotia*, are few. *A. infirmus*, Michx. (a somewhat earlier name than *A. cornifolius*, Muhl.), *A. umbellatus*, Mill. (which includes *A. amygdalinus*), and the somewhat ambiguous *A. reticulatus*, Pursh, are the species.

§ 8. IANTHE, taken from Torr. & Gray, Fl., includes a few species with pappus inconspicuously double, the outer being slender-setulose or indistinct, the bristles of the inner not at all clavellate; the involucre, &c. that of the following section. (*A. obovatus*, Meyer, the *Rhinactina limonifolia*, Less., lies between this section and the preceding.) Our species are *A. linariifolius*, L., *A. scopulorum* (the *Chrysopsis alpina* and *Diplopappus alpinus* of Nuttall), and *A. ericæfolius* of Rothrock, which is the *Diplopappus ericoides* of Torrey and Gray.

§ 9. ORTHOMERIS is taken from Torrey and Gray, Fl., with some extension. It includes the remainder of our perennial Asters, those with simple pappus and no green tips to the involucral bracts. *A. acuminatus*, Michx., and *A. nemoralis*, Ait., make the first section. Another consists of *A. Engelmanni*, Gray, *A. ledophyllus* (promoted from the variety of the preceding), and *A. elegans*, Torr. & Gray, three very close species, and *A. glaucus*, Torr. & Gray. *A. ptarmicoides*, which forms another section, has a var. *Georgianus*, remarkably tall and branching, from the mountains of Georgia, where Dr. Chapman collected it; the *Xylorrhiza* section has a proposed new species, *A. Watsoni*, founded on a plant referred to *A. glacialis* by Eaton in Bot. King (no. 509): it may pass into *A. arenarioides*, Eaton. The remaining section consists of species which had been referred to *Oxytripolium*. The last of them is *A. tenuifolius*, L. (not of subsequent authors), which is *A. flexuosus*, Nutt., and which differs from the following only by the perennial rootstock.

The series of monocarpic (annual and biennial) Asters contains the following subgenera or primary sections, besides *Tripolium* of the Old World.

§ 10. OXYTRIPOLIUM. *Tripolium* § *Oxytripolia*, DC., excluding the perennial species. It is suspected that the widely distributed warm-

temperate species for which Nuttall's specific name of *divaricatus* was adopted by Torrey and Gray is *A. exilis* of Elliott. *A. subulatus*, Michx., is a name for the other species preferred to *A. linifolius*, L.; for the true original of the Linnæan plant is a *Galatella*. This species, with its inconspicuous rays, hardly surpassing the disk and commonly surpassed by the mature pappus, and with its fewer disk-flowers, must be held to invalidate the genus *Brachyactis*, which is

§ 11. CONYZOPSIS, Torr. & Gray. This name having been used in this sense, as the name of a section, before the generic name *Brachyactis* was published, should be continued by those who do not admit the latter genus. It is, as it were, the analogue of the section *Trimorphæa* in *Erigeron*. The American species are *A. frondosus* and *A. angustus*, Torr. & Gray. *Brachyactis robusta*, Benth., by its involucre, flat and nerved-margined achenia, and no ligules, appears to be a *Conyza*; besides its pappus is distinctly double. *B. menthodora*, Benth. (Hook. Ic. Pl. t. 1106) seems to be a true perennial *Aster*.

§ 12. MACHÆRANTHERA. One division of this is the genus *Machæranthera* of Nees; the other is the genus *Dieteria* of Nuttall. Except for the biennial or annual root, and the disposition to have spinulose-toothed or cleft or dissected leaves, this subgenus would rank among the true Asters in the early part of the first series. *A. gymncephalus* (*Aplopappus*, DC.) is a common Mexican species. As we receive it *A. canescens*, Pursh, would appear to comprise three or four species, the extreme forms being widely different. These are arranged as varieties, under the heads of var. *viridis* (the *Machæranthera canescens*, var. *glabra*, Gray, Pl. Wright. i. 89, etc.); var. *latifolius* (*M. canescens*, var. *latifolia*, Gray, Pl. Wright. ii. 75, and *Dieteria asteroides*, Torr. in Emory Rep. 142); var. *viscosus*, to which belongs *Dieteria viscosa* and *sessiliflora*, Nutt., and *D. incana*, Torr. & Gray (*Diplopappus incanus*, Lindl. Bot. Reg. t. 1693, & Hook. Bot. Mag. t. 3382); and var. *tephrodes*, of Southern California, Arizona, and New Mexico, which was named *A. incanus* in the Botany of California, but which cannot be Lindley's plant.

Among the true Asters are several forms which have to be named, such as *A. Porteri* for *A. ericoides*, var. *strictus*, Porter & Coult. Fl. Colorad. 56, and *A. Pringlei*, from the northern end of Lake Champlain,—species allied to *A. ericoides*. One species of Oregon is so well marked that it may here be characterized:—

ASTER CUSICKII. Cinereo-pubescent, pubescent, nec scabra; caulibus simplicibus vel apice ramosis 1-2-pedalibus usque ad capitula solitaria majuscula foliosis; foliis amplis (inferioribus poll.

3-4, summis 2-3 longis) membranaceis parce denticulatis vel integerimis, radicalibus caulinisque infimis spathulato-obovatis in petiolum alatum basi auriculato-dilatatum amplexicaulem angustatis, cæteris ovatis oblongisve acutatis basi cordato-amplexicaulibus; involucro hemisphærico foliaceo discum æquante, bracteis extimis foliis referentibus intimas lanceolatas superantibus; ligulis numerosis angustis pallide cæruleis semipollicaribus; acheniis glabris.—Along streams in the subalpine region, in the mountains of Union Co., E. Oregon, W. Cusick.

Whether *Galatella*, DC. (*Galatea*, Cass.) should be kept distinct from *Aster*, partly for geographical reasons, may be still a mooted question; but whether as a genus or subgenus it could hardly include a West-Indian shrubby plant, which has been mistakenly referred to *Solidago*. It is proposed now to distinguish it, under the name of

GUNDLACHIA, Nov. Gen. *Astroidearum*. Capitulum pauciflorum, heterogamum; floribus radii 1-3 fœminei; disci 3-5 hermafroditis, omnibus fertilibus. Involucrum angustum; bracteis siccis gradatim imbricatis subcarinatis uninerviis; intimis lato-linearibus, extimis brevibus subovatis. Corolla radii ligula alba oblonga discum æquante; disci flava, limbo usque ad tubum gracilem 5-partito, lobis linearibus patentissimis. Stamina prorsus exserta. Styli fl. herm. rami plani, appendice fere æquilonga et lata acutiuscula superati. Achenia gracilia, teretia, 5-nervia. Pappus uniserialis, e setis copiosis capillaris æqualibus.—*Frutex orgyalis*, ramis erectis foliosissimis linearibus subtrinerviis integerrimis, capitulis *Solidagini* referentibus, sed in thyrsus paniculæformem vel subcorymbiformem (nec racemiformem) digestis.

GUNDLACHIA DOMINGENSIS. *Solidago Domingensis*, Spreng. Syst. iii. 639; DC. Prodr. v. 341; Griseb. Cat. Cub. 150. *S. Lindeniana*, A. Rich. fide Griseb. *Baccharis ptarmicæfolia*, Griseb. in Pl. Wright. Cub. 513 (no. 1314), non DC.—St. Domingo, Bertero. Cuba, Linden, Wright, toward the eastern end of the island. Dedicated to Mr. J. Gundlach of Havana, an acute naturalist, the friend and companion of Charles Wright in his Cuban explorations.

The following are the characters of a few new *Compositæ*.

CHÆNACTIS SUFFRUTESCENS. Albo-tomentosa; ramis floridis e caule perenni lignescente decumbente vel humifuso erectis (subpedaliibus) apice longe nudis pedunculiformibus monocephalis; foliis in segmenta 5-7 linearia obtusa subintegerrima 1-2-pinnatipartitis; in-

volucro (subpollicari) denudato viscidulo, bracteis linearibus obtusis; corollis homomorphis albis pappo simplici 10–12-paleato paullo longioribus.—Rocky banks of the Sacramento below Mount Shasta, California, Lemmon.

ACTINOLEPIS LEMMONI. Tenella, laxe ramosa, triuncialis, lana tenui floccosa decidua demum glabrata; foliis parvis alternis fere linearibus obtusis integerrimis carnosulis; capitulis (lin. 3 longis) pedunculatis angustis; involucro e bracteis 6–7 oblongis; receptaculo plano; ligulis 4–6 lato-ovalibus tridentatis roseo-albis discum vix superantibus; acheniis clavatis hirsutis; pappo nullo.—Mohave Desert, S. E. California, on the borders of Arizona, Lemmon, 1880.

LAPHAMIA LEMMONI. Parva, ramosa, depressa, subcinereo-pubescentia; foliis omnibus oppositis cordato-rotundis (cum petiolo fere æquilongo semipollicaribus) 5–7-lobatis incisisve nunc fere partitis, lobis obtusissimis; pedunculis capitulo haud longioribus; involucri bracteis lineari-oblongis vel subspathulatis obtusissimis subplanis; ligulis nullis; corollis disci luteis; styli ramis elongato-subulatis; acheniis compressiusculis pube brevi densa subcinereis; pappo uni-(raro bi-) aristellato saepe evanido.—Near Camp Lowell, Tucson, Arizona, Lemmon, 1880.—Depressed-spreading, only 2 or 3 inches high; the heads 4 lines high. The usually solitary bristle of the pappus is exceedingly slender, about the length of the proper corolla-tube and half that of the achene; rarely there are two contiguous ones, in many flowers none at all or a mere rudiment. Assuming a form with incisely lobed leaves as the type, a marked variety, sent under a separate number, from the same station, is to be indicated, viz.:—

Var. PEDATA. Foliis plerisque pedatipartitis vel bipalmatifidis.—With the typical form.

FLEISCHMANNIA SCHAFFNERI. Suffruticosa, humilis, viscidulopubescentia, odore moschato; foliis plerisque alternis tenuiter petiolatis binternatipartitis, lobis sublinearibus 2–3-dentatis dentibusque acutis calloso-apiculatis; capitulis longe pedunculatis; involucro glabro pluriseriali; corollis albidis; stylis late roseis prælongis; pappi setis 5–6.—Shaded and humid ground, in the mountains near San Francisco (San Luis Potosi), Mexico, Dr. J. G. Schaffner, Aug., 1876, no. 349.

EUPATORIUM MYGINDÆFOLIUM. Fruticulosum, depresso, subpedale, glutinosum, glabrum; foliis crebis oppositis oblongis (semipollicem longis) obtusiusculis basi in petiolum attenuatis utrinque 1–4-dentatis vel denticulatis crasso-coriaceis subaveniis triplinerviis; capitulis subsolitariis ramulos terminantibus inter folia sessilibus 15–

floris; involucro (lin. 4 longo) e bracteis 7-8 oblongo-lanceolatis acutiusculis paucinervatis floribus (albis?) paullo brevioribus biseriatis, exterioribus parum brevioribus; acheniis secus costas hispidulo-scabris. — Province of San Luis Potosi, on high mountains near San Miguel, Dr. J. G. Schaffner, coll. Aug. 1876.

PHILACTIS LONGIPES, Gray, Proc. Am. Acad. xv. 35, is now received from Dr. Schaffner, the specimens in a more advanced state, showing the obpyramidal-triquetrous fertile akenes of the ray, the inner angle usually aristellate; and the akenes of the disk, though seemingly well formed, are infertile.

II. *Some Species of Asclepias.*

In the conspectus of the species of *Asclepias* published in these Proceedings (vol. xii.), and in the Synoptical Flora of North America, two undescribed species lurked undetected, one under *A. longicornu*, the other under *A. brachystephana*. Both of them were brought to light and are named by the Rev. Edward L. Greene, one of our keenest observers, who collected and examined the living plants in the interesting field where he is now stationed in New Mexico. The main characters of these species are appended.

ASCLEPIAS WRIGHTII, E. L. Greene, in litt. *A. longicornu* & *A. nyctaginifoliæ* affinis, hirto-puberula, viridiflora: caulis e radice crassa decumbentibus spithameis et ultra foliosis; foliis lato-lanceolatis ovatis e basi acuta petiolatis; umbellis ad plerosque nodos subsessilibus plurifloris; cucullis erectis linearis-oblongis antheris triplo longioribus basibus rotundatis columnam brevissimam obtusangulis præter margines albidas alæformes superne dilatatas solidis infra medium vix constrictis intus sub apice crista parva bifida, lobo postico obtusissimo, antico in cornu breve falcatum subinclusum producto; antherarum alis semi-ovatis. — Near Santa Rita, New Mexico, C. Wright, 1851-2. In the same district between Silver City and Lone Mountain, July 10, 1880, E. L. Greene. Mr. Wright's specimens, in fruit and with flowers in poor condition, were mixed with those of *A. longicornu* and remained unnoticed until the species was collected and well described as a new one by Mr. Greene, who assigns to it the present name. The follicles are like those of *A. longicornu*; those of *A. nyctaginifolia* are not known, but are probably of the same character. *A. Wrightii* is wholly related to the latter, but the two should be brought into proximity with *A. longicornu*, which thus becomes less isolated in the genus.

A. uncialis, E. L. Greene in Bot. Gazette, v. 64 (1880). *A. brachystephanae* quoad flores affinis, facie *A. involucratæ*, sed humillima; cucullis antheris paullo brevioribus, dorso lato-rotundato lobos auriculaeformes anticas æquante, cornu seu processu ovato-oblongo obtusissimo inclusio. — New Mexico near Silver City, Greene. Plains of Colorado, Hall & Harbour (478). Green River, N. W. Wyoming, Parry (246). The last two have been referred to *A. brachystephana* in Proc. Acad. Philad. 1863, Am. Nat. 1874, and in Syn. Fl. ii. 94. The stems above ground are only an inch or two high, so that the name is not inappropriate, even if they should attain a somewhat greater height. As in the related *A. brachystephana*, the hoods are not higher than broad, and are of similar structure, but the back is rounder and the triangular anterior lobes or auricles not projecting, while a short fleshy process takes the place of the subulate horn. The hoods are not longer than those of *A. brachystephana*, but the *gynostemium*, or mass above the insertion of the hoods, is shorter.

ASCLEPIAS QUINQUEDENTATA, var. *NEO-MEXICANA*, E. L. Greene in litt. Floribus subdimidio minoribus. — Rocky mountain-side east of Pinos Altos, in the southern part of New Mexico, June 22, 1880, E. L. Greene. The discoverer had distinguished and characterized this as a new species, and justly, if the published character of *A. quinquedentata* were quite correct. But in that a mistake was made by assigning "a small acute dorsal tooth" to the horn of the hood. That tooth is, in fact, only the middle one of the five teeth of the hood itself, to which the horn is sometimes adnate up to the very tip, sometimes not so far. Wright's original certainly has flowers of nearly twice the size of those of Mr. Greene's specimens. But the plant growing around San Luis Potosi (Parry and Palmer's 583, and also sent by Dr. Schaffner) is just intermediate. In this species, as in *A. Linaria*, Cav., the follicle is arrect on a deflexed pedicel.

The characters of three species of adjacent Mexico are appended.

ASCLEPIAS SCHAFFNERI. Species concinna, *A. Coulteri* affinis, glabella; caule gracili simplici subpedali; foliis oppositis filiformi-linearibus; umbellis pedunculatis laxe paucifloris; floribus rubellis nunc viridulis; corollæ lobis (lin. 3 longis) ovato-oblongis; cucullis (cum columna brevi parum breviori) antheras sublonge superantibus complicato-compressis inferne dorso carnosis solidis superne petaloideis antice utrinque longe acuminato-productis, dorso quasi exciso medio callo obtuso apiculato, processu interno adnato subulato gracili rectiusculo longe exerto: folliculo fusiformi puberulo arrecto. — Near San Luis Potosi, Mexico, Schaffner, Parry & Palmer (582).

The slender horns moderately surpass the subulate-attenuate anterior lobes of the hoods. The follicle in the only fruiting specimen is erect on a circinate pedicel.

ASCLEPIAS PUBERULA. Subglabra, spithamæa; foliis oppositis lanceolatis (infimis nunc oblongo-lanceolatis) seu linearibus, 1½–3-pollicaribus sat petiolatis; pedunculis umbella pluriflora longioribus; corollæ albidæ lobis lato-ovatis supra puberis; columna brevissima; cucullis ovatis obtusissimis crassis stigma parum superantibus processu suo lingulato obtusissimo prorsus adnato vix longioribus.—In swamps, Morales, near San Luis Potosi, Schaffner.

ASCLEPIAS EUPHORBIÆFOLIA. Engelm. in herb. Humifusa, a basi ramosa, fere glabra; foliis omnibus oppositis parvis (lin. 2–3 longis) ovatis subcordatis raro oblongis subcarnosis eveniis breviter petiolatis; pedunculis terminalibus umbellæ 7–9-floræ æquilongis; floribus roseo-albidis (lin. 2 longis); columna brevissima; cucullis ovato-oblongis obtusis basi marginibus inflexis corollæ lobis parum æqui-longis infra medium processu falcato brevi inclusa auctis; folliculis puberulis lævibus in pedicello arrecto-inflexis.—Near San Luis Potosi, in sandy soil, Schaffner (1876), Parry and Palmer, the latter in a single specimen.

III. *A New Genus of Gentianaceæ.*

GENIOSTEMON, Engelm. & Gray.

Calyx alte 4-fidus; lobis lanceolatis carinatis subulato-acutis. Corolla marcescenti-persistens, subrotata; tubo lobis ovalibus haud longiore. Stamina 4, fauci inserta: filamenta antheris oblongis immutatis æquilonga, glanduloso-barbata. Stylus elongatus, filiformis, persistens: stigma infundibuliformi-capitatum, subintegrum. Capsula oblonga, placentis intrusis semibilocularis, polysperma. Semina subglobosa; testa conformis parum foveolata.—Herbæ Mexicanæ, annuæ? pusillæ (bipollicares), ramosæ, parvifoliæ; floribus pedunculatis cærulescentibus. *Erythreæ* et *Microcalæ* affinis.

GENIOSTEMON COULTERI. Caulibus teneribus parum ramosis æquilater foliatis; ramis unifloris; foliis spathulato-lanceolatis (lin. 3 longis) basi attenuatis; pedunculo flore haud longiore; filamentis infra medium creberrime glanduloso-barbatis; antheræ loculis utrinque obtusis (corolla lin. 4 longa, ut videtur alba?).—Mexico, Coulter, no. 945.

GENIOSTEMON SCHAFFNERI. E radice forte annua multicaulis, cymoso-ramosissimus et multiflorus; foliis linearibus (lin. 2–3 longis)

imisve spathulatis, summis subulatis basi haud angustatis; pedunculis gracilibus flore longioribus; filamentis sub apice barbatis inferne nudis; antheræ loculis basi subacutis (corolla cœrulescente). — In mountain swamps, San Luis Potosi, Schaffner.

IV. *Miscellaneæ of the North American Flora.*

ASTRAGALUS GREENEI. *Phaca*, inter *Inflatos* et *Scytocarpos*, subpedalis e radice perenni, cinereo-pubescentis; stipulis deltoideo-subulatis; foliolis multijugis obovatis oblongisve retusis confertis (lin. 3 longis); pedunculis folio longioribus; spica oblonga confertim multiflora; floribus lin. 4 longis parvibracteatis brevissime pedicellatis patentibus; calyce campanulato pilis nigricantibus albidisque sericeo-hirsutis, dentibus angustis subacutis tubo dimidio brevioribus; corolla purpurea basi alibda, carina obtusissima; legumine turgido ovali semipollucari cinereo-puberulo prorsus uniloculari in calyce sessili polyspermo. — Foothills of the Mogollon Mountains, New Mexico, April 20, 1880, E. L. Greene.

Some other *Astragali* remain to be characterized; and a new conspectus of the North American species will be needed.

DALEA WISLIZENI, Gray, Pl. Fendl. var. **SESSILIS**. Lateriflora; spicis brevibus sessilibus ramulos breves foliosos secus caules prolixo dispositos terminantibus. — New Mexico and Arizona, Greene, 1877, Lemmon, 1880.

SEDUM MEEHANI. Glaucescens, 2-3-pollicare, radicibus fibrosis perennans, foliosum; foliis teretibus (subsemipollucaribus, floralibus minoribus); ramis calycibus ovariisque tenuiter glanduloso-hirtellis; floribus omnibus 5-meris; petalis albis (lin. 2 longis) lanceolato-ovatis tenuiter acuminatis calycis lobis ovatis plus duplo longioribus. — Utah, on City Creek, north of Salt Lake City, at the base of the mountains, coll. by Mr. John Reading, the live plant communicated by Professor Thomas Meehan. It is so desirable to connect in this way the name of Mr. Meehan with the botany of the country which he has done so much to illustrate, that the actual collector will probably join us in wishing it to be commemorated by this pretty little species of *Sedum*. It will not make much show among Meehan's "Flowers of the United States Illustrated," of which four goodly volumes have already appeared under his editorship; but it is to be hoped that it will find a place in the fifth volume.

DOUGLASIA LÆVIGATA. Depressa; pedunculo pedicellisque puberulis, cæterum glaberrima; foliis oblongo-lanceolatis obtusis crassis

haud ciliatis in caudicibus rosulatis; umbella simplici (nec prolifera) 2-5-flora; calycis lobis deltoideo-ovatis tubo suo æquilongis tubo corollæ brevioribus; corollæ lobis latis tubo suo subdimidio brevioribus.—On Mount Hood, Oregon, May, 1880, Joseph and T. L. Howell. A handsome and well-marked species of an interesting genus, to stand next to the little known *D. arctica*.

ECHINOSPERMUM HISPIDUM. E caudice perenni erectum, pedale, setis asperis patentibus hispidum; foliis lanceolatis, imis oblongis in petiolum attenuatis; racemis sub-ebracteatis paniculatis laxis; pedicellis calyce longioribus, fructiferis decurvis; corolla rotata viridulo-alba intus basi annulo prominulo instructa; nuculis dorso planis breviter parceque glochidiatis, margine ala submembranacea dentata cinctis, dentibus subulatis apice glochidiatis.—Northeastern Oregon, on Rocky hillsides of Pine Creek, June, 1880, Cusick. In flower and with forming fruit. This would belong to Boissier's genus *Paracaryum*, as that genus is defined and limited by Bentham, better indeed than does *E. glochidiatum*. But however it be for the species which in the Genera Plantarum are referred to *Rindera*, these two species cannot well be separated from *Echinosperrnum*. *E. Redowskii* var. *cupulatum* is instructive in this respect. The flowers are no larger than those of *E. deflexum*.

PENTSTEMON CUSICKII. *Saccanthera*, *P. Kingii* proximus, pruinoso-puberulus (sub lente), nec glandulosus; caulis e basi frutescente strictis gracilibus (subpedalibus) foliosis; foliis anguste linearibus; pedunculis thyrsi pluriflori gracilibus; sepalis ex ovato acuminatis; corolla semipollucari læte purpureo-cærulea; filamento sterili apice dilatato.—On the banks of Powder River or Eagle Creek, N. E. Oregon, June, 1880, Cusick. A neat and pretty species, related to *P. Rœzli* and yet more to *P. Kingii*, but manifestly distinct, dedicated to the worthy discoverer.

GILIA DEPRESSA, Marcus E. Jones. E radice annua divaricato-ramosa, demum humifuso-depressa, pilis brevibus multiseptatis cine reo-hirsutula, viscidula; ramis ad apicem usque æqualiter foliatis; foliis oblongo-lanceolatis (semi- ad subpoll.) utrinque attenuatis integrimis vel inciso-1-2-dentatis, dentibus apiceque cuspide tenui mucronatis; floribus subsparsis brevipedunculatis; calycis 5-partiti segmentis e basi lata sensim attenuato-subsetigero-acuminatis corolla hypocaterimorpha albida parum brevioribus capsulam ovoideam superantibus; corollæ lobis ovalibus tubo 3-4-plo brevioribus, sinu unico paullo profundiore; staminibus tubo supra medium insertis e fauce parum exsertis; seminibus in loculis 4-5, testa mucilaginosa haud

spirillifera. — In sand at Deseret, S. Utah, June 16, 1880, Marcus E Jones. Most related to *G. pumila* and *G. polycladon*, which are ambiguous between the *Elaphocera* and the *Eugilia* sections. The slight irregularity in the depth of the sinuses of the corolla is of little account.

REVERCHONIA, Nov. Gen. *Euphorbicearum*.

Phyllanthea, *Phyllantho* affinis, verum-tamen antheris introrsis, ovulis amphitropis, seminibus adscendentibus, cotyledonibus *Stenolobearum* angustis. — Flores dioici et monoici. *Masc.* Calyx 4-partitus; segmenta spathulato-oblonga, subherbacea, æstivatione leviter imbricata. Discus obscurus. Stamina 2, sepalis totidem opposita: filamenta brevia, distincta: antheræ immutatæ, introrsæ, loculis contiguis parallelis longitorsum dehiscentibus. *Fœm.* Calyx 6-partitus; segmenta maris similia. Discus pateriformis 6-crenatus. Ovarium triloculare; styli breves, discreti: stigma brevia, crassa, emarginato-biloba. Ovula in loculis gemina, amphitropa, medio inserta. Capsula trilocularis, globosa, primum subcarnosa, demum in coccus bivalves dissiliens. Semina in loculis bina, supra basim hilo parvo inserta, adscendentie recta, sectione transversa trigona dorso convexa, estrophiolata; testa crustacea. Embryo in albumine carnoso parum incurvus, teres; radicula supera, gracilis, cotyledonibus angustis parum latioribus longior.

REVERCHONIA ARENARIA. Herba annua, parvula, glabra, patentim ramosa; foliis alternis brevi-petiolatis oblongis vel angustioribus integerrimis crassiusculis (semi-sub-pollicaribus); stipulis lato-subulatis scariosis; floribus fœmineis brevipedicellatis aut in axillis solitariis aut in plantis androgynis singulo in fasciculo paucifloro pl. masc.; perianthio viridulo demum purpurascente. — Sandy river-banks of W. Arkansas and N. W. Texas. Sand-hills along the Canadian, Dr. J. M. Bigelow, Sept. 10, 1853. Sand-hills of the Brazos, Baylor Co., Texas, Julien Reverchon, September, 1879.

Of this interesting plant, both collectors obtained only the female plant, and in fruit. But Mr. Reverchon has raised a plant or two from seed. The latter prove to be sometimes monœcious and androgynous. The late Dr. Torrey had ascertained the carpological characters, except as to the embryo, from Dr. J. M. Bigelow's specimens. The rediscovery enables me to complete the character, and to establish on it a new genus; which, with great satisfaction, I dedicate to M. Julien Reverchon, of Dallas, Texas, the second discoverer,—a valuable correspondent, an acute and sedulous botanist.

The relationship of this plant to *Phyllanthus* is so close, that, were

it not for a combination of characters, it might be taken for an aberrant *Phyllanthus*. Although the cotyledons are little broader than the long radicle, and barely flattish, one would hardly refer the genus to the *Stenolobieæ*, being so unlike the Australian type. It shows that Mr. Bentham was wise in reducing Müller's primary series to the rank of a tribe.

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78 PROCEEDINGS OP THE AMERICAN ACADEMY

CONTRIBUTIONS TO NORTH AMERICAN BOTANY.

By Asa Gray.

Presented June 9, 1880.

I. Notes on some Coynpositce.

As the portion of the Synoptical Flora of North America which contains this order, now under elaboration, cannot immediately be published, it will be advantageous to fix some of the results already reached by a few notes and characters.

VERNONIA. The North American species, although few, are difficult, both on account of variation and probable hybridization.

The principal change from Torrey and Gray's Flora now made is the restoration of *V. altissima*, Nutt., standing between *V. fasciculata* (to which some of it had been referred) and *V. Baldwinii* or *V. Noveboracensis*. A good new species comes in under the name of

Vernoma Lettermanni, Engelm. in litt. *V. Jamesii* et *V. fasciculafCB affinis*, glaberrima, Lisvis ; foliis angustissime linearibus eveniis integerrirais planis ; capitulis numerosis paniculato-cymosis pedunculatis lanatis cylindraceis 10-14-floris (semipoUicaribus) ; involucri bracteis acutis vel acuminatis adpressis inappendiculatis, externis

ovato-subulatis, intimis angusto-lanceolatis purpureis ; achenis secus
costas panicum scabris. — Aikansas, on Cooper's Creek, Dr. J. M. Bige-
low, and on sand-bars of the Washita, Lettermann.

Ageratum LiTTORALE is the name adopted for the Ccelestina
maritima of Torr. & Gray, Fl. ii. 64, which is not Afjerntum mariti-
mum, II BK., that being a true Ar'eratum with diminutive pappus.

A species of the Florida coast is likely to occur on shores of the Gulf
and West Indies ; but this has not yet been identified elsewhere.

EuPATOKiuM AMBiGUUM, llook. This name comes up in place of
E. pnrvljorum, Ell., non Swartz. E. detonicum and E. uissectdm
are ConocUnium betonicum, DC. (of which var. suhinlegrum is prob-
ably E. Harwegi, Benth.), and O. dissectum, Gray, Pl. Wright.

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Brickellia squamulosa, Gray, Proc. Am. Acad., xv. 30, comes
into our flora, being found by Mr. Greene to occur abundantly in New
Mexico. It is woody only at the base, sending up long and simple
stems which bear narrowly linear leaves, 2 or 3 inches long and less
than two lines wide the first year ; they flower the next year, when
they bear only squamiform and minute leaves or bracts.

Garbicria fkuticosa, Gray, in Proc. Acad. Philad., Nov. 1879,
379. Having followed Bentham and Hooker in the restoration of

Cassini's genus *IVilisia*, I found Nuttall's *Liatris fruticosa* still more worthy of generic distinction. But, in taking up Nuttall's subgeneric name of *Leptoclaium* (in Proc. Am. Acad. xv. 48) I overlooked the patent fact that Gardner had used that name, somewhat illegitimately, for an allied Brazilian genus. Whereupon, as the above reference shows, I promptly took the opportunity of dedicating our genus, to the rediscoverer of the plant, Dr. A. P. Garber, of Columbia, Pennsylvania, a most devoted and acute botanist, who has done more for the development of the botany of subtropical Florida of late than any one, except Mr. A. H. Curtiss, who is still in the field.

APLOPAPPUS. The primary sections of this extended genus, as here accepted, are *Prioiopsis*, *Aplopappus* proper (which is made to include *Eriocarpum*, Nutt., *Pijrrocoina*, Hook., *Himiopnppiis*[^] Nutt., and *Sideranlhus*, Nutt.), *Isopappus*, *Steiiotus*, *Ericamcria*, and *Macronema*.

Aplopai'pus integkifolius, T. C. Porter, is taken up from an unpublished name of a plant collected in Wyoming by J. M. Coulter and also by Burke, a species between *A. lanceolatas* or *paniculatus* and *A. inijiurus*. *A. Parryi*, which inclines on the one hand toward *Solidago*, especially in a reduced form (var. *depauperalns*), is included in the *Stenotus* section. *A. nanus* takes in *A. cervinus* of Watson as a variety, and the following new species are brought together into a subsection of the *Ericameria* section, which is transitional between that and the section *Macronema*.

Aplopappus Watsoni. *Viscidulo-pubesens*, *spithama*[^]*us* ; *ramis fastigiatis subherbaceis e basi lignosa* ; *foliis lanceolatis sen angusto-*

spathulatis oblongisve mucronato-acuminulatis membranaceis (vix pollicem longis) ; capitulis pauciusculis subglomeratis ; bracteis involucrī lanceolato-linearibus acutis vel acuminatis plerisque tenuiter chartaceis vel paucis herbaceis, omnibus erectis ; ligulis 4-8 ; floribus disci vix numerosioribus ; appendicibus styli ramorura setaceo-liliformibus.
Aplopappus snjriiticous, Eaton, Bot. King, 1 59, pro parte. —
Northern Nevada, Watson, Palmer, &C.

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Aplopappus Grkenei. Suffruticosus, pedalis, tenuiter viscoso-puberulus, caeterum glaber ; caulis usque ad capitulum subsolitarium foliosis ; foliis spathulato-oblongis parvulis (lin. 6-10 longis 2-3 latis) ; involuci subglandulosi bracteis aiugusto-lanceolatis acutis superne vel apice tantum foliaceis et patentibus ; ligulis 3-7; fl. disci 13-16; styli ramis Macronemce. — N. California, on the Scott Mountains of Siskiyou Co., E. L. Greene. Mountains of Union Co., Oregon, Cusick.

Aplopappus mollis. Prjecedenti affinis, pube molli incana tomentosus ; involuci bracteis (intimis linearibus scariosis exceptis) oblongis vel brevi-lanceolatis mucronatis, apice erecto foliaceo ; ligulis 3-0. — High mountains of Union Co., Oregon, with the preceding. Cusick.

SOLIDAGO is divided into three primary sections or subgenera, viz. Virgaurea, Euthcania, and Chrysoma. The C/iri/sastrum section of

Torrey and Gray is reduced to a subsection of the first, and is made to include *S. petiolaris*.

S. BiGELOVII is a New Mexican species founded on *S. petiolaris*, var., Gray in Bot. Mex. Bound. 79, collected by Bigelow, Wright, and Parry, and placed next to *S. Lindheimeriana* of Scheele, which was in Pl. Lindh. referred to a *S*. speciosa*, var. *rigiduluscula*.

S. SPATHULATA, DC. is the *S. spiciformis*, Torr. & Gray, an older and better name.

S. SPECTABILIS is the a *S**. *Guiradonis* var. *spectabilis* of Eaton in Bot. King ; but it and its relatives are of uncertain limitation.

S. Chapmanii. *S. odorce proxima*, validior, rigidior ; caule superne scabro-puberulo ; foliis brevibus oblongis vel ellipticis apice obtuso vel rotundato, summis rotundatis. — Pine barrens of Florida, Chapman (^*S. odora* of his Flora, in part), Dr. Garber.

S. WuiGiiTir. Corgmbosce ? *cinereo-puberula*, scabrida ; foliis caulinis oblongis seu lancolato-ellipticis acutiusculis intogerrimis rigidiusculis baud triiilinerviis (radicalibus ignotis) ; capitulis subcorymboso-glomeratis ; involucri bracteis lanceolatis acutiusculis, extimus puberulis ; floribus radii 6-8, disci plus 20 ; acheniis pubescensibus. *S. petiolaris*, var., Gray in Pl. Wright, i. 94. *S. Californica*, var., Rothrock, in Wheeler Rep. vi. 145. — W. Texas to Arizona, Wright, Bigelow, Rothrock.

APHANOSTEPHUS, DC. This genus, first brought into its

present shape in Plantaj Wrightiamc, i. 93, has now live recognized species, which are arranged and characterized thus : —

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» Pappus brevissime coroniformis, margine primum ciliolato-fimbriato cajterum integro ; corollae disci tubus parum incrassatus.

A. Arizonicus. Puberulus, subintegritfolius ; pedunculis apice clavatis ; ligulis brevibus ; acheniis angustis teretibus costis circiter 10 angustis striatis. A. ramosissimns, Rothrock in Wheeler Rep. vi. 147. — Arizona, on the Gila, Rothrock.

A. RAMOSISSIMUS, DC. Hispidulo-pubescentis ; foliis inferioribus sa^pe laciniatis vel pinnatifido-incisis ; pedunculis gracilibus ; ligulis longioribus ; acheniis parum pauci-costatis. — Texas and adjacent Mexico.

A. HUMILIS, Gray. Diffusus, pube molli cinereus ; foliis soepius den^atis vel pinnatifidis ; pedunculis gracilibus ; acheniis brevioribus costato-angulatis. — S. W. Texas and Mexico.

A. RAMOSUS. Precedenti affinis, parum pubescentis ; foliis omnibus linearibus integerimis. Keerlia ramosa, DC. Prodr. v. 310. — Mexico, Keerl.

m * Pappus conspicuus, e corona dentata vel laciniata ; corolla tubo
basi demum incrassato indurato diu persistente in achenio valde
angulato-costato. Leucopsisidium et Keerlia skirrobasis, DC.

A. Arkansanus, Gray. — Plains of Arkansas and Texas.

Var. Hallii. Minor ; foliis imis sgepius pinnatipartitis ; corona
pappi profundius 4-5-lobata, lobis subulato-acuminatis ! — Hempstead
and Austin, Texas, E. Hall, no. 303, 304.

A proposed new genus of the group to which Aphanostephus and
Keerlia belong is

GREENELLA, Nov. Gen. Comp-Asteroidearum. Capitulum hete-
rogamum, radiatum, multiflorum ; fl. radii 12-16 foemineis, disci her-
maphroditis, omnibus fertilibus. Receptaculum convexiusculum, nu-
dum, parum alveolatum, alveolis dentatis. Involucrum latum; bracteis
imbricatis pauciseriatis oblongis coriaceis margine (saltem interiorum)
scariosis, apice obtuso, dorso viridi-herbaceo, esterioribus brevioribus.

Lignite oblongoe exserts. Corollae disci tubuloso-infundibuliformes,
tubo proprio brevi, limbo 5-lobo. Antherae inclusce. Styli rami fl.
lierm. longe exserti, appendicibus linearibus complanatis obtusiusculis
liirtello-puberis parte stigmatifera quadrata 4-plo longioribus instructi.

Achenia oblongo-turbinata, canescenti-puberula, 8-costata, basi apiceque
truncata, pappo brevi coroniformi multisetuloso-dissecto superata. —
llerba parvula, Arizonica, e radice ut videtur bienni vel perenni ra-
mosa, diffusa fere glaberrima ; foliis alternis integerrimis parvis, imis
lauceolatis hispidulo-ciliolatis, superioribua linearibus decrescentibus

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margine lajvibus ; capitulis ramulos nudos terminantibus ; ligulis albis
majusculis ; coroUis disci forte albidis.

Greenella Arizonica. Near Tucson, S. Arizona, Rev. Edward

Lee Greene (an enterprising botanist and most acute observer, to whom the genus is dedicated, and who discovered the plant in the year 1877) ; also J. G. Lemmon, who collected it in a more advanced state in the spring of 1880. If the ray-flowers of this plant were yellow instead of white, it would be referred to the genus Xanthocephalum, and the habit is nearly that of *X. linearifolioliuvi* and *X. sericocarpum*. But it shows no trace of the glutinosity or balsamic exudation which so largely prevails in the homochromous Asteroidece. And *Xanthocephalum* has not the peculiar, large and long, much exserted style-ajipendages which are characteristic of the present plant.

CH^TOPAPPA, DC. — Chctopappa et Bistasis, DC. ; Benth. &

Hook. Gen. ii. 268. The species are

C. ASTEROIDES, DC. — Arkansas and Missouri to the borders of Mexico.

Var. iMBERBis. Aristis pappi plane nullis ; paleis latioribus quan-
doque coroniformi-concretis. — E. Texas, C. Wright.

C. Partri. Major, rigidior, hispidula, nunc glabrata ; involucro
turbinato ; ligulis 6-7 ; appendicibus styli fl. disci brevibus obtusissimis ;
acheniis glaberrimus, fertilibus fusiformibus subcompressis 4-nervatis ;
pappi fl. radii paleis firmioribus cuneiformi-quadratis apice truncato
laciniato-fimbriatis, aristis aut nullis aut 1-3 tenellis ; acheniis disci
plerisque inanis baud aristatis. Distasis modesta, Gray in Bot. Mex.

Bound. 78. — Mt. Carmel on the Rio Grande, Parry.

C. MODESTA. Involucro late campanulato, bracteis pluribus obtusi
oribus ; ligulis 9-20 ; fl. disci 40-60 plerisque fertilibus ; appendicibus
styli angustioribus acutiusculis ; acheniis magis compressis ; pappi
paleis 5 oblongis eroso-truncatis aristis sat validis alternantibus.

Distasis modesta, DC. Prodr. v. 279. — Texas and adjacent Mexico.

An anomalous Asteroideous Composita was collected on the adobe
plains of S. W. Colorado by Mr. Brandegee, of which additional speci-
mens are desired. It has the general aspect of some of the pauci-
radiate Erigerons, such as Erigeron Bigelovii ; and the characters
are of that genus, except that the simple pappus consists of irregular
twine-bearing palea;

TOWNSENDIA, Hook. Ever since the discovery of a consider-
able number of species, this very characteristic genus of the Rocky

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Mountain region has been particularly difficult. The result of a recent study of it, in the form of the following synopsis of the species, may assist our botanists.

« Involuci bracteae insigniter sensim acuminatae : capitulum amplura.

»- Annuae vel biennes, caulescentes, pube hirsutula decidua demum glabratte : bracteae involuci lato- seu ovato-lanceolato3, marginibus plerumque latissime albido-scariosis : ligulas loete violaceae vel caeruleae.

++ Pappus abbreviatus, persistens, corneus, ex aristis 2 subulatis et squamellis demum rigidis siepius coroniformi-concretis : achenium lato-obovatum glabratum : involucrum fere T. grandiflora B.

T. EXIMIA, Gray, PL Fendl. 70. — Northern New Mexico and Colorado, Fendler, Bigelow, &c.

++ ++ Pappus saltern disci plurisetosus generis : achenium angusto-obovatum.

T. GRANDIFLORA, Nutt. Mox decumbenti-patens, angustifolia ; involuci bracteis acumine cuspidato ; pilis achenii sub lente glochidiato-capitellatis : pappus radii e squamellis brevibus. — Wyoming and Ne-

braska to New Mexico.

T. Parri, Eaton in Am. Nat. viii. 212. Erectus, nanus, simplex ;
foliis spathulatis : involuci latissimi bracteis angustioribus tenuioribus
minus attenuatis, extimis parum acuminatis ; acheniis canescenti-pu-
bescens, pilis apice acutis vel 1-2-dentatis ; pappo radii ut disci
plurisetoso. — Rocky Mountains of Wyoming and E. Idaho, Hayden,
Parry.

Var. ALPINA. Forma depressa, cinereo-pubescent, parvifolia ; caule
florifero abbreviato vel fere nullo ; bracteis minus acuminatis ; ligulis
" roseo-purpureis." — High divide between Stinking Water and the
Yellowstone (confounded with T. spathulata), Parry.

•«- -I— Perennis e caudice stoloniformi, depressa, pilis longis arach-
noideis lanosissima ; capitulo intra folia rosulata spathulato-obovata
sessili : bracteae involuci lineares, moues : pappus disci et radii
plurisetosus, tenuis.

T. CONDENSATA, Parry in Am. Nat. viii. 213 (char, ex D. C.
Eaton). — Wyoming, on an alpine peak of the Owl Creek range, T.
D. Putnam.

• * Involuci bracteas parum vel haud acuminatae : capitulum minus
vel angustius.

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•»— Pili achenii gracilia, copiosa, simplicissima, nonnulla apice 2-3-fida,
lobis vel deiitculis parum patentibus acutis vel acutiusculis : capitula
mediocria, iiivolucro minus imbricato, pedunculo saepius nudo : ligulae
roseo-purpureae, rarius albte : annuse vel biennes, occidentales.

++ Pappus radii plurisetosus disci conformis vel brevior.

T. FLORIFER. Spithamaea, cinereo-hirsuta ; caulis e radice annua
gracilibus ; foliis linearibus imisve subspathulatis acutis nunc apiculato-
acuminatis ; involuci bracteis linear-lanceolatis parum ina^qualibus.

T. strigosa. Gray in Wilkes Exped. xvii. 344, non Nutt. Erigeron
Jlorifer, Hook. Fl. Bor.-Am. ii. 20. Aplopappus Jlorifer, Hook. &
Arn. Bot. Beech. 351. Stenotus Jlorifer, Torr. & Gray, Fl. ii. 238.—

Sandy banks of the Columbia River and its tributaries (as far north
as Wenass Valley, Lyall), and in the dry region east of the Cascades.

T. SCAPIGERA, Eaton. Humilior, hirsuto-pubescent ; caulis sca-
piiformibus (inferne 1-2-foliatis) ; foliis radicalibus spathulatis, lamina
saepius lata brevi ; involuci bracteis latiuscule lanceolatis. Bot. King,
145, t. 17. Aplopappus jlorifer, var. Hook. & Arn. 1. c. ? — Moun-
tains of N. Nevada and N. E. California, Watson, Lemmon, Mrs.
Austin.

Var. CAULESCENS, Eaton, 1. c, is a summer form, becoming sparingly
leafy-stemmed, slender, and with rather smaller heads. — Monitor Val-
ley, Nevada, Watson.

Var. AMBiGUA is still more leafy-stemmed, with white rays, and the pappus in the ray shorter than that of the disk. — Rabbit Valley, Utah, Ward.

++ ++ Pappus radii setoso-squamellatus latitudine achenii brevior.

T. Watsoni. Pube brevi adpressa subcinerea: caulis e radice gracili patentibus saspe ramosis parceque foliatis ; foliis anguste spathulatis ; capitulis sat numerosis brevi-pedunculatis ; bracteis involucri oblongo-lanceolatis ; pilis achenii brevibus obtusis vel apice dentibus 2-3 obtusis instrnctis. T. strigosa, Eaton, 1. c, non Nutt. — Utah, on the shore of Stanbury Island, Great Salt Lake, Watson.
H— ^— Pili achenii aut omnes aut pliirimi glochidiato-capitellati, i. e.

apice breviter bidentati, dentibus obtusis recurvis subglandulosis ?

++ Capitulum sat magnum (1-pollicare) ; involucro pluriseriatim imbricato : plantae fere glabra, depresso-acaulescentes e radici perenni : folia plana, inferne longe attenuata, coriacea, capitulum longe superantes.

T. WiLCOXiANA, Wood. Foliis linearispathulatis (1-3-pollicaribus) ;

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L-apitulo scepius unico subpedunculato ; involucri bracteis lanceolatis, intimis linearibus acutiusculis ; pappo radio et disci conformi e setis

gracillimis elongatis. Bull. Torr. Club, vi. 163, & Bot. Gazette, iii.

50. — Colorado and Indian Territory, E. K. Smith, Dr. Wilcox, and
Arizona, Lemmon.

T. RoTHROCKii, Gray. Foliis lato-spathulatis brevibus circa ca-
pitulum sessile rosulato-confertis ; involucro breviore latiore, bracteis
oblongis plerumque obtusis ; pappus radii e setulis squamellatis latitu-
dinem achenii baud excedentibus, nunc 1 vel 2 longioribus. Roth-
rock in Wheeler Rep. vi. 148, t. 7. — Alpine region of the mountains
around South Park, Colorado, Rothrock.

++ ++ Capitula raajuscula (f-^— pollicaria), plerumque seseilia ; involu-
cro pluriseriatim imbricato : pappus radii saepius j^lurisetosus : plantae
sericeo- vel striguloso-pubescentes, radice perenni, T. incana forte
excepta.

T. SERiCEA, Hook. Depresso-acaulescens, demum multiceps et
pulviniformis ; foliis linearibus sen lineari-spathulatis circa capitulum
(pollicare vel minus) arete sessile confertis eumque jequantibus vel
superantibus ; bracteis involuci angusto-lanceolatis plerisque acutis ;
ligulis albis vel purpureo tinctis ; pappo ssepius conformi plurisetoso
(forma papposa. Gray, Pl. Fendl. 69), vel radii pauci-setoso, vel
breviore validiore, vel squamellato latitudinem achenii parum exce-
dente. Fl. Bor.-Am. ii. 16, t. 119 ; Mechan, Flowers, ser. 2, i. t. 47.
Aster ? exscapus, Richards. — Saskatchewan and Rocky Mountains,
lat. 54°, to New Mexico and Arizona ; fl. April and May. Very vari-
able in breadth of leaves, size of heads, &c. ; commonly with pappus
of ray and disk nearly alike, only at the North found with the ray-
pappus reduced, either to a few unequal aristiform bristles, as figured

by Hooker, or to a circle of setiform squamellse. In one form the heads are only half an inch long.

Var. LEPTOTES (an spec. ?) : forma ambigua ; capitulis vix semipollis-caribus, priraario sessili, sequentibus subpedunculatis ; foliis angustis.

— Middle Park, Colorado, Parry.

T. Arizonica. Depresso-subcaulescens, multicipiti-ramosa, 2-3-pouicaris, pube minuta sericeo-canescens ; foliis spathulatis brevibus (semipollis-caribus) capitulum parum sessile hemisphericum (semipollis-care) fulcrantibus vix superantibus ; bracteis involucri lanceolatis plerumque obtusis ; pappo radio et disci conformi e setis rigidiusculis achenio (lin. 2-3 longo) asquilonis. — Arizona, at Fort Trumbull, &c., Palmer.

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T. INCANA, Nutt. Depresso-caulescens vel subcaulescens ex radice forte monocarpico ; caulis demum 1-4-pollicaribus ramosis ; foliis striguloso-cinereis vel canescentibus angusto-spatulatis linearibusque, summis capitulum sessile (semipollis-care) fulcrantibus vix superantibus ; involucri bracteis sericeis parum obtusis ; pappo radii eo disci subdimitio breviore. Trans. Am. Phil. Soc. 1. c. T. Fremontii, Torr. &, Gray in Jour. Bost. Soc. Nat. Hist. v. 108. — Rocky Mountains of Wyoming to Utah and Nevada.

-M- ++ ++ Capitula minora (J-poUicaria) inter folia rosulata sessilia :

herba depresso-multiceps e radice perenni gracili, villoso-lanata : folia

spathulata, conferta : pappus radii et disci conformis e setis gracilibus

conjunctim deciduis.

T. SPATHULATA, Nutt, 1. c. — Rocky Mountains in Wyoming, Nut-tall, Parry.

++ H-+ -H- ++ Capitula parvula (^-pollicaria), hemisphaerica, sa^pius

brevi-pedunculata : involucrum e bracteis pauciseriatis lato-lanceo-

latis parum acutis : herbæ caulescentes demum ramosæ, sestivales.

= Glabrateæ, virides, perennes.

T. GLABELLA. Subsimijlex, pollicaris vel bipollicaris e rhizomate
gracili ; foliis crassiusculis spathulatis petioli gracili, summis pedunculo
paullo brevioribus ; involucro glabro ; pappo plurisetoso conformi sed
radii dimidio breviore, vel diverse in radio brevi-squamellato. — La

Pagosa, S.W. Colorado, Newberry,

= = Pubes tenui strigulosa cinereæ : herbea primum exiles simplices,

demum laxe ramosæ 4-10-pollicares : pappus radii semper brevis,

coroniformi-squamellatus, setis 1-2 brevibus raro additis. — § Nano

dia, Nutt. 1. c. (Species nimis affines.)

T. Fendleri, Gray, PI. Fendl. 70. Radice gracili ut videtui
perenni ; foliis linearibus ; involuci bracteis inaequalibus triserialibus
acutis. — Gravelly hills of New Mexico and S. Colorado.

T. STRiGOSA, Nutt. 1. c. Radice monocarpico gracili ; foliis prima-
riis spathulatis, sequentibus linearibus ; capitulis parum minoribus ,
involuci bracteis latioribus acutiusculis tantum biseriatus, exteriori-
bus brevioribus. — Gravelly hills and plains, Wyoming to New Mexico
and Ai'izona.

T. Mexicana, Gray, PL Fendl. 70, parum differt involuci brao
teis JBquilongis obtusissimis. — Saltillo, &c., Mexico, Gregg, Parry.

ERIGERON. This genus shades off into Aster in more than one
direction ; and its subgenus Coenotus fairly runs into Coyiyza. It can

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be limited only by taking into account a combination of characters, and
insisting here upon one, there upon another. The general differences
between it and Aster are found, — 1. in the simpler involucre, of equal
neither foliaceous nor appendiculate narrow bracts ; 2. in the very
numerous and narrow rays of the typical species ; 3. in the very short,
broad, and obtuse style-appendages ; 4. simpler stems, naked above or

with few more pedunculate heads ; 5. less copious and more fragile pappus ; 6. smaller achenia ; their nervation is of little importance, but mostly there are only the marginal nerves. We adopt the genus with the extension which Bentham and Hooker, following our lead, now give to it. The various nominal genera which have been predicated on the pappus and the number of ray-flowers are nearly unavailable for good subgenera. The following arrangement, in which the needs of the student are much considered, commences with some of the most Asteroid forms, and ends with the species which merge in Conyza. The three primary sections here adopted are not very strictly characterizable ; the two larger are connected by a small intermediate group.

§ 1. EuERiGERON. Flores foeminei omnibus ligulatse ligulis elon gatis, in perpaucis nuUi.

Series 1. Perennes.

1. Species Am.-Bor.-Orientales, glabratse, parviflorae ; ligulis 20-25 plerumque albis; acheniis 2-4-nervatis ; pappo simplicissimo. —

§ Erigeridium, Torr. & Gray.

E. HYSSOPiFOLius, Michx. Fl. ii. 123. Aster graminifolius, Pursh.
Fl. ii. 545. — Northern New England to Hudson's Bay, &c., west to shore of Lake Superior.

E. NUDiCAULis, Michx. 1. c. E. vernus, Torr. & Gray, Fl. ii. 176.
E. integrifolius, Bertol. Misc. vi. t. 3, non Bigel. Aster vernus, L.
Stenactis verna, Nees, DC. — Pine barrens near the coast, Virginia

to Louisiana.

2. Species Californicae, etc., ligulis nullis ; pappo simplici.

* Subcaulescens, pedunculis scapiformibus monocephalis.

E. Bloomeri, Gray, Proc. Am. Acad. vi. 40. — Sierra Nevada,
California to W. Oregon.

* * Foliosissimae, humiles ; capitulis saepius solitariis.

E. SUPPLEX, Gray, Proc. Am. Acad. vii. 353. — N. E. California,
Bolander, &c.

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E, MISER, Gray, Proc. Am. Acad. xiii. 372. — Sierra Nevada near
Summit.

* * * Foliosissimaj, elatiores glabrae ; capitulis subcymosis.

E. INORNATUS. E. foliosus, var. inornatus, Gray, Bot. Calif. i.
330. — California to Washington Terr.

3. Species occidentales ; caulinibus siepe ramosis foliatis e rhizoma-
tibus vel caudice gracilibus ; capitulis parvulis, involucro magis imbri-

cate (bracteis 2-3-seriatis, exterioribus brevioribus) ; ligulis 12-40;
acheniis binerviis (exterioribus nunc 3-nerviis) ; foliis viridibus nee
canescentibus.

* Californicse ; caulis erectis inferne simplicibus apice subcymoso-
ramosis ; pappo simplici.

E. FOLIOSUS, Nutt. ; Gray, Bot. Calif, i. 329. E. Douglasii, Torr.
& Gray, Fl. ii. 177. Jiplopappus ? occidentalis, Hook. & Arn. Bot.
Beech. 350. Et var. stenophyllus, Gray, 1. c. E. stenophyllus,
Nutt. — California, especially the western parts.

E. Breweri, Gray, Proc. Am. Acad. vi. 541. — Sierra Nevada, in
woods.

* * Texano-Neo-Mexicanae, humiles ; caulis a basi ramosis ; pappo
dui^lici.

E. BiGELOVII, Gray, Bot. Mex. Bound. 78. — On the Rio Grande
near Fronteras, Wright, Bigelow.

4. Species occidentales, baud canescentes ; caulis foliosis ima basi
herbaceis ; capitulis subcorymbosis ; bracteis involucri ajquilongis ; li-
gulis 15-50.

E. CORYMBOSUS, Nutt. in Trans. Am. Phil. Soc. n. ser. vii. 308.

Ligulae 30-50, lineares, violaceae. Pappus exterior e S[Juamellis setulose minutis. — Rocky Mountains of Wyoming to Washington Terr, and E. California.

E. decumbens, Nutt. 1. c. Ligulne 15-40, iato-lineares, alb; i? vel purpurascentes. Pappus exterior vix ullus. — Idaho to Utah and the borders of California.

5. Species argenteo-canescentes, montanne ; caulis foliosis moncephalis 4-12-pollicaribus e caudice multicipiti lignescenti ; ligulis albis circiter 50 ; foliis angustis ; acheniis G-I0-tiervatis.

E. CANDs, Gray, Pl. Fendl. & Proc. Am. Acad. viii. 650. — Northern New Mexico and E. Colorado.

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E. ARGENTATus, Graj, Proc. Am. Acad. 1. c. E. ccespitosus, Eaton, Bot. King, pro parte. — Arid interior region of S. Utah and Nevada.

6. Species montano-occidentales, humiles e caudice multicipiti ligne-scente vel incrassato ; foliis angustis integerrimis {E. composito ex-cepto) ; involucro hand lanato.

* Folia filiformia, ima nunc spathulato-linearia nee ultralineam lata.

-t- Corolla disci tubo villoso-hirsuto : achenia 2-4-nervata : involucrum e bracteis subincequalibus : caules saepe ramosi, capitula speciosa saepius albo-ligulata longius pedunculata gerentes : pappus fere simplex.

E. STENOPHYLLus, Graj in Pacif. R. Rep. iv. 42. — N. W. Texas, Bigelow.

E. Utahensis. E. stenophyllus, var. ? teirapleurus, Gray, Proc. Am. Acad. viii. 650. — Arid region of S. Utah, Mrs. Thompson, Capt. Bishop, Parry, Palmer.

•(— -i- CoroUae disci fere glabrae : achenia binervata.

++ Pappus simplex : caules superne saepius ramosi foliati : ligulae 30—80, violaceee vel albae.

E. FiLiFOLius, Nutt. ; Torr. & Gray, Fl. ii. 177. Chrysopsis canescens, DC. Prodr. v. 328. — British Columbia to California, in the dry interior.

+--o •-+ Pappus satis duplex, serie exteriore setulosa vel squamellata brevi manifesta : caules floridi saepius simplices, superne pedunculiformes monocephali : ligulae nunc ochroleucae, saltern flavae !

E. PEUCEPHYLLrs. Facie et involucro subimbricato E. jiUfolium simulans, pube cinerea adpressa magis strigillosa, demum glabratus ; foliis filiformibus ; ligulis 30-40 (lin. 2-3 longis) nunc pallide caeruleis

nunc ochroleucus vel luteis ; pappo exteriore squamellato. E. ochro-leucus, Auct. pro parte, Gray, Bot. Calif, i. 328, etc. *Diplopappus filifolius*, Hook. Fl. ii. 21, ex char. — British Columbia and Idaho to the Sierra Nevada, California.

E. OCHROLECUS, Nutt. *Magis hirsutus*, nunc glabratus ; foliis e lineariformibus ad linearispathulata inferne hirsuto-ciliatis; capitulo majore ; involucri bracteis £equilongis ; ligulis plus 40 (lin. 3-5 longis) nunc albidis nunc luteis; pappo exteriore fere setuloso. — Idaho and E. Oregon.

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Var. HIKTELLUS. Hirsutior, imino hispidus pilis patentibus ; Hgulis aureis. *Chrysopsis hirtella*, DC. Frodr. v. 327? — E. Oregon and Idaho. Douglas ? Cusick, Nevius, Howell.

-1— -i— Folia palmati- (rarius pinnati-) partita, radicalia, vel 2-3 in caule scapiformi monocephalo, angusta, integerrima.

E. COMPOSITUS, Pursh. E. pedatus, N'utt. — Subalpine or alpine on the Rocky Mountains, Sierra Nevada to the Arctic regions, and Greenland.

Var. *Discoideus*, Gray, Am. Jour. Sci., ser. 2, xxxiii. 237.

Var. TRiFiDUS. Foliis parvulis 2-3-fidis, lobis oblongis vel ovatis. —

Northern Rocky Mountains.

Var. PiNNATiSECTUS. Foliis pinnati-partitis in segmenta 7-11 in-tegerrima vel 2-3-fida. — High mountains of Colorado, Hall, Hooker & Gray, Rothrock.

•»— -f— -f- Folia ex angusto-linearibus ad lanceolata, ima spathulata, omnia integerrima.

H- Virides, pube hirsuta parca vel evanida : caules simplices, 2-6 pollicares e caudice multicipiti, superne nudi, monocephali : ligulæ nee numerosissimæ nee ansustæ.

= Species alpinae ; pappo simplici ; pube baud glandulosa.

E. RADiCATUs, Hook. — A still obscure species.

E. NANUS, Nutt. B. nanus & B. radicatus, Nutt. in Trans, Am.

Phil. Soc, 1. c. — High Rocky Mountains.

E. URSiNUS, Eaton, Bot. King, 148. Aster glacialis, Nutt. 1. c. —
High Rocky Mountains, occurs in several forms.

= = Species alpestris ; pappo exteriori setuloso parum manifesto.

E. GLANDULOSUS, Portcr, Fl. Colorad. 60. E caudice valido coespitoso 3-5-uncialis, hispidulo-glandulosus, subscaber ; caulibus sca-

piiformibus rigidiusculis ; foliis radicalibus spathulato-lauceolatis (lin. 2
latis poll. 2 longis) ; capitulo raajusculo ; involucri bracteis subinaj-
qualibus scabro-glandulosis parum hirsutis ; ligulis violaceis lin. 5
longis. — Mountains of Colorado.

++ ++ *Viridula* 3, vix cinerea?, pube tenui substrigulosa plerumque ad-
pressa : ligulae pauciuscuhe (25-30) uec angustie : pappus fere
simplex.

= Caules floridi simplices monocephali, sat validi, superne aphylli,
capitulum majuscum superati.

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E. Nevadensis, Gray, Proc. Am. Acad. viii. 649. — Sierra Nevada
and adjacent mountains in W. Nevada.

Var. *PYGMiEus*, Gray, 1. c. An ambiguous form, of the higher
peaks of the Sierra Nevada.

= = Caules debiles, diffusi, demum ramosi : capitula parvula, ligulis
lin. 3 longis albis vel purpureo-mentibus.

E. Eatoni. Substrigoso-pubescent ; caulis e radice subfusiformi
3-9.pollicaribus ; foliis linear-lanceolatis sen angusto-linearibus (poll.
2-3 longis lin. ^-2 latis) supra glabratis ; involucri bracteis subhirsutis

fera equalibus. E. ochroleucus[^] Eaton, in Bot. King, 152, non Nutt.

— Wind River Mountains (C. Richardson) to the Uinta and Wahsatch,
at 7,000 to 10,000 feet (Watson, Eaton, M. E. Jones), and S. Utah,
Palmer.

E. TENER. Cinereo-puberulus ; caulis exiguis laxis e caudice
multiplici ; foliis spathulatis seu lanceolatis, radicalibus lamina ^2-
polycarpi in petiolo sat longo, caulinis superioribus linearibus parvis ;
involutio lin. 2 longo, bracteis inaequalibus. E. ccespitosus, var. tener,
Gray, Bot. Calif, i. 328. — High mountains of Nevada and adjacent
part of California ; also of Central Utah, Watson, Brewer, Parry.

++!-++ Cinereo-canescentes, pube brevi molli vel hispidula basi ad-
pressa : caules e caudice valido ramoso plurimi, foliosi, aut simplices
aut superne ramosi, capitula mediocria pauca vel solitaria gerentes :
folia latiuscula.

= Ligulae 18-30, latiusculae, oblango-lineares, purpureas, modo Asteris.

E. ASPEKUGINEUS. Pube hispidula minuta cinereus ; caulis sim-
plicibus 2-6-pollicaribus sspinosus monocephalus ; foliis caulinis iuferiori-
bus radicalibusque obovato-rotundis vel spathulatis (lin. 3—5 latis)
petiolo longiusculo, superioribus lato-linearibus ; involucro e bracteis
paucis aequalibus ; pappo simplicissimo. Aster asperugineus, Eaton
in Bot. King, 142. — E. Humboldt Mountains, Nevada, Watson.

= Ligulae numerosse uniserialis, albae, nunc pallide roseae : involu-
crum pi. m. villoso-hirsutum.

a. Pappus simplex.

E. CANESCENS, Torr. & Gray. — Northern Rocky Mountains.

b. Pappus duplex, exterior brevis setuloso-squamellatus.

E. c[^]SPiTOSus, Nutt. in Trans. Am. Phil. Soc. 1. c. ; forma parvula.

Diplopappus grandijlorus, Hook. Fl. Bor.-Am. ii. 21, forma validior

macrocephala. — Rocky Mountains from the Saskatchewan to Colorado
and Utah.

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++++++ Hispidas vel hirsutissimae pilis longis pateitibus : caules

simplices vel superne ramosi, foliosi, spithamsei : capitula majuscula ;

involucro hispido-hirsuto : lignite 50-60, etiam 80, longae et angustas,

mox deflexae : pappus aperte duplex.

E. PDMiLUS, Nutt. Gen. ii. 147. Robustior; ligulis albis ; pappo

exteriori e setulis (vix squamellis) brevibus setis interioris vix latioribus.

— Plains of Dakota to Colorado and the mountains of Utah.

E. CONCINNDS, Torr. & Gray, Fl. ii. 174. Hirsutior ; foliis minus

rigidis ; caulibus steppis ramosis floribundis ; ligulis violaceis raro albis ;
pappo exteriori paleaceo-squamellato, paleis aut subulatis aut oblongis.

Var. CONDENSATUS, Eaton in Bot. King, 151; forma nana; paleis

pappi paucioribus latioribus. — Var, aphanactis, Gray, Proc. Am.

Acad. vi. 540 : ligulis abortivis vel brevissimis, vel fl. fcemineis plane

nullis. — Arid districts, Rocky Mountains to the Sierra and Cascades,

and from Brit. Columbia to Arizona.

7. Species alpinae vel alpestres : folia latiora fere semper integer-
rima : involuci laxi lanosissimi pilis longissimis multiseptatis : achenia
ssepius binervia: ligulae ad 100 angustiusculaB : pappus fere simplex.

E. UNIFLORUS, L. — Alpine region of the Rocky Mountains and
Sierra Nevada, north to the Arctic coast.

E. GRANDiFLORCs, Hook. Fl. Bor.-Am. ii. 18, t. 123. — Alpine and
alpestrine regions of the Rocky Mountains.

Var. LANATUS. Depressus, ad E. unijlorum tendens, sed involu-
cro squarroso-patente nee adpresso, foliis latioribus rarissime trifidis.

E. lanatus, Hook. 1. c. 17, t. 121. — High alpine summits.

Var. ELATiOR, Gray, Am. Jour. Sci., ser. 2, xxxiii. 237. Caule
sa^pius pedali apice ramoso 2-5-cephalo folioso ; foliis aut oblongis aut
ovato-lanceolatis basi lata sessili. — Alpestrine, along streams in the
Rocky Mountains of Colorado, first collected by Dr. Parry.

8. Species sylvaticte vel agrestes, paucte alpestres, latifoli^ : caules
foliosi, superne ramosi, raro raonocephali, basi nee flagelliformi nee
repentes : involucrum baud lanatum : ligulae plerumque violaceae vel
purpureae.

* Capitula maxima (disco pollicem diametro) caules breves lignescentes
decumbentes terminantia : pappus fere simplicissimus : ligula3 nume-

rosissimae et latiusculae.

E. GLAUCUS, Ker. ; Torr. & Gray, Fl. ii. 172, ubi synon. — Sea-shore of Oregon and California.

* * Capitula majuscula, disco semi- vel §-pollicari: ligula? 100 vel plures, angustae : caules erecti, 1-2-pedales : folia integerrima : pap-

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pus exterior manifestus, setulosus vel subulato-squamellatus. (f^pe-
cies nimis affines.) — § Phosnactis, Nutt. in Trans. Am. Phil. Soc.

1. c. pro parte.

E. SPECIOSUS, DC. — Brit. Columbia to Oregon near the coast.

E. MACRANTHUS, Nutt. 1. c. Involucrum glabrum vel subglabrum :
capitula nunquam magna. — Rocky Mountains from Wyoming to
S. Utah and New Mexico,

E. GLABELLUS, Nutt. Gen. ii. 147. JEJ. asper, Nutt. 1. c. — Sas-
katchewan and Minnesota to the Rocky Mountains, southward to
Colorado and Utah. A polymorphous species as here received. The
annexed is an ambiguous form, which but for the involucre would be

appended to the foregoing.

Var. MOLLIS, Gray, Proc. Acad. Philad. 1863, 64. Pube (etiam involuci) brevi molli patente subcinereus ; caule folioso. — Colorado Rocky Mountains, at 8,000 to 9,000 feet.

* * * Capitula majuscula vel mediocria : ligulfe minus nuraerosae 50-

70 vel pauciores, latiusculoe : corollae disci sursum paulo ampliataj,

dentibus majoribus : pappus simplex : caules erecti mono - oligo-

cephali : folia inferiora quandoque parce serrata. Transitus ad

Aster um.

•f- Subalpin^e vel alpestres, occidentales, foliis laste viridibus: caules

e rhizomate baud stolonifero subpedales ad bipedales, macriores

(4-8-pollicares) monocephali.

E. SALSUGiNOSUS. Rhizomatibus brevibus crassiusculis ; foliis glabris vel subglabris oblongis seu lanceolatis, imis obovatis vel spatulatis, superioribus apiculato-acuminatis, summis subulatis : involucro laxo glanduloso-pubero seu viscido, bracteis attenuatis apice patentibus ; ligulis purpureis seu violaceis. Aster sahuginosus, Richards. App.

Frankl. ed. 2, 32; Hook. Bot. Mag. t. 4942. A. Unalaschensis, Less.

in Linn. vi. 124. — Var. angustifolius : forma macra, angustifolia, Californica. — Wet ground, Kotzebue Sound to northern Rocky Mountains and subarctic plains eastward, along the higher mountains to

California, Utah, and New Mexico.

Var. HowELLii. Caule magis oequaliter folioso ; foliis ovatis
eximie acuminulatis ; ligulis tantum 30-35 latioribus albis. — Cascade
Mountains, Oregon, May, 1880, Joseph and T. J. Howell.

E. CoulTERi, T. C. Porter. Rhizomatibus gracilibus ; foliis pubes-
centi-hirsutis vel glabratis pallide viridibus ssp. oblongis parce
acute denticulatis vel integerrimis ; involucri bracteis minus attenuatis
vix patentibus undique vel basi villosis et glandulosis ; ligulis angusti-

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oribus albis vel purpureo tinctis. — Porter & Coulter, Fl. Colorad. 61 ;
Rothrock in Wheeler Rep. vi. 154. — Rocky Mountains of S. Colorado,
at 10,000 to 11,300 feet, Coulter. Wahsatch Mts., M. E. Jones,
Rothrock. S. Utah, Ward. Sierra Nevada, California, Bolander,
Greene, Lemmon.

H— -h- Orientalis, stolonifero-casspitosus ; capitulis mediocribus paucis
umbellato-cymosis rariusve solitariis.

E. BELLiDiFOLius, Muhl. — Canada to Louisiana, west to Illinois.

There are indications of an allied species in Oregon.

* * * * Capitula minora (disco lin. 3-4 lato) pi. m. cymosa : ligulae
numerossissimse, angustae, purpureas vel purpurascentes : pappus sim-

plex : plantae sparsae e surculis stolonibus filiformibus provenientes
perennantes (vel biennes ?).

E. Philadelphicus, L. ; Torr. & Gray, Fl. ii. 171, ubi synon. —

Nearly throughout the United States and British America.

E. QUERCiFOLius, Lam. ; Torr. & Gray, 1. c, ubi synon. — S. Caro-
lina to Texas.

9, Species humiles, caulis repentibus seu ramis procumbentibus
foliosis apice radicantibus perennantes : ligulæ numerosissimæ, angustæ,
pallidæ : capitula solitaria, longe vel scapo-pedunculata : pappus e
setis pauciusculis.

* Pappus simplex : folia saepe undulato-dentata seu lobata.

E. scaposus, DC. Prodr. v. 287 ; Benth. Pl. Hartw. 17. K
longipes, DC. 1. c. 285. Aster rivularis, Schlecht. — Mexico.

Var. ? cuNEiFOLius. Hirsuto-pubescentes ; ramis plerisque prostratis
repentibus ; pedunculis axillaribus scapiformibus ; foliis cuneatis vel
obovatis obtusis grosseque 5-9-dentatis, basi angustata integer-
ria ; pubescentia adpressa ; involucro l. 4 diametro. E. scaposus,
Torr. & Gray, Fl. ii. 170; Gray, Pl. Lindh. i. 11 (vix var. latifolium
DC. ex char.). — Sandy sea-shore, Texas.

He * Pappus duplex, exterior subulato-setulosus : caules floridi scapi-
formes, steriles flagelliformi-procumbentes, foliosi, apice demum

radicantes et prolieri : folia integerrima, cauliua angusta.

E. FLAGELLARis, Gray, Pl. Fendl. 69. — W. Texas to New Mexico,
S. Utah, Colorado.

Series 2. Species annuse vel biennes, vix unquam montanae.

* Achenia angusta minus compressa, apice truncato albo-coronulato :

pappus simplex.

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E. Bellidiastrujm, Nutt. Trans, Am. Soc. 1. c. — Low plains of
Nebraska to New Mexico.

«: * Achenia compressa generis : pappus duplex, exterior brevissimus,
setulis squamellisve numerosis nunc in coronulam pi. m. concretis. —

§ Phalacroloma, Torr. & Gray, Fl.

•*- Pappus conformis : folia pleraque integerrima : plantas humiles.

-H- LiguljB 30-40, albfe.

E, MODESTus, Gray, Pl. Fendl. 68, excl. syn., & Pl. Lindh. ii. 220.

— Sterile plains, W. Texas.

++ ++ Ligulfe circiter 100, angustse.

E. DiVERGENS, Torr. & Gray, Fl. ii. 175, et var. cinereus.

E. cinereus, Gray, Pl. Fendl. E. nudijlorus, Buckley in Proc. Acad.

Philad. — Nebraska to California and Mexico.

E. tenuis, Torr. & Gray, 1. c. — Arkansas, Louisiana, and Texas,

in low grounds.

•I— -I— Pappus interior setosus in radio nullus, vel parcissimus caducus :

ligulse 50-80, albae, nunc pururascentes (lin. 3 longge) : caules

erecti, 1-4-pedales, folia plurima indivisa et capitula parvula sat

numerosa gerentes. — Phalacroloma, Cass.

E. ANNUus, Pers. ; Torr. & Gray, 1. c. ubi synon. — Canada to Vir-

ginia and west to Oregon.

E. STRIGOSUS, Muhl. ; Torr, & Gray, 1. c. — Canada and Saskatche-

wan to Texas and California.

Var. Beyrichii, Torr. & Gray. — Arkansas and Texas.

-^ -1— -I— Pappus radii ut disci perfectus, interior caducus, exterior e

squamellis insigniter concretis : folia caulina pinnatipartita : ligulse

numerossimae angustae. — Stenactis, Cass. Polyactis, Less. Poly-

actidium, DC.

E. delphinifolius, Willd. New Mexico, Arizona, Mexico.

§ 2, Trtmorph^a. Flores freminei sjepissime biformes, exteriores

angustissime et breviter aut brevissime ligulati, interiores corolla fili-forrai tubulcsa stylo multo breviore : folia subintegerrima. — Trimorphcea, Cass.

* Caules humiles ssepius monocephali e rhizomate perenni : ligulae exsertse, tubo pilis parcis elongatis pluriseptatis instructo.

E. alpixus, L. — Alpine region of the northern Rocky Mountains,
Drummond.

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* * Caules spithamsei ad sesquipedales e radice bienni vel subperenni, majores ramosi oligo— polycephali : liguliE parum exsertae vel in-clustE.

•hr PurpurejE : corollae eligiliatfe filiformes numerosoe.

E. ACRis, L. — Anticosti and Labrador to the Rocky Mountains,
south to Colorado and Utah, and to the northwest coast.

Var. Drcebachensis, Blytt, Norg. Fl. 561, Glaber vel subglaber;
involutio nudo vel basi tantum hirsuto; ligulis ant subexsertis aut
minutis filiformibus pappo etiam per anthesin brevioribus. £. elonga-tus, Ledeb. FL Alt, jE. Kamtschaticus, DC. Prodr, E. glabratus, Hook.
Fl. Bor.-Am. ii. 18, maxima parte, non Hoppe. — Same distribution,

and numerous intermediate forms.

H— H— AlbidiE, filiformes : flores interiores eligulatae hand visas !

E. ARMERi^FOLius, Turcz. E. Ionchophyllus & E. glahratus var.

minor, Hook. E. racemosus^ Nutt. — Saskatchewan and along the

Rocky Mountains to Colorado, the Wahsatch, and the Sierra Nevada.

§ 3. C^NOTUS, Nutt. Flores foerainei uniformes numerosi ; ligulis
inconspicuis semper tubo suo brevioribus, aut parum exsertis stjlm
vix superantibus, aut minimis etiam obsoletis : flores disci stepius
pauci, corolla quadridentata : herbce annuae et biennes, microcephala^.

(Transitus ad Conyzam.)

* Floccoso-lanatae, incanae, nee viscida vel hirta : pappus simplex.

E. ERiOPHYLLUS, Gray, PI. Wright, ii. 77. — S. Arizona,

* * Leviter arachnoideae, mox nudatae, pube subviscida,

E. SUBDECURRENS, Schultz Bip. Conyza suhdecurrens, DC. Prodr.

V. 379. C. Coulteri, Rothrock in Wheeler Rep. vi. 155, non Gray. —

S. Arizona on Mt. Graham, Rothrock. Mexico, recently collected by

Schaffner, Parry, and Palmer.

* * * Pube nee lanata nee viscida hirsutte vel hispidte : caules folio-

sissimi.

-I— Inquilinae, involucro cinereo-pubescente.

E. LiNiFOLius, Willd. E. ambiguus, Schultz Bip. in Phy(. Canar.

E. Bonariensis, DC. pro parte. Conyza ambigia, DC, C. sinuata,

Ell. — Waste grounds, coast of S. Carolina to Florida.

-1- --) Indigenas, microcephalae, involucro fere glabro.

E. Canadensis, L. — Everywhere common, now a cosmopolite weed.

E. divaricatus, Michx. — River-banks of the Mississippi and its tributaries, to Texas.

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ASTER. The revision of this vast genus is not yet completed, owing to the great difficulty which is experienced in settling the synonymy and the limits of some of the earlier as well as of the later known species. It is intended to accept the genus in the wide extent assigned to it in the Genera Plantarum of Bentham and Hooker, at least so far as North America is concerned, and also to include Brachyactis. The subgenera may be arranged in two series ; the first of perennials, the second of annuals and biennials ; and an endeavor has been made to dispose of the perennial Asters under the following subgenera.

§ 1. Ajiellastrum, best marked by its broad and obovate very flat achenea with callous-nerved or thickened margins, and no lateral nerves. Here A. alpinus and the variety Jlaccidics, and the wholly Old World A. Amellus, L.

§ 2. *Megalastrum*. This was indicated in PL Wright, ii. 75,
and it connects the genus with *Townsendia*. The head, as the name
denotes, is very large, and the leading character is found in the
unusually coarse and rigid bristles of the pappus. The species are
A. tortifolius, Gray (*Aplopappus tortifolius*, Torr. & Gray), and *A.*
Wrightii, Gray {*Townsendia* § *Megalastrum Wrightii*, Gray in Bot.
Mex. Bovmd. 78), Texano-Arizonian species, more or less sulfrutescent.

§ 3. *Heleastrum*. DeCandolle's genus of that name, well restored
as a section by Bentham, which also has unusually coarse and rigid
pappus-bristles, the stronger ones somewhat clavellate at tip ; the
coriaceous-foliaceous bracts of the involucre are somewhat equal in
length ; the achenia narrow, mostly slender, little compressed, and 8-10-
nerved. *A. eryngiifolius*, Torr. & Gray, and *A. spinidosus*, Chap-
man, are referred here, along with the original *A. paludosus*. Ait. All
three are low pine-barren species of the Southern Atlantic States.

§ 4. *Hesperastrum* was indicated in the Botany of California,
under § *Machoeranthera*. The single species, *A. Shastensis*, of Mt.
Shasta, California, is truly perennial, has narrow and hardly at all
compressed achenia traversed by 5 strong nerves and intermediate
striae ; but the pappus is soft. The leading peculiarity is in the neutral
rays, after the manner of *Gorethi'ogyne*, of which it has somewhat the
habit. But the style-appendages are slender and naked.

§ 5. BiOTiA, a well known group, with appendages to the involu-
cral bracts so short or obscure that the section might be placed next
to the sections *Dcellingeria* and *Orthomeris*, while on the other hand

it is nearly related to *Sericocarpus*, also to the *Calliastrum* group
of the

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§ 6. EuASTER, or Aster proper. This includes all the remaining perennial Aster which have partly herbaceous or foliaceous, or at least herbaceous-tipped involucral bracts, and a simple pappus.

§ 7. DCELLINGERIA, adopted from Bentham and Hooker, is marked by the short involucre of thin coriaceous inappendiculate bracts, and a double pappus, the outer like that of many species of *Erigeron*, the larger bristles of the inner commonly clavellate-thickened at apex ; the rays, as in § *Biotia*, are few. *A. injirmus*, Mclix. (a somewhat earlier name than *A. cornifolius*, Muhl.), *A. umhellatus*, Mill, (which includes *A. amygdalinus*), and the somewhat ambiguous *A. reticulatus*, Pursh, are the species.

§ 8. Ianthe, taken from Torr. & Gray, Fl., includes a few species with pappus inconspicuously double, the outer being slender-setulose or indistinct, the bristles of the inner not at all clavellate ; the involucre, &c. that of the following section. (*A. obovatus*, Meyer, the *Rhinactina limonifolia*, Less., lies between this section and the preceding.) Our species are *A. Unariifolius*, L., *A. scopulorum* (the

Chrysopsis alpina and *Diplopappis cdpiniis* of Nuttall), and *A. ericce-*
folios of Rothrock, which is the *Diplopappiis ericoides* of Torrey and
Gray.

§ 9. *Ortiomeris* is taken from Torrey and Gray, Fl., with some extension. It includes the remainder of our perennial Asters, those with simple pappus and no green tips to the involucral bracts. *A. acuminatus*, Michx., and *A. nernoraUs*, Ait., make the first section. Another consists of *A. Engelmanni*, Gray, *A. ledophytUas* (promoted from the variety of the preceding), and *A. elegans*, Torr. & Gray, three very close species, and *A. glaucus*, Torr. & Gray. *A. ptarmicoides*, which forms another section, has a var. *Georgianus*, remarkably tall and branching, from the mountains of Georgia, where Dr. Chapman collected it ; the *Xylorrhiza* section has a proposed new species, *A. 'Watsoni*, founded on a plant referred to *A. glacialis* by Eaton in Bot. King (no. 509) : it may pass into *A. arenarioides*, Eaton. The remaining section consists of species which had been referred to *OxytripoUum*. The last of them is *A. tenuifolius*, L. (not of subsequent authors), which is *A. Jlexnosus*, Nutt., and which differs from the following only by the perennial rootstock.

The series of monocarpic (annual and biennial) Asters contains the following subgenera or primary sections, besides *TripoUum* of the Old World.

§ 10. *OxYTRiPOLiUM*. *TripoUum* § *Oxytripolia*, DC, excluding the perennial species. It is suspected that the widely distrlmited warm-

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temperate species for which Nuttall's specific name of *divaricatus* was adopted by Torrey and Gray is *A. exilis* of Elliott. *A. subulatus*, Michx., is a name for the other species preferred to *A. linifolius*^ L. ; for the true original of the Linnéan plant is a *Galatella*. This species, with its inconspicuous rays, hardly surpassing the disk and commonly surpassed by the mature pappus, and with its fewer disk-flowers, must be held to invalidate the genus *Brachyactis*, which is

§11. CoNYZOPSIS, Torr. & Gray, This name having been used in this sense, as the name of a section, before the generic name *Brachyactis* was published, should be continued by those who do not admit the latter genus. It is, as it were, the analogue of the section *TrimorphcBa* in *Erigeron*. The American species are *A. frondosus* and *A. angmtus*, Torr. & Gray. *Brachyactis robusta*, Benth., by its involucre, flat and nerved-margined achenia, and no ligules, appears to be a *Conyza* ; besides its pappus is distinctly double. *B. menthodora*, Benth. (Hook. Ic. Pl. t. 1106) seems to be a true perennial *Aster*.

§ 12. Mach^ranthera. One division of this is the genus *Machcerayithera* of Nees ; the other is the genus *Dieteria* of Nuttall. Except for the biennial or annual root, and the disposition to have spiculose-toothed or cleft or dissected leaves, this subgenus would rank among the true *Asters* in the early part of the first series. *A. gymncephalus* (*Aplopappus*, DC.) is a common Mexican species. As we

receive it *A. canescens*, Pursh, would appear to comprise three or four species, the extreme forms being widely different. These are arranged as varieties, under the heads of var. *viridis* (the MachoEvanthera *canescens*, var. *glabra*. Gray, Pi. Wright, i. 89, etc.) ; var. *latifolius* (M. *canescens*, var. *latifolia*, Gray, Pi. Wright, ii. 75, and *Dieteria asteroides*, Torr. in Emory Rep. 142) ; var. *viscosus*, to which belongs *Dieteria viscosa* and *sessiliflora*, Nutt., and *D. incana*, Torr. & Gray {*Diplopappus incanus*, Lindl. Bot. Reg. t. 1 693, & Hook. Bot. Mag. t. 3382) ; and var. *tephrodes*, of Southern California, Arizona, and New Mexico, which was named *A. incaniis* in the Botany of California, but which cannot be Lindley's plant.

Among the true Asters are several forms which have to be named, such as *A. Porteri* for *A. ericoides*, var. *strictus*, Porter & Coulter Fl. Colorad. 56, and *A. Pringlei*, from the northern end of Lake Champlain, — species allied to *A. ericoides*. One species of Oregon is so well marked that it may here be characterized : —

Aster Cusickii. Cinereo-pubescent, pubescent, not scabrous ;
caulibus simplicibus vel apice ramosis 1-2-pedalibus usque ad
capitula solitaria majuscula foliosis ; foliis amplis (inferioribus poll.

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3-4, summis 2-3 longis) merabranaceis parce denticulatis vel integer-
rimis, radicalibus caulinisque infimis spathulato-ovatis in petiolum

alatum basi auriculato-dilatatum amplexicaulem angustatis, caeteris
ovatis oblongisve acutatis basi cordato-amplexicaulibus ; involucro
hemisphaerico foliaceo discum tequante, bracteis extimis foliis refe-
rentibus intimas lanceolatas superaiitibus ; ligulis uuraerosis angustis
pallide cteruleis semipollicaribus ; acheniis glabris. — Along streams
in the subalpine region, in the mountains of Union Co., E. Oregon,
W. Cusick.

"Whether Galatella, DC. [Galatea, Cass.] should be kept distinct
from Aster, partly for geographical reasons, may be still a mooted
question ; but whether as a genus or subgenus it could hardly include
a West-Indian shrubby plant, which has been mistakenly referred to
SoUdago. It is proposed now to distinguish it, under the name of

GUNDLACHIA, Nov. Gen. Asteroidearum. Capitulum pauci-
florum, heterogamum ; floribus radii 1-3 foeminei ; disci 3-5 herma-
phroditis, omnibus fertilibus. Involucrum angustum ; bracteis siocis
gradatim imbricatis subcarinatis uninerviis ; intimis lato-linearibus,
extimis brevibus subovatis. Corolla radii ligula alba oblonga discum
£equante ; disci flava, limbo usque ad tubum gracilem 5-partito, lobis
linearibus patentissimis. Stamina prorsus exserta. Styli fl. herm. rami
plani, appendice fere aequilonga et lata acutiuscula superati. Achenia
gracilia, teretia, o-nervia. Pappus uniserialis, e setis copiosis capillari-
bus sequalibus. — Frutex orgyalis, ramis erectis foliosissimis linear-
ibus subtrinerviis integerrimis, capitulis Solidagini referentibus, sed in
thyrum panicul^formem vel subcorymbiformem (nee racemiformem)
digestis.

GuNDLACniA DoMiNGENSis. SoUdago Domiiigensis, Spreng. Syst.

iii. 639 ; DC. Prodr. v. 341 ; Griseb. Cat. Cub. 150. ,S'. Llndeniana,
A. Rich, fide Griseb. BaccJiaris ptarmicfEfoUa, Griseb. in PL AVright.
Cub. 513 (no. 1314), non DC. — St. Domingo, Bertero. Cuba, Lin-
den, "Wright, toward the eastern end of the island. Dedicated to Mr.
J. Gundlach of Havana, an acute naturalist, the friend and companion
of Charles Wright in his Cuban explorations.

The following are the characters of a few new Compositce.

Ch^nactis suffrutescens. Albo-tomentosa ; ramis lioridis e
caule perenni lignescente decumbente vel huraifuso erectis (subpedali-
bus) apice longe nudis peduncuKformibus monocephalis ; foliis in
segmenta 5-7 linearia obtusa subintegerrima 1-2-pinnatipartitis ; in-

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voliicro (subpollicari) deimdato viscidulo, bracteis Unearibus obtusis ;
coroUis homomorphis albis pappo simplici 10-r2-|)aleato paullo longi-
oribus. — Rocky banks of the Sacramento below Mount Shasta, Cali-
fornia, Lemmon.

AcTiNOLEPis Lemmoni. Tenella, laxe ramosa, triuncialis, lana
tenui floccosa decidua demum glabrata ; foliis parvis alternis fere linea-
ribus obtusis integerrimis caruosulis ; capitulis (lin. 3 longis) peduncu-

latis angustis ; involucro e bracteis 6-7 oblongis ; receptaculo piano ;
ligulis 4-6 lato-ovalibus tridentatis roseo-albis discum vix superan-
tibus ; acheniis clavatis hirsutis ; pappo nullo. — Mohave Desert, S. E.
California, on the borders of Arizona, Lemmon, 1880.

Laphamia Lemmoni. Parva, ramosa, depressa, subcinereo-pu-
bescens ; foliis omnibus oppositis cordato-rotundis (cum petiolo fere
a^quilongo semipollicaribus) 5-7-lobatis incisisve nunc fere partitis,
lobis obtusissimis ; pedunculis capitulo baud longioribus ; involuci
bracteis linear-i-oblongis vel subspathulatis obtusissimis subplanis ;
ligulis nullis ; corollis disci luteis ; styli ramis elongato-subulatis ;
acheniis compressiusculis pube brevi densa subcinereis ; pappo uni-
(raro bi-) aristellato stepe evanido. — Near Camp Lowell, Tucson,
Arizona, Lemmon, 1880. — Depressed-spreading, only 2 or 3 inches
high; the heads 4 lines high. The usually solitary bristle of the
pappus is exceedingly slender, about the length of the proper corolla-
tube and half that of the acheneum ; rarely there are two contiguous
ones, in many flowers none at all or a mere rudiment. Assuming a
form with incisely lobed leaves as the type, a marked variety, sent under
a separate number, from the same station, is to be indicated, viz. : —

Var. PEDATA. Foliis plerisque pedatipartitis vel bipalmatifidis. —

With the typical form.

Fleischmannia Schaffneri. Suffruticosa, humilis, viscidulo-
pubescens, odore moschato ; foliis plerisque alternis tenuiter petiolatis
biternatipartitis, lobis sublinearibus 2-3-dentatis dentibusque acutis
calloso-apiculatis ; capitulis longe pedunculatis ; involucro glabro plu-

riseriali ; corollis albidis ; stylis luteis roseis praelongis ; pappi setis
5-6. — Shaded and humid ground, in the mountains near San Fran-
cisco (San Luis Potosi), Mexico, Dr. J. G. Schaffner, Aug., 1876,
no. 349.

EuPATORIUM MYGiND-^EFOLIUM. Fruticulosum, depresso, sub-
pedale, glutinosum, glabrum ; foliis crebis oppositis oblongis (semi-
pollicem longis) obtusiusculis basi in petiolum attenuatis utrinque
1-4-dentatis vel denticulatis crasso-coriaceis subaveniis triplinerviis ;
capitulis subsolitariis ramulos terminantibus inter folia sessilibus 15-

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floris ; involucro (lin. 4 longo) e bracteis 7-8 oblongo-lanceolatis acu-
tiusculis paucinervatis floribus (albis ?) paullo brevioribus biseriatis,
exterioribus parum brevioribus ; acheniis secus costas hispidulo-
scabris. — Province of San Luis Potosi, on high mountains near San
Miguel, Dr. J. G. Schaffner, coll. Aug. 1876.

Philactis longipes, Gray, Proc. Am. Acad. xv. 35, is now re-
ceived from Dr. Schaffner, the specimens in a more advanced state,
showing the obpyramidal-triquetrous fertile akenes of the ray, the
inner angle usually aristellate ; and the akenes of the disk, though
seemingly well formed, are infertile.

II. Some Species of Asdeprias.

In the conspectus of the species of *Asdepas* published in these Proceedings (vol. xii.), and in the Synoptical "Flora of North America," two undescribed species lurked undetected, one under *A. longicornu* the other under *A. hrachystephana*. Both of them were brought to light and are named by the Rev. Edward L. Greene, one of our keenest observers, who collected and examined the living plants in the interesting field where he is now stationed in New Mexico. The main characters of these species are appended.

Asclepias Wrightii, E. L. Greene, in litt. *A. longicoru* & *A. nyctaginifolia* affinis, hirto-puberula, viridiflora : caulis e radice crassa decumbentibus spithamea^is et ultra foliosis ; foliis lato-lanceo-latis ovatis e basi acuta petiolatis ; umbellis ad plerosque iodos subsessilibus plurifloris; cucullis erectis linear-oblongis antheris triplo longioribus basibus rotundatis columnam brevissimam obtegentibus praeter margines albidas akBformes superne dilatatas solidis infra medium vix constrictis intus sub apice crista parva bifida, lobo postico obtusissimo, antico in cornu breve falcatum subinclusum producto ; antherarum alls semi-ovatis. — Near Santa Rita, New Mexico, C. Wright, 1851-2. In the same district between Silver City and Lone Mountain, July 10, 1880, E. L. Greene. Mr. Wright's specimens, in fruit and with flowers in poor condition, were mixed with those of *A. longicoru* and remained unnoticed until the species was collected and well described as a new one by Mr. Greene, who assigns to it the present name. The follicles are like those of *A. longicoru*; those of *A. nyctaginifolia* are not known, but are probably of the same character. *A. Wrightii* is wholly related to the latter, but the two should be brought into proximity with *A. longicoru*, which thus

becomes less isolated in the genus.

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A. uNCiALis, E. L. Greene in Bot. Gazette, v. 64 (1880). A. hrachystephance quoad flores affinis, facie A. involucratas, sed humillima ; ciicuUis autheris paullo brevioribus, dorso lato-rotundato lobos auriculaeformes anticas aequante, cornu seu processu ovato-oblongo obtusissimo inclusio. — New Mexico near Silver City, Greene. Plains of Colorado, Hall & Harbour (478). Green River, N. W. Wyoming, Parry (246). The last two have been referred to A. hrachystephana in Proc. Acad. Philad. 1863, Am. Nat. 1874, and in Syn. Fl. ii. 94.

The stems above ground are only an inch or two high, so that the name is not inappropriate, even if they should attain a somewhat greater height. As in the related A. hrachystephana, the hoods are not higher than broad, and are of similar structure, but the back is rounder and the triangular anterior lobes or auricles not projecting, while a short fleshy process takes the place of the subulate horn.

The hoods are not longer than those of A. hrachystephana, but the gynostemium, or mass above the insertion of the hoods, is shorter.

AscLEPiAS QuiNQUEDENTATA, var. Neo-Mexicana, E. L. Greene in litt. Floribus subdimidio minoribus. — Rocky mountain-side east of Pinos Altos, in the southern part of New Mexico, June 22, 1880, E. L. Greene. The discoverer had distinguished and characterized this as a new species, and justly, if the published character of A.

quinquedentata were quite correct. But in that a mistake was made by assigning " a small acute dorsal tooth " to the horn of the hood. That tooth is, in fact, only the middle one of the five teeth of the hood itself, to which the horn is sometimes adnate up to the very tip, sometimes not so far. Wright's original certainly has flowers of nearly twice the size of those of Mr. Greene's specimens. But the plant growing around San Luis Potosi (Parry and Palmer's 583, and also sent by Dr. Schaffner) is just intermediate. In this species, as in *A. Linaria*, Cav., the follicle is arrect on a deflexed pedicel.

The characters of three species of adjacent Mexico are appended.

AscLEPiAS ScHAFFNERi. Spccies concinna, *A. Coulteri affinis*,
glabella ; caule gracili simplici subpedali ; foliis oppositis filiformi-
linearibus ; umbellis pedunculatis laxe paucifloris ; floribus rubellis
nunc viridulis ; corollis lobis (lin. 3 longis) ovato-oblongis ; cucullis
(cum columna brevi parum breviori) antheras sublonge superan-
tibus complicato-compressis inferne dorso carnosis solidis superne
petaloideis antice utrinque longe acuminato-productis, dorso quasi
exciso medio callo obtuso apiculato, processu interno adnato subulato
gracili rectiusculo longe exerto : folliculo fusiformi puberulo arrecto. —

Near San Luis Potosi, Mexico, Schaffner, Parry & Palmer (582).

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The slender horns moderately surpass the subulate-attenuate anterior

lobes of the hoods. The follicle in the only fruiting specimen is erect
on a circinate pedicel.

AsCLEPiAS PDBERULA. Subglabra, spitharaaea ; foliis oppositis
lanceolatis (infimis nunc oblongo-lanceolatis) seu linearibus, 1^3-pol-
licaribus sat petiolatis ; pedunculis umbella plurifloro longioribus ;
corollae albidae lobis lato-ovatis supra puberis ; columna brevissima ;
cucullis ovatis obtusissimis crassis stigma parum superantibus processu
suo lingulato obtusissimo prorsus adnato vix longioribus. — In swamps,
Morales, near San Luis Potosi, Schaffner.

AsCLEPiAS EUPHORBiJEFOLiA. Engelm. in herb. Humifusa, a basi
ramosa, fere glabra ; foliis omnibus oppositis parvis (lin. 2-3 longis)
ovatis subcordatis raro oblongis subcarnosis eveniis breviter petio-
latis ; pedunculis terminalibus umbellis 7-9-floraB IEquilongis ; floribus
roseo-albidis (lin. 2 longis) ; columna brevissima ; cucullis ovato-
oblongis obtusis basi marginibus inflexis corollas lobis parum aequi-
longis infra medium processu falcato brevi inclusa auctis ; folliculis
puberulis laevibus in pedicello arrecto-inflexis. — Near San Luis
Potosi, in sandy soil, Schaffner (1876), Parry and Palmer, the latter
in a single specimen.

III. A New Genus of Gentianaceae.

GENIOSTEMON, Engelm. & Gray.

Calyx alte 4-fidus ; lobis lanceolatis carinatis subulato-acutis.
Corolla marcescenti-persistens, subrotata ; tubo lobis ovalibus baud
longiore. Stamina 4, fauci inserta: filamenta antheris oblongis im-

mutatis sequilonga, glanduloso-barbata. Stylus elongatus, filiformis,
persistens : stigma infundibuliformi-capitatum, subintegrum. Cap-
sula oblonga, placentis intrusis semibilocularis, polysperma. Semina
subglobosa ; testa conformis parum foveolata. — Hei'bae Mexicanae,
annujE? pusilliK (bipolligares), ramosae, parvifoliae ; floribus peduncu-
latis cterulescentibus. Eryihrece et Microcalce atiinis.

Geniostemon Coulteri. Caulibus teneribus parum ramosis aequa-
liter foliatis ; ramis unifloris ; foliis spathulato-lanceolatis (lin. 3 longis)
basi attenuatis ; pedunculo flore baud longiore ; filamentis infra
medium creberrime glanduloso-barbatis ; antherse loculis utrinque
obtusis (corolla lin. A longa, ut videtur alba?). — Mexico, Coulter,
no. 945.

Geniostemon Schaffneri. E radice forte annua multicaulis,
cymoso-ramosissimus et multiflorus ; foliis linearibus (lin. 2-3 longis)

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imisve spathulatis, summis subulatis basi baud angustatis ; peduncuHs
gracilibus flore longioribus ; filamentis sub apice barbatis inferne
nudis ; autbera3 loculis basi subacutis (corolla caerulescente). — In
mountain swamps, San Luis Potosi, Schaffner.

IY. MiscellanecB of the North American Flora.

Astragalus Greenei. Phaca, inter Injlatos et Scytocarpos, sub-pedalis e radice perenui, cinereo-pubescentis ; stipulis deltoideo-subulatis ; foliolis multijugis obovatis oblongis retusis confertis (lin. 3 longis) ; pedunculis folio longioribus ; sjjica oblonga confertim multiflora ; floribus lin. 4 longis parvibracteatis brevissime pedicellatis patentibus ; calyce campanulato pilis nigricantibus albidisque sericeo-hirsutis, dentibus angustis subacutis tubo dimidio brevioribus ; corolla purpurea basi alibda, carina obtusissima ; legumine turgido ovali semipollucari cinereo-puberulo prorsus uuliculari in calyce sessili polyspermo. — Foothills of the Mogollou Mountains, New Mexico,

April 20, 1880, E. L. Greene.

Some other Astragali remain to be characterized ; and a new conspectus of the North American species will be needed.

Dalea Wislizeni, Gray, Pl. Fendl. var. sessilis. Lateriflora ; spicis brevibus sessilibus ramulos breves foliosos secus caules prolixo dispositos terminantibus. — New Mexico and Arizona, Greene, 1877, Lemmon, 1880.

Seuum Meehani. Glaucescens, 2-3-pollicare, radicibus fibrosis perennans, foliosum ; foliis teretibus (subsemipollucaribus, floralibus minoribus) ; ramis calycibus ovariiisque tenuiter glanduloso-hirtellis ; floribus omnibus 5-meris ; petalis albis (lin. 2 longis) lanceolato-ovatis tenuiter acumiuatis calycis lobis ovatis plus duplo longioribus. — Utah, on City Creek, north of Salt Lake City, at the base of the mountains, coll. by Mr. John Reading, the live plant communicated by Professor Thomas Meehan. It is so desirable to connect in this way the name of Mr. Meehan with the botany of the country which he has done so

much to illustrate, that the actual collector will probably join us in
wishing it to be commemorated by this pretty little species of Sedum.
It will not make much show among Meehan's " Flowers of the United
States Illustrated," of which four goodly volumes have already ap-
peared under his editorship ; but it is to be hoped that it will find a
place in the fifth volume.

DouGLASiA L^viGATA. Depressa ; pedunculo pedicellisque pu-
berulis, ciBterum glaberrima ; foliis oblongo-lanceolatis obtusis crassis

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haud ciliatis in cauciicibus rosulatis ; umbella simplici (nee prolifera)
2-5-flo'i'a ; calycis lobis deltoideo-ovatis tubo suo aequilongis tubo
corollas brevioribus ; corollis lobis latis tubo suo subdimidio breviori-
bus. — On Mount Hood, Oregon, May, 1880, Joseph and T. L. Howell.

A handsome and well-marked species of an interesting genus, to
stand next to the little known D. arctica.

EcHiNOSPERMUM HisPiDUM. E caudice perenni erectum, pedale,
setis asperis patentibus hispidum ; foliis lanceolatis, imis oblongis in
petiolum attenuatis ; racemis sub-ebracteatis paniculatis laxis ; pedicellis
calyce longioribus, fructiferis decurvis ; corolla rotata viridulo-alba
intus basi annulo prominulo instructa ; nuculis dorso planis breviter
parceque glochidiatis, margine ala submembranacea dentata cinctis,
dentibus subulatis apice glochidiatis. — Northeastern Oregon, on Rocky

hillsides of Pine Creek, June, 1880, Cusick. In flower and with forming fruit. This would belong to Boissier's genus *Paracaryuin*, as that genus is defined and limited by Bentham, better indeed than does *E. glochidiatum*. But however it be for the species which in the Genera Plantarum are referred to *Rindera*, these two species cannot well be separated from *Eckinospermum*. *E. Redowskii* var. *cupula*[^] turn is instructive in this respect. The flowers are no larger than those of *E. dejlexum*.

Pentstemon Cusickii. *Saccanthera*, *P. Kingii proximus*, pruinoso-puberulus (sub lente), nee glandulosus ; caulis e basi frutescente strictis gracilibus (subpedalibus) foliosis ; foliis anguste linearibus ; pedunculis thyrsi pluriflori gracilibus ; sepalis ex ovato acuminatis ; corolla semipollucari late purpureo-cterulea ; filamento sterili apice dilatato. — On the banks of Powder River or Eagle Creek, N. E. Oregon, June, 1880, Cusick. A neat and pretty species, related to *P. illoezli* and yet more to *P. Kingii*, but manifestly distinct, dedicated to the worthy discoverer.

GiLiA DEPRESSA A, Marcus E. Jones. *E radice annua divaricata-ramosa*, demum humifuso-depressa, pilis brevibus multiseptatis cinereo-hirsutula, viscidula ; ramis ad apicem usque a[^]qualiter foliatis ; foliis oblongo-lanceolatis (semi- ad subpoll.) utrinque attenuatis integrerrimis vel inciso-l-2-dentatis, dentibus apiceque cuspidate tenui mucronatis ; floribus subsparsis brevipedunculatis ; calycis 5-partiti segmentis e basi lata sensim attenuato-subsetigero-acuminatis corolla hypocrateriformis albida parum brevioribus calyculis ovoideam superantibus ; corolla lobis ovalibus tubo 3-4-plano brevioribus, sinu uno

paullo profundiore ; stamiuibus tubo supra medium insertis e fauce
parum exsertis ; seminibus in loculis 4-5, testa mucilaginosa haud

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spirillifera. — In sand at Deseret, S. Utah, June 16, 1880, Marcus E Jones. Most related to *G. pumila* and *G. poh/cJadon*, which are ambiguous between the *Elaphocera* and the *Eiiglia* sections. The slight irregularity in the depth of the sinuses of the corolla is of little account.

REVERCHONIA, Nov. Gen. Euphorhicearum.

Phyllanthea, *Phyllantho affinis*, verum-tamen antheris introrsis, ovulis amphitropis, semiuibus adscendentibus, cotyledonibus Stenolobearum angustis. — Flores dioici et monoici. 3lasc. Calyx 4-partitus ; segmenta spathulato-oblonga, subherbacea, sestivatione leviter imbricata. Discus obscurus. Stamina 2, sepalis totidem opposita : filamenta brevia, distincta : antherae immutatse, introrsse, loculis contiguis parallelis longitrorsum dehiscentibus. Eoem. Calyx 6-partitus ; segmenta maris similia. Discus pateriformis G-crenatus. Ovarium triloculare ; styli breves, discreti : stigmata brevia, crassa, emarginato-biloba. Ovula in loculis geraina, amphitropa, medio inserta. Capsula trilocularis, globosa, primum subcarnosa, demum in coccus bivalves dissiliens. Semina in loculis bina, supra basim hilo parvo inserta, adscendentierecta, sectione transversa trigona dorso convexa, estrophiolata ; testa

Crustacea. Embryo in albumine carnosus parum incurvus, teres ; radi-
cula supera, gracilis, cotyledonibus angustis parum lato-ribus longior.

Reverchonia arenaria. Herba annua, parvula, glabra, patentim
ramosa ; foliis alternis brevi-petiolatis oblongis vel angustioribus in-
tegerrimis crassiusculis (semi-sub-pollicaribus) ; stipulis lato-subulatis
scariosis ; floribus foemineis brevipedicellatis aut in axillis solitariis
aut in plantis androgynis singulo in fascicule , paucifloro pi. masc. ;
perianthio viridulo demum purpurascente. — Sandy river-banks of
W. Arkansas and N. W. Texas. Sand-hills along the Canadian, Dr.
J. M. Bigelow, Sept. 10, 1853. Sand-hills of the Brazos, Baylor Co.,
Texas, Julien Reverchon, September, 1879.

Of this interesting plant, both collectors obtained only the female
plant, and in fruit. But Mr. Reverchon has raised a plant or two from
seed. The latter prove to be sometimes monoecious and androgynous.
The late Dr. Torrey had ascertained the carpological characters,
except as to the embryo, from Dr. J. M. Bigelow's specimens. The
rediscovery enables me to complete the character, and to establish
on it a new genus ; which, with great satisfaction, I dedicate to M.
Julien Reverchon, of Dallas, Texas, the second discoverer, — a valu-
able correspondent, an acute and sedulous botanist.

The relationship of this plant to Phyllanthus is so close, that, were

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it not for a combination of characters, it might be taken for an aberrant *Phyllanthus*. Although the cotyledons are little broader than the long radicle, and barely flattish, one would hardly refer the genus to the *Stefiolohiece*, being so unlike the Australian type. It shows that Mr. Bentham was wise in reducing Miiller's primary series to the rank of a tribe.