

Fl. Fran. 234 (1891). *M. albicaulis* Dougl., var. *Jonesii* Urb. & Gilg, Nova Acta Acad. C.L.C.G. Nat. Cur. lxxvi. 29 (1900). *M. albicaulis* Dougl., var. *spectabilis* Jones, Contrib. W. Bot. xii. 16 (1908). *Acrolasia gracilenta* (T. & G.) Rydb. Bull. Torr. Club, xxx. 278 (1903). *A. nitens* (Greene) Rydb. l. c. — Western Nevada and Arizona to California and Lower California. — NEVADA: Esmeralda Co., May, 1881, *Shockley*; Unionville, *Watson*, 429. ARIZONA: TUCSON, 1881, *Lemmon*. CALIFORNIA: Topatopa Mts., *Abrams & McGregor*, 68; San Antonio River, *Brewer*, 506, 575; April, 1881, *S. B. & W. F. Parish*, 940; west of Laws, *Heller*, 8197; Acton, *Elmer*, 3657; Mojave Desert, *S. B. & W. F. Parish*, 1377; Pasadena, May, 1885, *O. D. Allen*; San Rafael Mts., June, 1887, *H. C. Ford*; "California," *Coulter, Douglas*. LOWER CALIFORNIA: Valley of Palms, *Orcutt*, 101; All Saints Bay, April, 1882, *Parry*.

3c. var. PECTINATA (Kell.) Urb. & Gilg, Nova Acta Acad. C.L.C.G. Nat. Cur. lxxvi. 29 (1900). *M. pectinata* Kell. Proc. Calif. Acad. iii. 40 (1863). — Southern California. — Kern River, *Heller*, 7634; White Mts., May 2, 1896, *Eastwood*; Cajon Summit, *Parish*, 11844.

4. *M. CONGESTA* T. & G. Fl. N. A. i. 534 (1840). *Acrolasia congesta* (T. & G.) Rydb. Bull. Torr. Club, xxx. 277 (1903). — Nevada to southeastern California. — NEVADA: Verdi, *Heller*, 10874; Mt. Rose, *Heller*, 10335; Franktown, *Heller*, 10518; Carson City, *Baker*, 968; Toyabe Mts., *Watson*, 431. CALIFORNIA: Argus Peak, *Purpus*, 5475; Pah Ute Peak, *Purpus*, 5286; Bishop, *Heller*, 8361.

✓ 4a. var. **Davidsoniana** (Abrams), comb. nov. *Acrolasia Davidsoniana* Abrams, Bull. Torr. Club, xxxii. 538 (1905). *M. Davidsoniana* Abrams, Fl. Los Ang. 235 (1917). — Southwestern California. — Mt. Wilson, *Davidson*, 1010; Lytle Creek Cañon, *Hall*, 1228; also *I. M. Johnston*, 2059; San Gabriel Mts., *Abrams & McGregor*, 622.

#### IV. CERTAIN NORTH AMERICAN UMBELLIFERAE

TAUSCHIA Schlecht. Linnaea, ix. 607 (1835). *Deweya* T. & G. Fl. i. 641 (1840). *Museniopsis* (Gray) Coult. & Rose, Rev. N.A. Umb. 26, 122 (1888). *Donnellsmithia* Coult. & Rose, Bot. Gaz. xv. 15 (1890). *Drudeophytum* Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 80 (1900).

It is with no little hesitation that I have decided to express an opinion upon generic limitations in this highly technical group of plants. Most of us, when we have specimens of the *Umbelliferae* to determine, feel so grateful toward the authors of the discriminating revisions of the group that we are inclined to take up the

names presented without further question. In the present instance, however, I have found myself involved in an analysis of the group of segregate genera listed above because of the lack, in any one treatment by Coulter & Rose, of a presentation in contrast of the characters relied upon by them to distinguish these several genera. Treatment of the Mexican genera apart from those of the United States has been responsible for this unfortunate situation.

*Tauschia*, as defined by Coulter & Rose, Proc. Wash. Acad. Sci. i. 134 (1900), is made to include only Mexican species which are, l. c. 134, "of low acaulescent habit, with pinnate leaves, obtuse ribs, and no stylopodium." After reading this statement it is rather startling to say the least to note that the species are divided in the key into two subgroups, one containing plants that are "Acaulescent or weak caulescent," the other, those that are "Caulescent, rather stout and somewhat branching." A similar instance in which the generic definition does not accord with the facts exists in the argument for the validity of *Drudeophytum* Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 80 (1900), which, we are told, "differs from *Deweya*, however, in having orbicular fruit, with slender filiform ribs and ternate leaves." In the original diagnosis, too, occurs the statement, "Fruit orbicular." Yet *D. Parishii* Coult. & Rose, a species referred by the authors to *Drudeophytum* without question, has oblong fruit; and indeed the fruit is so described, l. c. 82. Furthermore, so long as *D. vestitum* is retained in *Drudeophytum*, this genus cannot be said to differ from *Deweya* in having ternate leaves for, as Coulter & Rose remark, the leaves of *D. vestitum* are pinnate. The only constant character left then to distinguish *Drudeophytum* from *Deweya* is the character of "slender filiform ribs" and this feature cannot be said to possess in itself generic value since species in related genera show variation in the thinness and prominence of the ribs. Besides the difference between the ribs of the mature fruit of *Drudeophytum Parishii* and those of *Deweya arguta* is, it seems to me, without question purely a relative difference. The possibility of creating a new genus to care for the aberrant (and troublesome) *D. vestitum* may come in for consideration but such a disposition would be highly artificial since the plant possesses no characters that are admitted as being of value for the definition of genera in the *Um-*

*belliferae*. If *Drudeophytum* and *Deweya* are not to be distinguished satisfactorily what can be said of the relationship of this group of species to *Tauschia*? According to Coulter & Rose, l. c. 79, *Drudeophytum* is "more distinct from *Deweya* than is *Deweya* from *Tauschia*." If this is true the case at the start seems to be pretty weak for *Deweya* which is distinguished (according to the same author) by "its very sharp prominent ribs, prominent and persistent calyx teeth, as well as in its range." As regards the ribs they are quite as prominent in *T. edulis* as they are in *D. arguta*; in the former, however, they are obtuse. The calyx-teeth of *Tauschia* are obsolete, it is true, but *Drudeophytum* contains some species with conspicuous, others with merely evident, and still others obsolete calyx-teeth, so that this seems obviously to be a valueless character for generic discrimination. If *Deweya* (including *Drudeophytum*) is distinct from *Tauschia*, therefore, it must rest on the one character, the acute ribs of the fruit, a character which, as shown above, is more or less relative. But now the problem is only partially presented. There is yet another group of species which has been retained as a distinct genus, *Museniopsis*. This genus has the obsolete calyx teeth of *Tauschia* but the ternately compound leaves of *Drudeophytum* and, according to Coulter & Rose, Proc. Wash. Acad. Sci. i. 116 (1900), Contrib. U. S. Nat. Herb. vii. 24 (1900), the "slender and more or less indistinct ribs" of the latter genus. But more recently Rose, Contrib. U. S. Nat. Herb. viii. 337 (1905), has referred without question a new species to *Museniopsis* (*M. fusiformis*) which has the very prominent thick and obtuse ribs that generally characterize the fruits of *Tauschia*. *T. filiformis* Coult. & Rose, on the other hand, exhibits fruits with the thin wings of certain species of *Museniopsis*. Coulter & Rose have attached what seems to me undue significance to the manner in which the seed-face, in certain of these groups, is sulcate. The seed face of *Deweya*, *Drudeophytum* and *Tauschia* is involute but in varying degree of depth and width. The seed face of *Museniopsis* is merely deeply sulcate and the variation in this respect found in the other groups negatives whatever importance might otherwise be attached to this character as indicating generic values. Furthermore, *M. arguta* Rose, Contrib. U. S. Nat. Herb. viii. 336 (1905), has the deeply involute seed face of species of *Drudeophytum* although the author does not

question its standing as a species of *Museniopsis*. One other genus of this group is to be considered. This is *Donnellsmithia* which, now that more species of *Museniopsis* have been discovered, is evidently referable to that genus. Its only characters are, in nature, relative, and the fact that it is the only species known from Guatamala, can scarcely be interpreted as meaning that it merits generic recognition.

The facts brought out above prove conclusively, it seems to me, the futility of treating these several evidently poorly marked groups of species as distinct genera. Whatever one's theory as to generic limitation, no one admits that there is any advantage to segregation which results in the erection of genera with lines so indefinite that many species cannot with confidence be referred to any particular group. Furthermore, if these five genera we have been considering are maintained we should need, if consistent in our segregation, several new generic names to care for aberrant species — species which possess the same sort of distinctive characters we are using in discriminating these five genera. And if these characters are of value for the discrimination of genera in one instance, they must, logically, be of equal value in another. On the other hand, to retain these merging groups in one genus which is at once distinct from its nearest relative, *Arracacia*, does away with the necessity of assigning in unscientific fashion generic value to characters which are known to be variable, often of slight moment and usually not concomitant. As Coulter & Rose have shown, *Velaea* DC. to which Drude, Nat. Pflanzenf. iii. Abt. 8: 168 (1898) has referred these plants, must be referred to *Arracacia*. The first available name therefore is *Tauschia* Schlecht. to which Gray referred with good judgment his *T. texana*, later made the type of *Museniopsis*. In this connection it is interesting to note that Coulter & Rose in 1888 in their Rev. N.A. Umb. 120 wrote with evident conviction, "There is no doubt that our species that have been described under *Deweya* [including *Drudeophytum*] are the same generically as the Mexican *Velaea*, [i.e. *Tauschia*, as now understood] and as such must bear the older name."

At present I am transferring to *Tauschia* only those species which have come particularly to my attention during this study, although I have examined most of the described species referable to this genus. The groups of species, discussed above may be distinguished, in general, as follows:

Leaves pinnately compound or entire, never white-pubescent; fruit (usually) with conspicuous ribs.

Calyx teeth obsolete; ribs of fruit obtuse or obtusish Sect. *Eutauschia*.

Calyx teeth prominent; ribs of fruit acute. . . . . Sect. *Deweya*.

Leaves ternately compound (except one white-pubescent species); fruit often with slender inconspicuous ribs.

Seed face involute; calyx teeth evident or obsolete;

United States species. . . . . Sect. *Drudeophytum*.

Seed face deeply sulcate or rarely involute; calyx-teeth

obsolete; mostly Mexican species. . . . . Sect. *Museniopsis*.

Sect. **Eutauschia**, sect. nov., calycis dentibus obsoletis; jugis obtusissimis. — Species typica *Tauschia nudicaulis* Schlecht. *Linnaea* ix. 608 (1835).

Sect. **Deweya** (T. & G.), comb. nov. *Deweya* T. & G. Fl. i. 641 (1840). A single species, *Tauschia arguta* (T. & G.), comb. nov. *D. arguta* T. & G. l. c. *Velaea arguta* (T. & G.) Coult. & Rose, Rev. N. A. Umb. 120 (1888).

Sect. **Drudeophytum** (Coult. & Rose), comb. nov. *Drudeophytum* Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 80 (1900). Typified by *Tauschia Hartwegi* (Gray), comb. nov. *Deweya Hartwegi* Gray, Proc. Am. Acad. vii. 342 (1867). *Velaea Hartwegi* (Gray) Coult. & Rose, Rev. N. A. Umb. 121 (1888). *Drudeophytum Hartwegi* (Gray) Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 81 (1900).

Sect. **MUSENIOPSIS** Gray, Bost. Journ. Nat. Hist. vi. 211 (1850). *Museniopsis* (Gray) Coult. & Rose, Rev. N. A. Umb. 122 (1888). Typified by *Tauschia texana* Gray, l. c.

✓ *Tauschia Parishii* (Coult. & Rose), comb. nov. *Velaea Parishii* Coult. & Rose, Rev. N. A. Umb. 121 (1888). *Drudeophytum Parishii* Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 82 (1900).

*Tauschia vestita* (Wats.), comb. nov. *Deweya vestita* Wats. Proc. Am. Acad. xvii. 374 (1882). *Velaea vestita* (Wats.) Coult. & Rose, Rev. N. A. Umb. 122 (1888). *Drudeophytum vestitum* (Wats.) Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 83 (1900).

✓ *Tauschia Howellii* (Coult. & Rose), comb. nov. *Velaea Howellii* Coult. & Rose, Rev. N. A. Umb. 122 (1888). *Drudeophytum Howellii* Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 82 (1900).

*Tauschia fusiformis* (Rose), comb. nov. *Museniopsis fusiformis* Rose, Contrib. U. S. Nat. Herb. viii. 337 (1905).

*Tauschia biennis* (Coult. & Rose), comb. nov. *Museniopsis biennis* Coult. & Rose, Proc. Wash. Acad. Sci. i. 130 (1900).

*Tauschia peucedanoides* (HBK.), comb. nov. *Cnidium peucedanoides* HBK. Nov. Gen. & Sp. v. 15 (1821). *Museniopsis peucedanoides* (HBK.) Coult. & Rose, Contrib. U. S. Nat. Herb. iii. 303 (1895).

**Tauschia drudeophytoides**, nom. nov. *Museniopsis arguta* Rose, Contrib. U. S. Nat. Herb. viii. 336 (1905), not *Tauschia arguta* (T. & G.) Macbr.

**Tauschia pubescens** (Coulter & Rose), comb. nov. *Museniopsis pubescens* Coulter & Rose, Proc. Wash. Acad. Sci. i. 134 (1900).

**Tauschia scabrella** (Coulter & Rose), comb. nov. *Museniopsis scabrella* Coulter & Rose, Contrib. U. S. Nat. Herb. iii. 304 (1895).

**Tauschia guatemalensis** (Coulter & Rose), comb. nov. *Donnell-smithia guatemalensis* Coulter & Rose, Bot. Gaz. xv. 15 (1890).

ANGELICA ARGUTA Nutt. in Torr. & Gray Fl. i. 620 (1840). When Watson described *A. Lyallii*, Proc. Am. Acad. xvii. 374 (1882), he indicated *A. arguta* among the species he considered most closely related. Unfortunately this plant has remained unknown to the present day except for the type preserved in the Torrey Herbarium. Coulter & Rose, after two examinations of Nuttall's specimen stated, Contrib. U. S. Nat. Herb. vii. 157 (1900), "*A. arguta* is different from *A. genuflexa*. It seems much nearer *A. lyallii*, to which we were once constrained to refer it. It grows at so much lower elevations, however, that it seems impossible to consider the two identical." Referring to the key to the species of *Angelica*, l. c. 153, one finds these species contrasted thus:

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| " Fruit 6 to 8 mm. long, with lateral wings thick and corky . . .    | 6. <i>A. arguta</i> .   |
| Fruit 4-6 mm. long, with lateral wings not corky thickened . . . . . | 7. <i>A. lyallii</i> ." |

A genuine difference would seem possibly to exist here especially when one considers the fact, mentioned by Coulter & Rose in the note quoted above, that *A. arguta* was secured from a low elevation while *A. Lyallii* has been known as a plant of the mountains. Accordingly when I received specimens from J. C. Nelson collected at Salem, Oregon "at less than 200 ft. elevation" I felt that his inference that he had rediscovered "the long-lost *A. arguta*, which Nuttall collected on Sauvies Island and which no one has been able to find since" would doubtless prove true. But upon examination of the abundant material at hand of *A. Lyallii*, much of it representing collections cited by Coulter & Rose, I find that the characters which they assign to *A. arguta* are exhibited by specimens which they themselves have referred to *A. Lyallii*. Thus the fruits of Henderson, no. 2666 and Sandberg, no. 393 often come within the measurements assigned to those of *A. arguta*,

i.e. 6–8 mm. in length. Moreover the lateral wings of these fruits are quite as “corky-thickened” as those of Mr. Nelson’s plants, some of which are also 6–8 mm. long. In short there appears to be no difference between the *A. Lyallii* Wats. and *A. arguta* Nutt. which indubitably is well represented by Mr. Nelson’s specimens. Nevertheless, Rydberg, Fl. Rocky Mts. 631 (1917), recognizes three species here which he distinguishes from each other by the shape of the leaflets and their teeth and the presence or absence of pubescence. For instance he distinguishes his *A. Piperi* by the presence of pubescence on the leaves and the obtuse teeth of the leaflets, overlooking the fact that plants from British Columbia which he refers to *A. Lyallii* are more or less pubescent as is also Watson’s plant from Montana, the latter being a part of the material upon which Watson founded *A. Lyallii*! And as for the obtuse teeth the fact is evident that the leaflets of Lyall’s specimen, which are essentially but not absolutely glabrous, have very broad obtuse teeth quite similar indeed to the dentation of the leaflets of cotype material of *A. Piperi*. In as much as there is no correlation between the shape of the teeth of the leaflets and the presence or absence of pubescence and since these characters exist in every degree they are not even of varietal let alone specific significance. Rydberg’s interpretation of specific values in some cases passes all understanding especially when viewed in connection with his conservative drawing of specific lines in certain other groups, as in *Calochortus*.

✓ **Lomatium simplex** (Nutt.), comb. nov. *Peucedanum simplex* Nutt. ex Wats. Bot. King Exp. 129 (1871). *P. triternatum* (Pursh) Nutt., var. *platycarpum* Torr. Stansb. Rep. 389 (1852). *Lomatium platycarpum* (Torr.) Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 226 (1900). *Cogswellia simplex* (Nutt.) Jones, Bull. Univ. Mont., Biol. ser. xv. 41 (1910).

In Contrib. Gray Herb. liii. 15 (1918) I have asserted the validity of the generic name *Lomatium* Raf.

CYNOMARATHRUM Nutt. ex Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 244 (1900). Several years ago when studying a specimen of *C. Nuttallii* (Gray) Coult. & Rose, I was impressed with the general resemblance of this plant to certain species of *Lomatium*. Now again I have had occasion to refer to *C. Nuttallii* and this time I have considered carefully its generic status and have be-

come convinced that the plants considered by Coulter & Rose, l. c., as constituting a distinct genus are much better, indeed more naturally treated as species of *Lomatium*. Prof. M. E. Jones, Contrib. W. Bot. xii. 32, 35 (1908) has expressed the same opinion and has shown that *Cynomarathrum* cannot be separated satisfactorily from *Lomatium* by virtue of the habit or the winging of the fruits as attempted by Coulter & Rose, l. c. 245. Nor does the fact that the calyx-teeth are evident furnish a means of distinction as they are quite obvious in *L. macrocarpum*. The one character at all times constant is the presence in the species that have been referred to *Cynomarathrum* of a more or less evident stylopodium. This is flat, however, and consequently scarcely obvious and surely not to be regarded as alone possessing value for defining a genus in a group of plants alike in aspect and in other characters of moment. Finally it may be mentioned that the original of *C. Nuttallii* collected by Nuttall bears on the sheet in Dr. Gray's hand the statement "Will do for a *Peucedanum*," that is, a *Lomatium* as now understood. Watson, Aven Nelson, Jones, Drude, and even Coulter & Rose have at one time or another regarded without question species of this alliance as good *Lomatiums*. This disposition of these plants will necessitate a number of new combinations of which the following may be made now.

✓ ***Lomatium Nuttallii*** (Gray), comb. nov. *Seseli Nuttallii* Gray, Proc. Am. Acad. viii. 287 (1870). *Cogswellia Nuttallii* (Gray) Jones, Contrib. W. Bot. xii. 32 (1908).

✓ ***Lomatium alpinum*** (Wats.), comb. nov. *Peucedanum graveolens* Wats., var. *alpinum* Wats. Bot. King Exp. 129 (1871). *Cynomarathrum alpinum* (Wats.) Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 245 (1900).

✓ ***Lomatium Parryi*** (Wats.), comb. nov. *Peucedanum Parryi* Wats. Proc. Am. Acad. xi. 143 (1876). *Cynomarathrum Parryi* (Wats.) Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 246 (1900).

✓ ***Lomatium Eastwoodae*** (Coult. & Rose), comb. nov. *Cynomarathrum Eastwoodae* Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 247 (1900).

✓ ***Lomatium Brandegei*** (Coult. & Rose), comb. nov. *Peucedanum Brandegei* Coult. & Rose, Bot. Gaz. xiii. 210 (1888). *Cynomarathrum Brandegei* Coult. & Rose, Contrib. U. S. Nat. Herb. vii. 246 (1900).



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