

* * *Flowers yellow: fruit-wings narrower.*

18. **P. Parryi** Watson, Proc. Am. Acad. xi. 143. Strictly acaulescent, somewhat glaucous, with rather stout peduncles 6 to 8 inches high from a stout multicapital caudex clothed with old leaf-sheaths, puberulent or glabrous: leaves pinnate; leaflets short, pinnatifid below to entire above; ultimate segments very small, ovate and cuspidate: umbel 5 to 10-rayed, with involucels of a few linear-acuminate bractlets; rays $\frac{1}{2}$ to $1\frac{1}{2}$ inches long; pedicels 2 to 4 lines long: calyx-teeth evident: fruit oblong, puberulent or glabrous, $3\frac{1}{2}$ to $4\frac{1}{2}$ lines long, 2 to 3 lines broad, with wings not half as broad as body, and filiform dorsal and intermediate ribs: oil-tubes 3 to 5 in the intervals, 4 to 10 on the commissural side. (Fig. 52.)—*P. macrocarpum* of Parry, Am. Naturalist ix. 271.

Mountains of Southern Utah (*Parry* 75 and 85, *Palmer* 178, *Jones* 1864.)

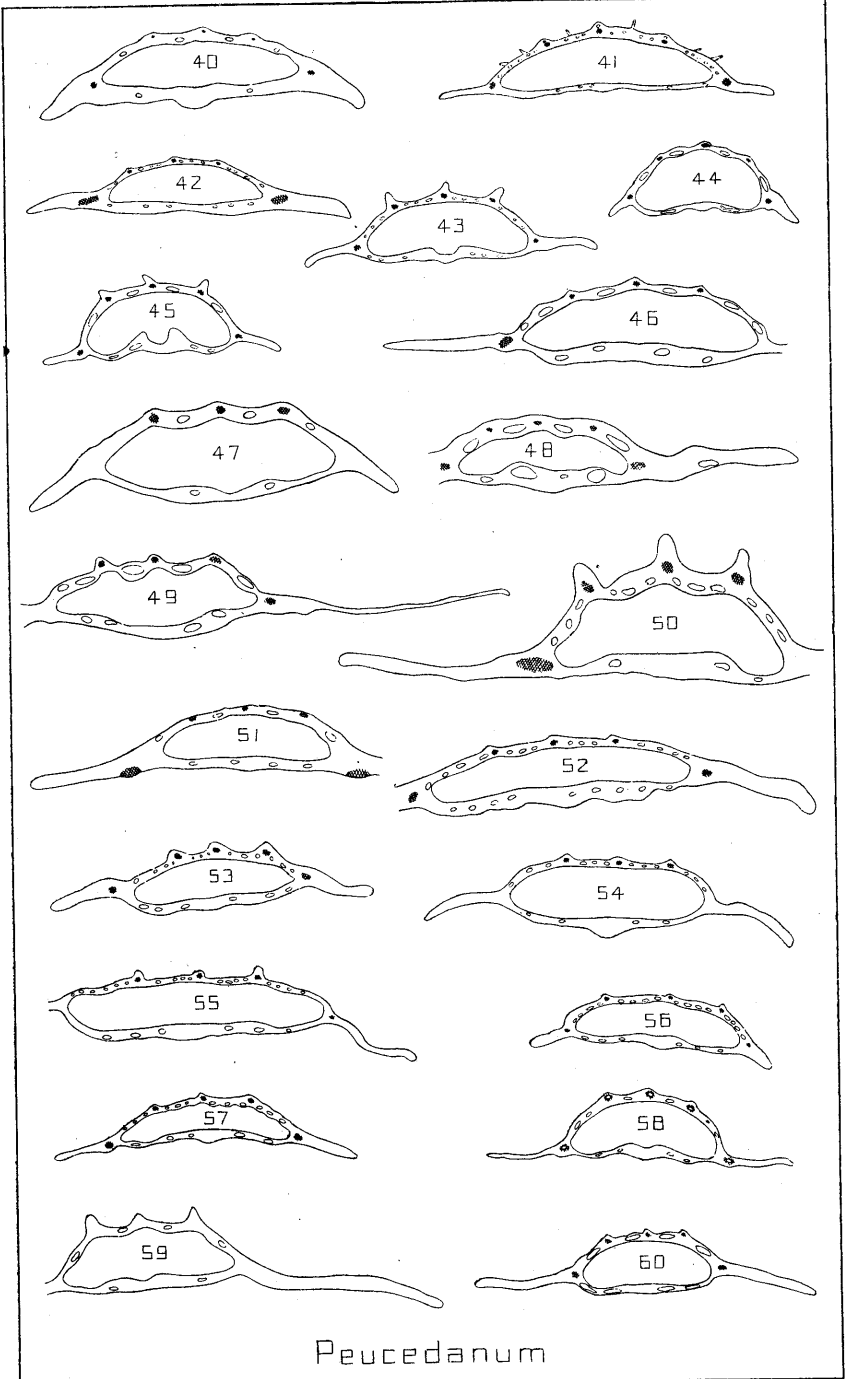
19. **P. Oreganum**. Similar to the preceding species, but a very much reduced cespitose form, not glabrous, with very slender peduncles but 1 to 2 inches high, bearing a very small simple umbel, or sometimes two nearly sessile umbellets, and one to few matured puberulent fruits about 2 lines long; ultimate leaf-segments very small, linear-oblong, not cuspidate. (Fig. 53.)

Alpine rocks, Blue and Eagle Creek Mts., Oregon (*Cusick* 1390, Aug. 1886-88.)

20. **P. villosum** Nutt. Watson, King's Rep. v. 131. Acaulescent, more or less densely pubescent, 3 to 8 inches high: leaves finely dissected, with very numerous narrow crowded segments: umbel somewhat equally 4 to 5-rayed, with involucels of ovate to linear usually very tomentose bractlets; rays about an inch long; pedicels 1 to 3 lines long: fruit oval, somewhat pubescent, $3\frac{1}{2}$ lines long, $2\frac{1}{2}$ lines broad, with wings half as broad as body, and prominent dorsal and intermediate ribs: oil-tubes 3 or 4 in the intervals, 4 on the commissural side: seed-face plane. (Fig. 54.)

From N. California (*M. K. Curran*), W. Nevada, N. Arizona, and New Mexico, to Nebraska, Dakota, and N. W. Territory (*Macoun*, *Dawson*).

Specimens collected by Canby (no. 150) in "Bad Lands," Little Missouri, Dakota, June 30, 1883, and by Dawson (no. 2184) along Pelly River, N. W. T., June 28, 1883, for the first time bring the mature fruit to our knowledge, from which we have drawn the above characters. The fruit becomes smoother with age and may become but sparsely pubescent, in which condition it has been mistaken for *P. fœniculaceum*.



21. **P. Donnellii** C. & R. Bot. Gazette, xiii. 143. Shortly caulescent or acaulescent, 6 to 12 inches high, glabrous, from a fusiform root: leaves ternate then pinnately decomposed, with segments pinnately cleft into short oblong or linear lobes: umbel somewhat unequally 6 to 12-rayed, with involuцels of linear acuminate bractlets; rays 1 to 4 inches long; pedicels 2 to 8 lines long: fruit ovate to broadly oblong, glabrous, $3\frac{1}{2}$ to 4 lines long, 2 to 3 lines broad, with wings less than half as broad as body, and prominent dorsal and intermediate ribs: oil-tubes small, 4 to 6 in the intervals, 4 to 6 on the commissural side. (Fig. 55.)

Oregon, Union county (*Cusick* 36, in 1883), John Day Valley (*Howell* 420 and 829, in 1885). Fl. April.

Most nearly resembling *P. Nevadense*. Dedicated to John Donnell Smith, in whose herbarium the species was first detected.

22. **P. Sandbergii** C. & R. Bot. Gazette, xiii. 79. Caulescent, branching at base, an inch or two to a foot high, from an elongated comparatively slender root, rough puberulent: petioles wholly inflated, with a very conspicuous white scarios margin; leaves ternately or pinnately dissected, the ultimate segments very short linear: umbel very unequally 6 to 15-rayed, with involuцels of distinct linear-lanceolate bractlets; rays 1 to 4 inches long; pedicels a line or two long; flowers bright yellow: fruit ovate, puberulent, 2 to $2\frac{1}{2}$ lines long, $1\frac{1}{2}$ lines broad, with very narrow wings, and filiform dorsal and intermediate ribs: oil-tubes 4 or 5 in the intervals, 6 on the commissural side: seed-face plane. (Fig. 56.)

Bare mountain tops, 5,000 feet altitude, along snow drifts, Kootenai county, N. Idaho (*J. H. Sandberg* 47); Upper Marias Pass, 7,300 feet altitude, N. Montana (*Canby* 150); North and South Kootenai Pass (*Dawson* 876) and top of Crow's Nest Pass (*Dawson* 92), B. C.

This very distinct alpine species is remarkable for its inflated petioles, with very broad glistening scarios margins, which form the most conspicuous feature of the plant. The peduncles are short when the plant first blooms, rising but a few inches above the ground, but they rapidly elongate, becoming as much as a foot high. The fertile rays also are often very much elongated, becoming many times longer than the sterile rays.

23. **P. microcarpum** Howell in herb. Closely resembling the preceding species, but differing in its stouter habit, petioles without conspicuous margins, somewhat equally-rayed umbels, deeper yellow flowers, glabrous fruit which is oblong and 3 lines long, and much earlier blooming.

On cliffs, Roseburg, Umpqua Valley, Oregon, April 20, 1887 (*Howell* 709).

§ 4. Shortly caulescent, slender, from elongated comparatively slender roots, glabrous (except *P. Vaseyi*): leaves small, lanceolate or oblong in outline, pinnate or bipinnate, with ovate toothed segments: fruit-wings half as broad as body or much broader: oil-tubes solitary in the intervals (except *P. Hallii*).

* *Fruit-wings half as broad as body.*

24. **P. Hallii** Watson, Proc. Am. Acad. xi. 141. The elongated peduncles 6 to 15 inches high: leaves pinnate, oblong in outline, the ovate segments half inch long, deeply toothed or pinnatifid: umbel equally 3 to 6-rayed, with small involucels; rays about an inch long; pedicels 3 or 4 lines long; flowers yellow: fruit broadly elliptical, glabrous, 3 lines long, 2 lines broad, with filiform dorsal and intermediate ribs: oil-tubes 3 in the intervals, 4 to 6 on the commissural side. (Fig. 57.)—*P. nudicaule* Gray, Proc. Am. Acad. viii. 385.

Oregon, "northern part" (*Hall* 211), above snow line on Mt. Hood (*Mrs. P. G. Barrett*, in 1882); Washington Territory, Mt. St Helens (*Mrs. Briggs*, in 1885).

25. **P. Austinae** C. & R. Bot. Gazette, xiii. 208. Resembling the preceding species, but with leaf-segments larger and pinnate with narrow often toothed divisions, flowers purplish, fruit $3\frac{1}{2}$ lines long, $1\frac{1}{2}$ lines broad, with oil-tubes solitary in the dorsal intervals, mostly 2 in the lateral, 4 on the commissural side, and an additional one in each group of strengthening cells; seed-face concave, with central longitudinal ridge. (Fig. 58.)

California, Plumas county (*Mrs. R. M. Austin*, in 1880), Humboldt county (*Greene* 732). Distributed as *P. Hallii*.

* * *Fruit-wings much broader than body.*

26. **P. Martindalei** C. & R. Bot. Gazette, xiii. 142. Resembling *P. Hallii* in habit and foliage, but differing in leaves sometimes bipinnate, with toothed or pinnatifid segments, fruit 4 to 7 lines long, $3\frac{1}{2}$ lines broad, with wings much broader than body (which is but a line), and prominent dorsal and intermediate ribs; oil-tubes solitary in the intervals, 2 on the commissural side; seed-face somewhat concave, with central longitudinal ridge. (Fig. 59.)

Rocky places, Oregon, Cascade Mts. and Waldo (*Howell*, in 1880). Fl. May.

oblong to nearly orbicular, sometimes emarginate at each end, 3 to 6 lines long, 2 to 5 lines broad, with wings broader than body (also extending below body), and prominent dorsal and intermediate ribs: oil-tubes large and solitary in the intervals, 2 on the commissural side: seed-face slightly concave. (Fig. 64.)—*P. triternatum*, var. *platycarpum* Torr. Stansb. Rep. 389.

From Arizona and California (*M. K. Curran*) to Washington Territory, Idaho, and Montana.

In determining this species it is important to remember that wings develop last, and hence very mature fruit must be obtained to show wings of full width.

34. ***P. triternatum*** Nutt. Torr. & Gray, Fl. i. 626. Caulescent or acaulescent, puberulent, 1 to 2½ feet high: leaves biternate to triternate; leaflets from narrowly linear to linear-lanceolate, 2 to 4 inches long: umbel unequally 5 to 18-rayed, with involucels of lanceolate or setaceous bractlets; rays ½ to 2½ inches long; pedicels a line or more long: fruit narrowly oblong, glabrous (rarely pubescent), 3 to 6 lines long, 1½ to 2 lines broad, with narrow wings, and somewhat prominent dorsal and intermediate ribs: oil-tubes very large and broad, solitary in the intervals, 2 on the commissural side: seed-face very slightly concave. (Fig. 65.)—Incl. *P. triternatum*, var. *leptocarpum* Nutt.

From California to Washington Territory, Idaho, and British Columbia (*Macoun*). Fl. April to June.

One of the most abundant and variable of our species. It shades off towards *P. simplex* sometimes in a most perplexing way. The following are extreme forms:

Var. **macrocarpum**. A more robust form, with broader leaflets, longer rays, and larger fruit (6 to 8 lines long).

Oregon (*Suksdorf* 502), Dalles (*Kellogg*, in 1869), Hood River (*Henderson* 390).

Var. **brevifolium**. Stouter and more rough puberulent, with more compact leaves, having stout inflated petioles, and shorter and broader often toothed leaflets.

Oregon, Klickitat county (*Howell* 379, in 1881), and rocky hillsides near the Dalles (*Suksdorf*).

Var. **alatum**. Leaves with very narrowly linear and elongated segments; fruit 5 to 6 lines long, with broader wings (sometimes as broad as body or even broader), but the elongated form is that of *P. triternatum* and not *P. simplex*.

20. THASPIUM Nutt. Genera, i. 196.—Perennials (2 to 5 feet high), with ternately divided leaves and broad serrate or toothed leaflets (or lower leaves simple), mostly no involucre, involuclers of small bractlets, mostly yellow flowers, and all the fruits pedicelled.

The species of *Thaspium* are in great confusion. In Gray's Manual *T. aureum* Nutt. and *T. trifoliatum* Gray each have an apterous variety. These apterous forms were taken from Koch's genus *Zizia* and placed under the *Thaspium* species apparently from the close resemblance of the foliage. The fruit characters, however, are abundantly distinct, for the *Zizia* forms have simply ribbed fruit flattened laterally, the central fruit of the umbellets sessile, and flower in early spring; while *T. aureum* and *T. trifoliatum* of the Manual have winged fruit flattened dorsally, central fruit pedicelled, and flower late in summer, maturing fruit in the fall. Bentham & Hooker have transferred these apterous *Zizia* forms to a section *Zizia* under *Carum*, from which genus they differ in the absence of stylopodia, central sessile fruit, more prominent ribs, and *Thaspium*-like foliage. The same authors seem to have made no disposition of *T. aureum* of the Manual, unless it went with the apterous variety, while the group of forms under *T. trifoliatum* Gray, of the Manual, has been taken to represent *T. cordatum* Torr. & Gray. For this latter species Bentham & Hooker seem to have had in mind only Gray's apterous variety, and so referred it to *Carum* § *Zizia* as one of the two species. In Watson's Bibliographical Index the synonym *Carum cordatum* Benth. & Hook. under *T. trifoliatum*, is correctly quoted so far as literature is concerned, but apparently should be transferred to *T. trifoliatum*, var. *apterum* Gray, to express the real form Bentham & Hooker had in mind. This leaves the Manual forms *T. aureum* and *T. trifoliatum* with its var. *atropurpureum* unprovided for by these authors, the two apterous varieties only having been used to form the section *Zizia* under *Carum*. An explanation of this may be found in the fact that most of the herbarium specimens labeled *Thaspium aureum* are really the so-called apterous varieties. The true *Thaspium* forms, with winged fruit, are quite uncommon in herbaria, while the apterous forms are very abundant.

1. **T. aureum** Nutt. l. c. Glabrous: radical leaves mostly cordate, serrate: stem leaves simply ternate (rarely biternate); leaflets ovate to lanceolate, rounded or tapering at base, serrate: umbels 8 to 12-rayed; rays $\frac{1}{2}$ to 1 inch long; pedicels about a line long; flowers deep yellow: fruit globose-ovoid, about 2 lines long, all the ribs equally winged. (Fig. 85.)

Thickets and woodlands, throughout the Atlantic States and westward into the Mississippi Valley. Apparently not in Canada, all the specimens so labelled from there being *Zizia aurea*. Fl. in summer and maturing fruit in late summer or autumn.

This species has a wide range of variation in the division and toothing of its leaves, but the variations are so inconstant that it seems impossible to found specific distinctions upon them. In characterizing *T. aureum*, Nuttall has laid some stress upon "lateral divisions of the upper leaves subsessile," a character which means nothing, as these divisions may be sessile, subsessile, or petioled upon the same plant, either in *T. aureum* or the *T. trifoliatum* of Gray. So far as foliage characters are concerned, serrate leaflets point to Nuttall's form, while crenately-toothed leaflets stand for Gray's *T. trifoliatum*, exclusive of his var. *apterum* and *atropurpureum*. Further confusion in leaf characters has arisen by including the so-called apterous varieties, which we have restored to *Zizia*. An extreme variation in leaf characters, but merging completely into the type through intermediate forms, is

Var. **trifoliatum** C. & R. Bot. Gazette, xii. 136, in which the leaves or leaflets are crenate or crenately-toothed.—*T. trifoliatum* Gray, Manual, in part.

Ohio to Illinois, westward to Oregon and British Columbia (*Macoun*).

This seems to be the common western form of the species, as our Pacific coast specimens are all distinctly this variety. From Ohio to Illinois there is an interminable intermingling of species and variety, while in Pennsylvania the specific form is distinctly represented.

Var. **involutratum**. Radical leaves twice to thrice ternate; leaflets as in the species: umbel with conspicuous involucre of serrate bracts, and involuclers of numerous toothed bractlets often as long as the pedicels, which are 2 to 3 lines long.

Mountain meadows, Kootenai county, Idaho, July, 1887 (*J. B. Leiberg*).

Var. **atropurpureum** C. & R. Bot. Gazette, xii. 136. Petals dark-purple.—*T. atropurpureum* Nutt. *T. trifoliatum*, var. *atropurpureum* Gray, Manual.

Same range as the species.

This variety has the leaf characters of the species, and if var. *trifoliatum* had been retained as a species, var. *atropurpureum* would have been transferred to *T. aureum*.

In giving the range of the above group of forms it has been impossible to use published ranges, owing to the great confusion as to what forms were intended. Discarding the apterous varieties, the true *Thaspiums* of this group are but scantily represented in our herbaria, far more so, probably, than their occurrence would justify. The early spring and summer flowers and fruits of the apterous forms have probably too often satisfied collectors that they had already secured good material of forms which only appeared in collecting condition in late summer and autumn. Therefore we can only cite such range as our material indicates, confident

This species has the most strongly laterally flattened carpels in the genus.

5. **V. Howellii.** Glabrous throughout, short caulescent, 2 or 3 inches high: leaves 1 or 2, thickish, about $1\frac{1}{2}$ inches long, with ovate outline, pinnatifid, the oblong segments irregularly cuspidate-toothed and lobed, with revolute margins: umbel 3 to 6-rayed (sometimes with 1 or 2 sessile umbellets), with no involucre, and involucels exceedingly prominent, being exactly like the leaves and forming the principal part of the foliage of the plant; rays 6 to 8 lines long; pedicels about a line long: calyx-teeth prominent: fruit (immature) oblong, glabrous, a line long: oil-tubes several in the intervals.

Alpine, top of Siskiyou mountains, Oregon, July 20, 1887 (*Howell* 711).

This interesting alpine *Velva* closely resembles *V. Parishii* C. & R. in foliage. Its dwarf habit and remarkable involucels well characterize it.

6. **V. vestita.** Acaulescent, 2 to 4 inches high, densely clothed throughout with white soft spreading hairs: leaves pinnately compound, with numerous crowded confluent oblong segments: umbel 10 to 15-rayed, with no involucre, and involucels of numerous lanceolate bractlets; rays 4 to 8 lines long; fruit sessile or nearly so, the sterile pedicels 6 to 9 lines long: fruit ovate-oblong, pubescent, 2 to $2\frac{1}{2}$ lines long, $1\frac{1}{2}$ lines broad, with inconspicuous ribs: oil-tubes 3 to 4 in the intervals, 3 on the commissural side. (Fig. 140.)—*Deweya vestita* Watson, Proc. Am. Acad. xvii. 373. *Arracacia vestita* Watson, l. c. xxii. 415.

California, San Bernardino mountains (*S. B. & W. F. Parish*), Long Meadow, Tulare county, 8-9000 feet alt. (*Dr. E. Palmer*, July, 1888).

43. **MUSENIOPSIS.**—Glabrous perennials, from thick elongated roots, with radical pinnate leaves, no involucre, involucels of few small bractlets, and yellow flowers.—Based upon *Tauschia (Museniopsis) Texana* Gray, Pl. Lindh. ii. 211.

The fact that this can be made an outlying member of several genera and a satisfactory member of none suggests the propriety of isolating it and thus making more consistent generic groupings. It brings trouble into every genus under which it can be placed, and thus seems to prove its right to generic independence. First placed under *Tauschia* by Gray, it differs from that genus chiefly in its numerous small oil-tubes, instead of solitary large ones, and in not having an involute seed-face. Referred to *Eulophus* by Bentham & Hooker, its deeply and narrowly sulcate seed-face at once contradicts the broad and shallow sulcus of that genus, to say

long, with very prominent stylopodium, and styles about the same length: seed sulcate beneath the large oil-tubes.

Central California, near the coast (*Brewer, Bolander, Kellogg, Palmer* 156 and distributed as *C. Gairdneri*, etc.)

The Fremont specimen referred to by Dr. Gray in the original description of this species is *Eulophus Pringlei*, and this specimen somewhat affects the whole description. This species is very scarce in herbaria.

4. **C. Howellii**. Stem 3 to 3½ feet high, from a fascicle of thickened fibres: leaves few, ternate, then once or twice pinnate; leaflets lanceolate to ovate, strongly toothed or lobed: umbels many-rayed (about 25), with involucre of long narrowly oblanceolate bracts (becoming reflexed), and involucels of prominent lanceolate scarious-margined bractlets; rays about 1½ inches long; pedicels 3 lines long: fruit (immature) with very prominent stylopodium longer than the styles: oil-tubes very large.

Giant's Pass, Oregon, July 13, 1887 (*Howell* 710, distributed as *C. Kelloggii* ?).

C. CARUI L., the common garden caraway from Europe, has become naturalized in many places, especially in the north and northwest. It may be recognized by its pinnately compound leaves with fliform divisions.

51. **CICUTA** Linn. Gen. n. 354.—Smooth poisonous marsh perennials, with pinnately compound leaves and serrate leaflets, involucre of few bracts or none, involucels of several slender bractlets, and white flowers.

1. **C. virosa** L. Spec. 255. Stout, 2 to 6 feet high: leaves twice or thrice pinnate, the lower on long petioles; leaflets narrowly lanceolate, 1 to 2 inches long, acuminate, coarsely serrate, with the veinlets commonly running to the sinuses: umbel many-rayed, with involucre mostly wanting, and involucels of few narrow lanceolate bractlets; rays 1 to 3 inches long; pedicels 2 to 4 lines long: fruit broadly ovate to oval, 1 to 1½ lines long, with lateral ribs much larger than the others: oil-tubes broad and conspicuous, the commissural pair contiguous: seed nearly terete. (Fig. 152.)

Quite common in marshes from the Saskatchewan region and Hudson Bay (*Burke*), to the western coast, and northward (*Lyall, Bourgeau, Macoun*). Fl. summer.