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V. 28 B



NORTH
AMERICAN
FLORA

VOLUME 28B

UMBELLALES
CORNALES



PUBLISHED BY
THE NEW YORK BOTANICAL GARDEN
1944-1945

111
1072
V. 28B

VOLUME 28B WAS PUBLISHED IN TWO PARTS

- PART 1. Pages 1-160 30 December 1944
PART 2. Pages 161-397 28 December 1945

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VOLUME 28B

PART 1

NORTH AMERICAN FLORA

UMBELLALES

HAROLD WILLIAM RICKETT

ARALIACEAE

ALBERT C. SMITH

UMBELLIFERAE (PARS)

MILDRED E. MATHIAS AND LINCOLN CONSTANCE



Subscription Price, \$3.20

Separate Copies, \$4.05

PUBLISHED BY

THE NEW YORK BOTANICAL GARDEN

December 30, 1944

ANNOUNCEMENT

NORTH AMERICAN FLORA is designed to present in one work descriptions of all plants growing, independent of cultivation, in North America, here taken to include Greenland, Central America, the Republic of Panama, and the West Indies, except Trinidad, Tobago, and Curaçao and other islands off the north coast of Venezuela, whose flora is essentially South American.

The work will be published in parts at irregular intervals, by the New York Botanical Garden, through the aid of the income of the David Lydig Fund bequeathed by Charles P. Daly.

It is planned to issue parts as rapidly as they can be prepared, the extent of the work making it possible to commence publication at any number of points. The completed work will form a series of volumes with the following sequence:

- Volume 1. Myxomycetes, Schizophyta.
- Volumes 2 to 10. Fungi.
- Volumes 11 to 13. Algae.
- Volumes 14 and 15. Bryophyta.
- Volume 16. Pteridophyta and Gymnospermae.
- Volumes 17 to 19. Monocotyledones.
- Volumes 20 to 34. Dicotyledones.

The preparation of the work has been referred to a committee consisting of Dr. H. A. Gleason, Dr. H. W. Rickett, and Dr. Fred J. Seaver.

Professor William Trelease, of the University of Illinois, and Dr. William R. Maxon, of the United States National Herbarium, have consented to act as an advisory committee.

Each author will be wholly responsible for his own contributions, being restricted only by the general style adopted for the work, which must vary somewhat in the treatment of diverse groups.

NORTH AMERICAN FLORA is published in parts of variable size; it is expected that four or more parts will be required for each volume. The subscription price for all parts published prior to 1936 is fixed at \$1.50 for each part; for later parts it is approximately two cents per page. A limited number of separate parts will be sold at an advance of a third above the subscription price.

THE NEW YORK BOTANICAL GARDEN

NEW YORK 58, N. Y.

Order UMBELLALES

BY HAROLD WILLIAM RICKETT

Trees, shrubs, and annual and perennial herbs, sometimes acaulescent. Leaves usually alternate, rarely opposite or basal, simple or more commonly compound, often several times divided; petioles with or without stipules, often sheathing. Inflorescence umbellate or capitate, sometimes simple, more commonly the umbels or heads disposed in umbels, racemes, panicles, or interrupted spikes. Flowers mostly hermaphrodite, less often polygamous or dioecious, actinomorphic, small. Perianth borne on a more or less elongate hypanthium (calyx-tube). Calyx small, sometimes obsolete. Petals free. Stamens usually as many as the petals and alternate with them, inserted on an epigynous disc. Ovary inferior, with 2 (rarely 1) or more locules; styles as many as the locules, free or connate, often thickened proximally into a stylopodium. Ovules solitary, pendulous. Fruit a berry, drupe, or schizocarp. Seeds containing a small embryo in copious endosperm.

Petioles usually stipulate, not sheathing; ovary (in our species) 2-12-locular; fruit a berry or drupe; mostly shrubs and trees.

Petioles sheathing, estipulate; ovary bilocular; fruit a schizocarp, splitting into 2 grooved mericarps; mostly herbs.

Family 1. ARALIACEAE.

Family 2. UMBELLIFERAE.

Family 1. ARALIACEAE

By ALBERT C. SMITH

Perennial herbs, shrubs, or trees, sometimes scandent epiphytes when juvenile, rarely epiphytic at maturity. Leaves (in our species) alternate, simple or pinnately or ternately compound or decompound or palmately compound. Stipules adnate to the petiole, sometimes hardly distinct, sometimes connate and produced into a coriaceous ligulate sheath, sometimes none. Flowers in umbels or heads, these disposed in solitary, racemose, corymbose, paniculate, or umbellate inflorescences. Bracts subtending the branches of the inflorescence small, usually deciduous. Bractlets at the base of the pedicels small, sometimes connate into an involucre. Bracteoles sometimes present on the pedicels, usually inconspicuous. Pedicels continuous with or articulate with the calyx, sometimes swollen at the apex into minute cupules. Flowers hermaphrodite, polygamous, or dioecious, actinomorphic, usually small. Calyx-tube obconic, cupuliform, or short-cylindric, adnate to the ovary, the limb erect or erecto-patent, truncate, undulate, or denticulate. Petals (in our species) 5-10, valvate or narrowly imbricate, broad at the base, deciduous at maturity, usually free, sometimes connate and calyprate. Stamens (in our species) usually as many as the petals and alternate with them (rarely more numerous), inserted with them on a disk within the calyx-limb, the filaments filiform or ligulate, the anthers oblong or ovate or subglobose, dorsally affixed, didymous, the locules 2, longitudinally dehiscent. Disk epigynous, carnose and short-conic or annular. Ovary inferior, in our species 2-12-locular, the styles as many as the locules, sometimes distinct and at length recurved with the stigmas terminal or on the interior surfaces, sometimes completely connate into a carnose column or short cone, rarely suppressed with the stigmas sessile on the disk. Ovules solitary, pendulous from the apex of each locule, anatropous, the raphe ventral. Fruit baccate or drupaceous, the exocarp usually carnose, the endocarp divided into distinct crustaceous, cartilaginous, or membranous pyrenes, or hardly distinct from the exocarp. Seeds solitary in pyrenes, laterally compressed, triquetrous in cross section, with copious endosperm and a small embryo near the hilum.

Leaves pinnately or ternately compound or decompound; petals narrowly imbricate in bud.

Petals, stamens, locules, and styles 4-6, usually 5.

Petals 7-10; stamens 7-12; locules and styles 8-12.

Pedicels continuous with the calyx; styles separate at the apex.

Pedicels articulate with the calyx; styles firmly connate to the apex.

Leaves simple or palmately compound.

Herbs with fleshy rootstocks and compound leaves; umbel solitary, terminal; petals narrowly imbricate in bud; styles and locules 2 or 3 in hermaphrodite flowers.

Shrubs or trees, the leaves simple or compound; petals valvate.

Flowers in umbels, pedicellate (in heads and sessile only in *Dendropanax sessiliflorus*—then the flowers hermaphrodite—and some species of *Schefflera*—then the petals connate, the leaves compound, the petiole conspicuously ligulate), hermaphrodite or polygamo-monoecious.

1. ARALIA.

2. SCIADODENDRON.

3. MEGALOPANAX.

4. PANAX.

- Styles and locules 2, rarely 3.
 Spiny shrubs; leaves simple, the petiole without an obvious ligule. 5. OPLOPANAX.
 Shrubs or trees, not spiny; leaves (in our species) compound, the petiole with an obvious but often small ligule. 6. DIDYMOPANAX.
 Styles and locules 5-9, usually 5.
 Leaves simple, the petiole without an obvious ligule; petals distinct. 7. DENDROPANAX.
 Leaves compound (simple only in *S. epiphytica* among our species), the petiole with a conspicuous coriaceous ligule; petals usually connate and calyptrate. 8. SCHEFFLERA.
 Flowers in heads, sessile (the staminate flowers short-pedicellate only in *O. echinops*), polygamo-dioecious (rarely polygamo-monoecious); petiole without an obvious ligule. 9. OREOPANAX.

1. **ARALIA** [Tournef.] L. Sp. Pl. 273. 1753;
 Gen. Pl. ed. 5. 134. 1754.

Herbs, shrubs, or trees, glabrous or variously pubescent. Leaves alternate, pinnately or ternately compound or decompound, the leaflets serrate. Stipules paired at the base of the petiole, usually inconspicuous. Umbels 2 or more per inflorescence, radiating or laxly corymbose or in large compound racemes, the bracts and bractlets small. Pedicels articulate with the calyx, often swollen at the summit or surmounted by fused bracteoles forming a minute cup. Flowers polygamo-monoecious, 5- or 6-merous, glabrous (the calyx rarely puberulent). Calyx obconic or cupuliform, the limb short, suberect, lobed or denticulate. Petals white or greenish, narrowly imbricate in the bud, membranous, oblong, obtuse and shortly inflexed at the apex. Filaments short, the anthers oblong, obtuse at both ends. Disk carnos, small, slightly raised at the margin. Styles 4-6, connate at the base, free above, or free to the base. Ovary wall usually carnos, the locules and ovules 4-6. Fruit baccate, subglobose, sharply angled, at length carnos, surmounted by the persistent calyx-limb and styles, the seeds as many as the styles.

Type species, *Aralia spinosa* L.

- Plants scapose, the leaves and inflorescences arising from the rootstock; umbels few (2-7 per inflorescence). 1. *A. nudicaulis*.
 Plants leafy-stemmed, the leaves and inflorescences not separate to the base of the aerial portion.
 Umbels numerous, in large compound racemes.
 Shrubs or low trees; trunk, branches, and often branches of the inflorescence spinose; leaflets often subcoriaceous, the base acute or obtuse, occasionally truncate or subcordate. 2. *A. spinosa*.
 Plants unarmed.
 Herbs, sometimes woody at base; larger leaflets usually cordate to truncate at base.
 Pedicels few (10-25 per umbel), the bractlets 1-1.5 mm. long; flowers comparatively small (petals 1-1.5, rarely to 2 mm. long, obscurely veined except for the midnerve); leaflets submembranous, sharply and irregularly serrate, the teeth often mucronulate. 3. *A. racemosa*.
 Pedicels numerous (20-75 per umbel), the bractlets 1.5-4 mm. long; flowers larger (petals 1.5-2 mm. long, the veins obvious); leaflets papyraceous, shallowly serrate. 4. *A. californica*.
 Shrubs or low trees; leaflets acute to truncate or rarely subcordate at base, crispate-pilose beneath. 5. *A. humilis*.
 Umbels few (2-10 per inflorescence), laxly corymbose.
 Herbs, often woody at base; basal portions of plant, and often the upper stems and petioles, bristly with stiff spines. 6. *A. hispida*.
 Low shrubs or low trees; plants not hispid-spinose.
 Leaflets broadly ovate, not more than twice as long as broad; calyx obconic.
 Leaflets crispate-pilose; umbels more than 6 per inflorescence; flowers comparatively small (petals 1.5-2 mm. long). 5. *A. humilis*.
 Leaflets glabrous; umbels not more than 6 per inflorescence; flowers larger (petals about 3 mm. long). 7. *A. scopulorum*.
 Leaflets narrowly ovate or oblong, 2.5-4 times as long as broad, pellucid, the veinlets conspicuously reticulate; calyx broadly obconic, somewhat flattened. 8. *A. Regeliana*.

1. *Aralia nudicaulis* L. Sp. Pl. 274. 1753.

Aralia nudicaulis var. *prolifera* Apgar, Bull. Torrey Club 14: 166. 1887.

Aralia nudicaulis var. *elongata* Nash, Bull. Torrey Club 20: 374. 1893.

Acaulescent perennial herb, the rootstock often long and branched; leaves glabrous or nearly so, ternate, the petiole erect, slender, terete, stramineous, up to 40 cm. long or more, the primary divisions pinnately 3-5 (-7)-foliolate, petiolulate, the petiolules up to 10 (rarely to 15) cm. long, the leaflets submembranous or papyraceous, sessile or short (rarely to 2 cm.)-petiolulate, ovate or elliptic, up to 18 cm. long and 11 cm. broad but usually much smaller, unequally acute or obtuse at the base, acuminate at the apex, finely and acutely serrate, the basal pair sometimes bi- or trifoliolate; peduncles erect, slender, terete, stramineous, usually shorter than the petioles; umbels radiating, usually subequal, the stalks usually 3-6 (-9) cm. long; flowers 5- or 6-merous, about 25-50 per umbel, the pedicels slender, 5-17 mm. long, sometimes pilose, minutely bracteolate at the base; calyx cupuliform, at anthesis about 2 mm. long and broad, often conspicuously veined, the lobes minutely deltoid, obtuse; petals 1.5-3 mm. long, the costa obvious; filaments up to 3 mm. long, the anthers about 1 mm. long; styles 4-6, distinct to the base, often minutely cleft at the apex; fruit 3-6 mm. in diameter, at length purplish black.

TYPE LOCALITY: Virginia.

DISTRIBUTION: Newfoundland to northern Alberta and central British Columbia, southward to Georgia, Colorado, and eastern Washington.

ILLUSTRATIONS: Meerburgh, Pl. Rar. pl. 31; Raf. Med. Fl. 1: pl. 8; T. Nees, Ic. Pl. Med. pl. 68; Torr. Fl. N. Y. 1: pl. 40; Britt. & Brown, Ill. Fl. 2: 506; ed. 2. 2: 618; Peterson, Wild Fruits 222.

NOTE: The two varieties listed above appear fairly distinct and are very local in distribution.

2. *Aralia spinosa* L. Sp. Pl. 273. 1753.

Angelica spinosa Shecut, Fl. Car. 167. 1806.

Aralia Leroana K. Koch, Wochenschr. Gärtn. 7: 369. 1864.

Aralia spinosa f. *subinermis* Moldenke, Castanea 9: 54. 1944.

Tree, up to 12 m. high or more, the trunk up to 25 cm. in diameter, with the branches and branchlets armed with stout straight or incurved prickles; leaves ample, bipinnate, the petiole up to 30 cm. long or more, often armed, the rachis swollen at the nodes, often armed, the pinnae 7-13-foliolate, short-petiolulate, often subtended by a single leaflet, the leaflets papyraceous, ovate, up to 15 cm. long and 9 cm. broad but usually much smaller, short-stalked (the terminal one long-stalked), obtuse to subcordate at the base, acute to acuminate at the apex, dentate to crenate at the margins, sometimes spinose or slightly pilose on the principal nerves, paler beneath; inflorescence often longer than the leaves, the peduncle and rachis stout, sometimes armed or puberulent, the secondary branches and pedicels usually pale-pilose, the bracts and bractlets lanceolate; flowers 5-merous, 15-40 per umbel, the pedicels usually 4-12 mm. long; calyx obconic, 1-1.5 mm. long, the lobes deltoid, subacute; petals 2-3 mm. long; filaments up to 4 mm. long, the anthers about 2 mm. long; styles connate at the base, free above; fruit 4-6 mm. in diameter, black.

TYPE LOCALITY: Virginia.

DISTRIBUTION: Delaware, central Pennsylvania, Illinois, Missouri, and Oklahoma, southward to Florida and eastern Texas; cultivated or escaped northward to New York and Connecticut.

ILLUSTRATIONS: Sarg. Silva 5: pl. 211; Sarg. Man. 705; J. E. Rogers, Tree Book (facing p.) 406; Britton, N. Am. Trees, 734; Britt. & Brown, Ill. Fl. 2: 506; ed. 2. 2: 617.

3. *Aralia racemosa* L. Sp. Pl. 273. 1753.

Aralia bicrenata Wootton & Standley, Contr. U. S. Nat. Herb. 16: 157. 1913.

Aralia arizonica Eastw. Proc. Calif. Acad. IV. 20: 148. 1931.

Branched herb, up to 2 (rarely to 4) m. high, often somewhat woody below; leaves bipinnate, the lower leaflets often again compound; petioles and rachises slender, glabrous or puberulent, the petioles up to 25 cm. long, the leaflets numerous, petiolulate, the petiolules slender, up to 5 cm. long but usually much shorter, that of the apical leaflet longest, the blades submembranous, ovate, up to 23 cm. long and 16 cm. broad but usually much smaller, usually obliquely cordate at the base, acuminate at the apex, sharply and irregularly serrate (often

bicrenate) at the margins (the teeth often mucronulate), essentially glabrous or puberulent, especially along the veins beneath; inflorescences often equaling the leaves in length but usually shorter, copiously branched, the branches and pedicels short-pilose, glabrescent, the bractlets lanceolate, 1-1.5 mm. long, the pedicels 10-25 per umbel, 3-12 mm. long, often swollen at the apex into a membranous minute hirtellous cupule; flowers 5-merous, the calyx cupuliform, at anthesis about 1 mm. long and broad, the lobes deltoid, apiculate; petals 1-1.5 mm. long, the midnerve obvious, otherwise faintly veined; filaments about 1 mm. long, the anthers small; styles connate at the base, free above; fruit 2-4 mm. in diameter, the persistent styler column about 1 mm. long.

TYPE LOCALITY: Canada.

DISTRIBUTION: New Brunswick, southern Quebec, and Minnesota, southward and westward to North Carolina, Texas, Utah, Arizona, Sonora, and Chihuahua.

ILLUSTRATIONS: Schkuhr, Handb. *pl.* 86; Millsp. Am. Med. Pl. *fl.* 69; Miller & Whiting, Wild Fl. 223; Britt. & Brown, Ill. Fl. 2: 506; ed. 2. 2: 617; Peterson, Wild Fruits 220.

4. *Aralia californica* S. Wats. Proc. Am. Acad. 11:

144. 1876.

Aralia californica var. *acuminata* S. Wats.; Howell, Fl. N. W. Am. 1: 271. 1898.

Branched herb, up to 3 m. in height, often somewhat woody beneath; leaves bipinnate or pinnate, the petiole and rachises stout, glabrous, the petiole up to 30 cm. long; leaflets petiolulate, the petiolules less than 5 cm. long, that of the apical leaflet longest, the blades papyraceous, oblong or ovate, up to 30 cm. long and 19 cm. broad but usually much smaller, obliquely cordate at the base, acuminate or cuspidate at the apex, shallowly serrate (the serrations obtuse or acute, somewhat callose), glabrous or sparsely puberulent on the nerves beneath; inflorescences ample, the branches and pedicels puberulent, glabrescent, the bractlets lanceolate, 1.5-4 mm. long, the pedicels 20-75 per umbel, 5-20 mm. long; flowers 5-merous, the calyx cupuliform, about 1.5 mm. long at anthesis, the lobes deltoid, apiculate; petals about 2 mm. long, the venation very obvious; filaments up to 2 mm. long, the anthers short; styles short, connate about half their length; fruit 3-5 mm. in diameter.

TYPE LOCALITY: Northern California.

DISTRIBUTION: Southern Oregon and California.

ILLUSTRATIONS: Silva Tarouca, Freiland-Stauden *f.* 50; Möller's Gärtner-Zeit. 24: 343.

5. *Aralia humilis* Cav. Ic. 4: 7. 1797.

Aralia pubescens DC. Cat. Pl. Hort. Monsp. 80. 1813.

Aralia scabra Presl; DC. Prodr. 4: 258, as syn. 1830.

Aralia brevifolia Marchal, Bull. Acad. Belg. II. 47: 74. 1879.

Aralia chilapensis Sessé & Moc. Pl. Nov. Hisp. 48. 1888.

Aralia pinnata Sessé & Moc. Pl. Nov. Hisp. 48. 1888.

Shrub or small tree, up to 3 m. high, the branchlets brownish, terete, puberulent, glabrescent; leaves and inflorescences at the ends of the branchlets; leaves bipinnate or pinnate, the petiole short, usually less than 10 cm. long, with the rachises puberulent, the leaflets papyraceous, ovate to oblong, up to 8 cm. long and 5 cm. broad, acute to truncate at the base, acuminate at the apex, crenate or shallowly or coarsely serrate, short crispate-pilose on both surfaces, subsessile or the petiolules up to 3 cm. long; inflorescences terminal or subterminal, the rachis stout, the branches glabrous or short-pilose, the umbels 8-30, laxly arranged, the bractlets lanceolate, about 2 mm. long, the pedicels 15-60 per umbel, slender, up to 25 mm. long, glabrous or short-pilose; flowers 5-merous, the calyx obconic, about 1 mm. long, the lobes deltoid, acute, often callose-tipped; petals 2-3 mm. long, the venation faint; filaments up to 2 mm. long, the anthers short; styles up to 2.5 mm. long, distinct nearly to the base; fruit 3-7 mm. in diameter, sulcate when young, at length black.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Southern New Mexico and Arizona to Guatemala.

ILLUSTRATION: Cav. Ic. 4: *pl.* 313.

6. *Aralia hispida* Vent. Descr. Pl. Cels*pl.* 41. 1801.*Aralia Mühlenbergiana* R. & S. Syst. Veg. 6: 704. 1820.

Plant up to 1 m. in height, the rootstock usually horizontal, stout, giving rise to short subliguous ascending stems, these densely bristly especially near the base with sharp slender spines up to 5 mm. long; leaves bipinnate, the petiole usually shorter than the blade, those of the lower leaves occasionally up to 15 cm. long, with the rachises often spinose, the leaflets oblong to ovate, up to 7 cm. long and 5 cm. broad but usually much smaller, usually obtuse at the base, acute or short acuminate at the apex, irregularly serrate, glabrous or sparsely pilose on the nerves beneath; inflorescences glabrous, terminal, the lower branches sometimes subtended by leaves, the branches few, the bracts lanceolate, up to 10 mm. long, the umbels usually 5-10, the bractlets lanceolate, up to 3 mm. long, the pedicels slender, 15-40 per umbel, up to 20 mm. long; flowers 5-merous, the calyx obconic, 1-2 mm. long, the lobes broadly deltoid, often obtuse or rounded; petals 1.5-2 mm. long; filaments 1-1.5 mm. long, the anthers small; styles about 1 mm. long or less, connate about half their length; fruit 3-5 mm. in diameter.

TYPE LOCALITY: Canada, "depuis Québec jusqu'à la Baie d'Hudson."

DISTRIBUTION: Newfoundland and Ontario to North Carolina, West Virginia, Ohio, and Minnesota.

ILLUSTRATIONS: Bot. Mag. *pl.* 1085; Lodd. Bot. Cab. *pl.* 1306; Schnizl. Ic. *pl.* 163; Mathews, Field Book 303; Britt. & Brown, Ill. Fl. 2: 507; ed. 2. 2: 618; Peterson, Wild Fruits 225.7. *Aralia scopulorum* Brand. Proc. Calif. Acad. II.

2: 165. 1889.

Shrub, 1-4.5 m. high, the branchlets terete, gnarled, cinereous, the leaves and inflorescences at the ends of the branchlets; leaves glabrous, pinnate, up to 20 cm. long, the petiole up to 7 cm. long, the leaflets 3-7, submembranous, broadly ovate, up to 6 cm. long and 3.5 cm. broad, usually truncate or subcordate at the base, short-acuminate at the apex, shallowly serrate, the teeth often callose-tipped; inflorescence terminal or subterminal, the rachis, branches, and pedicels glabrous or sparsely puberulent, the umbels usually 4-6, the lateral ones often small, the bractlets lanceolate, about 2 mm. long, the pedicels usually about 30 per umbel, up to 15 mm. long, the flowers 5- or 6-merous; calyx obconic, about 1.5 mm. long, the lobes minutely deltoid-apiculate; petals about 3 mm. long; filaments up to 2 mm. long, the anthers small; styles less than 1 mm. long, free nearly to the base; fruit 4-5 mm. in diameter.

TYPE LOCALITY: Baja California.

DISTRIBUTION: Baja California.

ILLUSTRATION: Brand. Proc. Calif. Acad. II. 2: *pl.* 8.8. *Aralia Regeliana* Marchal, Bull. Acad. Belg. II.

47: 73. 1879.

Shrub or small tree, 1-3 m. high, the branchlets stout, cinereous, glabrous, marked by crowded leaf-scars, the leaves and inflorescences at the ends of the branchlets; leaves up to 20 cm. long, usually bipinnate, the lower pinnae with few leaflets, the petiole and rachises slender, glabrous or crispate-pilose, the petiole up to 11 cm. long, the leaflets slenderly petiolulate, the petiolules up to 2 cm. long, the blades submembranous, pellucid, narrowly ovate or oblong, up to 8 cm. long and 2.5 cm. broad, unequally obtuse or rounded at the base, long-acuminate at the apex, crenate-serrate, glabrous or crispate-puberulent on both surfaces; inflorescences terminal, not leafy, about as long as the leaves, glabrous, the peduncle and branches slender, the umbels usually 5-10, the bractlets lanceolate, minute, the pedicels 20-50 per umbel, up to 2 cm. long in fruit; flowers 5-merous, the calyx broadly obconic-flattened, less than 1 mm. long, 2.5-3 mm. broad, the lobes separate, deltoid, subacute, minutely fimbriate; petals oblong-deltoid, 2.5-3 mm. long; filaments about 1.5 mm. long, subequal to the anthers; styles short, free nearly to the base; fruit 4-5 mm. in diameter.

TYPE LOCALITY: Tamaulipas.

DISTRIBUTION: Tamaulipas and San Luis Potosí.

2. *SCIADODENDRON* Griseb. *Bonplandia* 6: 7. 1858.

Shrubs or trees, glabrous throughout. Leaves apparently exstipulate, ample, usually tri- or quadripinnate, the petiole subterete, often hollow, swollen and somewhat sheathing at the base, the rachises swollen and somewhat jointed at the nodes, the leaflets petiolulate. Inflorescences terminal on short branchlets (or growing from old wood?), compound, the primary rachis stout, short, woody, the secondary rachises few, straight, woody, the peduncles straight, slender, crowded toward the apex or in 2 or 3 more or less definite whorls, the pedicels continuous with the calyx. Calyx carnose, obconic or cupuliform, the margin membranous, subentire or undulate or obscurely 4-7-dentate. Petals 9 or 10, narrowly imbricate, often coherent and falling together. Stamens 9-12, sharply inflexed in the bud. Styles 9-12, connate below, forming a stout carnose column, separate above, the stigmas distinct, obliquely truncate, arranged in a ring on the styler column. Ovary thick-walled, the locules 9-12. Fruit subglobose, conspicuously costate.

Type species, *Sciadodendron excelsum* Griseb.

1. *Sciadodendron excelsum* Griseb. *Bonplandia* 6: 7. 1858.

Reynoldsia americana Donn. Smith, Bot. Gaz. 49: 455. 1910.

Shrub or tree, up to 20 m. high, the trunk straight, up to 60 cm. in diameter, the bark corky, the branches few, the foliage and inflorescences forming an apical crown, the flowers usually maturing after the leaves have fallen; leaves up to 2 m. long, the petiole up to 60 cm. long, stout (up to 1 cm. in diameter), the leaflets thin, ovate to elliptic, 5-8 (rarely to 15 when juvenile) cm. long, 2-4.5 (rarely to 7) cm. broad, acute to truncate at the base, long-acuminate at the apex, mucronate-serrulate, the petiolules up to 7 mm. long (those of the apical leaflet longer), the principal veins somewhat raised on both surfaces, the lateral veins few, arcuate-ascending, the veinlets copiously reticulate; inflorescences with the secondary rachises 2-8 cm. long, the peduncles 4-10 cm. long, each subtended by a few subcoriaceous ovate-orbicular bracts up to 5 mm. long, the bractlets subcoriaceous, minute, ovate; pedicels 15-25 per umbel, 4-10 mm. long; calyx at anthesis about 2 mm. long and 3-4 mm. in diameter; petals thin-carnose, white, oblong, about 4 mm. long and 1.5 mm. broad, sharply inflexed at the apex; filaments carnose, 3-4 mm. long, tapering distally, the anthers oblong, 2-3 mm. long, less than 1 mm. broad, obtuse at both ends; fruit 6-7 mm. in diameter, the apex flattened, the short calyx-limb and styler column persistent.

TYPE LOCALITY: Panama.

DISTRIBUTION: Southeastern Guatemala, El Salvador, Nicaragua, and southward; also in Haiti and northern Colombia; at low elevations.

ILLUSTRATION: Jour. Bot. 5: pl. 71.

3. *MEGALOPANAX* Ekman; Harms, Notizbl. Bot. Gart. Berlin 9: 122. 1924.

Trees, essentially glabrous throughout. Leaves ample, usually tripinnate, the petiole subterete, swollen at the base, the rachises swollen and somewhat jointed at the nodes, the leaflets short-petiolulate. Inflorescences large, compound, the primary rays several from the apices of short stout branchlets, straight, woody, rugose, lenticellate, the peduncles woody, straight, crowded at the apex or in 2 or 3 whorls, the pedicels very numerous, distinctly articulate with the calyx. Calyx carnose, obconic, the limb membranous, 4-7-dentate. Petals 7-10, narrowly imbricate, often coherent. Stamens 7-10, sharply inflexed in the bud. Styles about 8, firmly connate in a stout carnose column, the stigmas forming inconspicuous protuberances on the apex of the styler column. Ovary thick-walled, the locules about 8. Fruit depressed-subglobose, costate, small, the styler column persistent.

Type species, *Megalopanax rex* Ekman.

1. *Megalopanax rex* Ekman; Harms, Notizbl. Bot. Gart. Berlin 9: 122. 1924.

High tree, the bark sulcate, resiniferous; leaves up to 1 m. long, the petiole slender (3-5 mm. in diameter), up to 20 cm. long or more, the leaflets submembranous, ovate to oblong,

4–8 cm. long, 2–5 cm. broad, obtuse, rotund, or subcordate at the base, acuminate at the apex, entire or slightly undulate at the margins, the petiolules 2–8 mm. long, the principal veins raised on both surfaces, the veinlets copiously reticulate, obvious beneath; primary rays of the inflorescence up to 15 cm. long and 8 mm. in diameter, the peduncles 7–14 cm. long, distally swollen, subtended by small coriaceous ovate deciduous bracts, the bractlets very numerous, small, subcoriaceous, deltoid, acute, associated with small crispate branched hairs; pedicels 100 or more per umbel, slender, 9–15 mm. long; calyx at anthesis about 1.5 mm. long and 3.5 mm. in diameter; petals pale green, thin-carnose, oblong, about 4 mm. long and 1.5 mm. broad, the apex sharply incurved; filaments carnose, 3–5 mm. long, tapering distally, the anthers oblong, about 2.5 mm. long, obtuse at both ends; stylar column less than 1 mm. long.

TYPE LOCALITY: Cuba.

DISTRIBUTION: Cuba, apparently limited to Havana.

4. *PANAX* L. Sp. Pl. 1058. 1753; Gen. Pl. ed. 5.
481. 1754.*

Ginseng Adans. Fam. Pl. 2: 102. 1763.
Ginseng Wood, Bot. & Fl. 142. 1870.

Glabrous herbs, the leaves and inflorescences spreading or ascending from the summit of the stem. Rootstock fleshy. Stem erect or suberect. Leaves palmately compound. Umbel solitary, terminal, simple. Flowers hermaphrodite or polygamo-dioecious, the pedicels articulate with the calyx (continuous in staminate flowers). Calyx cupuliform, campanulate, or obconic, the limb short, membranous, erect, 5-denticulate. Petals 5, narrowly imbricate and often coherent. Stamens 5, inflexed in the bud. Styles 2 or 3 (often 1 in staminate flowers), distinct to the base. Disk carnose, annular. Ovary-wall thin, the locules 2 or 3. Fruit ovoid or laterally flattened, the calyx-limb and styles long-persistent, the seeds 2 or 3.

Type species, *Panax quinquefolium* L.

Plant usually more than 20 cm. high; rootstock fusiform; leaflets petiolulate, large (more than 3 cm. broad), acuminate; styles 2; seeds 2.
Plant usually less than 20 cm. high; rootstock subglobose; leaflets sessile, small (less than 1.5 cm. broad), obtuse; styles 3; seeds 3.

1. *P. quinquefolium*.
2. *P. trifolium*.

1. *Panax quinquefolium* L. Sp. Pl. 1058. 1753.

Panax quinquefolium var. *americanum* Raf. Med. Fl. 2: 52. 1830.
Panax quinquefolium var. *cuneatum* Raf. Med. Fl. 2: 52, as syn. 1830.
Panax quinquefolium var. *obovatum* Raf. Med. Fl. 2: 52. 1830.
Panax obovatum Raf. Herb. Raf. 68. 1833. (Nomen nudum.)
Panax cuneatum Raf. Act. Soc. Linn. Bordeaux 6: 286. 1834.
Panax americanum Raf. New Fl. 4: 58. 1838.
Panax americanum var. *obovatum* Raf. New Fl. 4: 58. 1838.
Panax americanum var. *elatum* Raf. New Fl. 4: 58. 1838.
Aralia quinquefolia Dec. & Planch. Rev. Hort. IV. 3: 105. 1854.
Ginseng quinquefolium Wood, Bot. & Fl. 142. 1870.

Herb, up to 1 m. high or more; rootstock fusiform, up to 2 cm. in diameter; stem straight, slender, subterete, often striate; leaves 3 or 4, 5 (3–7)-foliolate, the petiole slender, up to 10 (rarely to 15) cm. long, the leaflets thin, elliptic to obovate, up to 16 cm. long and 8.5 cm. broad (the basal ones smaller, often ovate), acute to rounded at the base, acuminate at the apex, conspicuously and often doubly serrate, the teeth deltoid, acute, the petiolules up to 4.5 cm. long, the principal veins slightly raised on both surfaces, the lateral veins 5–9, ascending; peduncle slender, straight, up to 10 (rarely to 30) cm. long, the bractlets deltoid to lanceolate, acute, 2–5 mm. long; pedicels 15–40 per umbel, up to 12 mm. long, swollen distally; calyx

* Although *Panax* was used as neuter by Linnaeus, it is classically masculine, and therefore, according to the *International Rules of Botanical Nomenclature* (ed. 3, Art. 72 [2], 1935), *Panax* and all modern compounds ending in *-panax* should be treated as masculine. This is one of the illustrations cited in the *Rules*. Harms, in his treatment of the family in *Die Natürlichen Pflanzenfamilien*, consistently used the masculine form for all the compounds based on *Panax*, but he has not always been followed. Throughout the present treatment all such compounds are treated as masculine, and the gender of accepted specific epithets is corrected where necessary; epithets cited in synonymy, however, are spelled as proposed by their authors.

carnose, cupuliform, at anthesis about 2 mm. long and in diameter, the lobes deltoid, acute, about 0.5 mm. long; petals greenish-white, membranous, slightly granular-papillose distally, oblong, about 1.5 mm. long and 1 mm. broad, subacute and slightly incurved at the apex; filaments carnose, narrowed distally, 1-1.5 mm. long, the anthers oblong, about 1 mm. long, obtuse at both ends; summit of the ovary flattened or concave, the styles 2, carnose, slightly curved, 1-1.5 mm. long; locules 2; fruit laterally flattened, transversely oblong, up to 7 mm. long and 10 mm. broad, longitudinally sulcate, the wall at length dry, the seeds 2, oblong, 4-5 mm. long, 3-4 mm. broad.

TYPE LOCALITY: "Ad sinum Dellawar Pennsylvaniae." *Gronovius*.

DISTRIBUTION: Southern Quebec to Minnesota, southward to Georgia and Oklahoma.

ILLUSTRATIONS: Lam. Tab. Encyc. *pl. 860*; Bot. Mag. *pl. 1333*; W. Barton, *Veg. Mat. Med. pl. 45*; T. Nees, *ic. Pl. Med. pl. 69A*; Millsp., *Am. Med. Pl. pl. 70* (as *Aralia quinquefolia*); Kew Bull. 1893: 75 (as *Aralia quinquefolia*); Britt. & Brown, *Ill. Fl. 2: 507*; ed. 2. 2: 618; Mathews, *Field Book 305*.

2. *Panax trifolius* L. Sp. Pl. 1059. 1753.

Panax pusilla Sims, Bot. Mag. *pl. 1334*. 1810.

Aralia triphylla Poir. in Lam. Encyc. Suppl. 1: 418. 1811.

Panax lanceolatum Raf. Herb. Raf. 68. 1833 (nomen nudum); New Fl. 4: 57. 1838.

Aralia trifolia Dec. & Planch. *Rev. Hort. IV. 3: 105*. 1854.

Ginseng trifolium Wood, Bot. & Fl. 142. 1870.

Herb, up to 20 (rarely to 30) cm. high; rootstock subglobose, up to 2 cm. in diameter; stem slender, subterete, often striate; leaves 3, 3-5-foliolate, the petiole up to 4 cm. long, the leaflets sessile (or the apical one short-petiolulate), thin, oblong to elliptic-lanceolate, up to 8 cm. long and 1.5 cm. broad (the basal ones smaller), acute to obtuse at the base and the apex, often doubly serrate, the teeth deltoid, acute, the costa slightly raised on both surfaces, the lateral veins few, ascending; peduncle slender, up to 8 cm. long, the bractlets lanceolate, about 2 mm. long; pedicels slender, 15-40 per umbel, up to 6 mm. long, slightly swollen distally; flowers polygamo-dioecious; in hermaphrodite flowers: calyx campanulate, at anthesis about 2 mm. long, 1-1.5 mm. broad, often contracted at the middle, 10-veined; petals white, rarely pink, membranous, ovate-oblong, 1-2 mm. long, less than 1 mm. broad, obtuse, the midnerve prominent, the veinlets faintly reticulate; filaments 1-1.5 mm. long, the anthers globose-oblong, about 0.5 mm. long; styles 3, straight, about 1 mm. long, slightly swollen distally; locules 3; in staminate flowers: calyx obconic, about 1 mm. long and broad or less, inconspicuously veined; ovary minute, sterile; fruit ovoid, 3-4 mm. in diameter, longitudinally trisulcate, the seeds 3, 2 mm. long or less.

TYPE LOCALITY: Virginia.

DISTRIBUTION: Nova Scotia, southern Quebec, and Wisconsin, southward to Georgia and Kentucky.

ILLUSTRATIONS: Bot. Mag. *pl. 1334* (as *Panax pusilla*); Lodd. Bot. Cab. *pl. 405*; T. Nees, *ic. Pl. Med. pl. 69B*; Iles, *Wild Fl. Am. pl. 110* (as *Aralia trifolia*); Britt. & Brown, *Ill. Fl. 2: 507*; ed. 2. 2: 619; House, *Wild Fl. N. Y. pl. 132*.

5. OPLOPANAX Miq. Ann. Mus. Bot. Lugd.-Bat. 1:

16. 1863.

Panax Sect. *Oplopanax* T. & G. Fl. N. Am. 1: 648. 1840.

Echinopanax Dec. & Planch. *Rev. Hort. IV. 3: 105*. 1854. (Nomen nudum.)

Spiny shrubs. Leaves simple, the petiole subterete, swollen at the base, the blade ample, lobed, serrate, palmate-nerved. Inflorescences terminal, racemously umbelliferous, the rachis stout, straight, the pedicels continuous with the calyx. Calyx carnose, cupuliform, the limb very short and obscurely 5-toothed. Petals 5, oblong, valvate. Stamens 5, sharply inflexed in the bud. Disk carnose, flattened. Styles 2, separate to the base, tapering distally. Ovary thick-walled, the locules 2. Fruit orbicular, laterally flattened, sulcate, the styles long-persistent, the seeds oblong.

Type species, *Panax horridum* Smith.

1. *Oplopanax horridus* (Smith) Miq. Ann. Mus. Bot.
Lugd.-Bat. 1: 16, excl. pl. Jap. 1863.

- Panax horridum* Smith in Rees, Cycl. 26: *Panax*, no. 10. 1813.
Aralia erinacea Hook.; Scouler, Edinb. Jour. Sci. 6: 64. 1827.
Aralia occidentalis Schlecht.; Ledeb. Fl. Ross. 2: 375, as syn. 1844.
Ricinophyllum americanum Pall.; Ledeb. Fl. Ross. 2: 375, as syn. 1844.
Echinopanax horridum Cooper, Pacif. R. R. Rep. 12^e: 31, 63. 1860. (Nomen nudum.)
Horsfieldia horrida Seem. Jour. Bot. 5: 237. 1867.
Fatsia horrida Benth. & Hook.; Brewer & Wats. Bot. Calif. 1: 273. 1876.
Ricinophyllum horridum Nelson & Macbr. Bot. Gaz. 61: 45. 1916.

Shrub, 1-3 m. high, the stems, petioles, and rachises densely spinose (the spines spreading, stiff, slender, up to 1 cm. long or more), often pale-villose, the leaves and inflorescences near the apices of stout brownish or stramineous branchlets; petioles stout, up to 30 cm. long, the leaf-blades papyraceous, deeply or shallowly 5- or 7-lobed, up to 35 cm. long and 40 cm. broad, deeply cordate at the base, acuminate or cuspidate at the apices of the lobes, conspicuously and irregularly serrate, the teeth acute, mucronulate, the principal nerves usually 7, prominent, usually spinose beneath, the secondary nerves numerous, spreading, the veinlets finely reticulate; inflorescence somewhat shorter than the leaves, the peduncles numerous, spreading, often villose, the basal ones up to 5 cm. long, those toward the apex shorter or lacking, each subtended by a papyraceous oblong fimbriate bract about 1 cm. long; umbels compact, 10-30-flowered, frequently not perfect, the pedicel short and villose at anthesis, in fruit glabrescent and up to 8 mm. long; calyx about 2 mm. long and 1.5 mm. in diameter at anthesis; petals submembranous, acute, 2-3 mm. long, 1-1.5 mm. broad, minutely granular-papillose distally; filaments filiform, at length about 4 mm. long, narrowed distally; anthers globose-oblong, about 1 mm. in diameter; styles subcarinose, 1-3 mm. long, incurved at the tip in the bud; fruit up to 7 mm. in diameter.

TYPE LOCALITY: Nootka Sound, Vancouver Island.

DISTRIBUTION: Southern Alaska and Winnipeg to Oregon, Idaho, and Montana; also on Isle Royale, Michigan.

ILLUSTRATIONS: Brown & Schäffer, Alp. Fl. Can. 200; Bot. Mag. pl. 8572; Britt. & Brown, Ill. Fl. ed. 2, 2: 619.

6. *DIDYMOPANAX* Dec. & Planch. Rev. Hort. IV.
3: 109. 1854.

Shrubs or trees, glabrous or variously pubescent. Leaves simple or palmately compound (compound in our species), the petioles dilated at base into a coriaceous ligulate sheath, the leaflets usually radiate. Inflorescences terminal or lateral, compound-paniculate or compound-umbellate, the branchlets subtended by coriaceous bracts, the umbels numerous, racemously or umbellate arranged. Pedicels subtended by minute bractlets, continuous with the calyx. Flowers hermaphrodite, 5-merous. Calyx obconic or cupuliform, the limb short, denticulate. Petals valvate, usually thin-carnose and greenish-white or brownish, acute at the apex, thickened and slightly cucullate distally. Stamens inflexed in the bud, the anthers with loosely coherent or separate locules. Disk carnose, raised and undulate at the margin. Styles 2 (rarely 3), carnose, distinct to the base or partially connate. Ovary thick-walled, the locules and ovules 2 (rarely 3). Fruit laterally compressed, longitudinally bisulcate, surmounted by the persistent calyx-limb and stylar column or recurved styles, the seeds 2 (rarely 3).

Type species, *Panax Morototoni* Aubl.

Blades of the leaflets more than 3 times as long as the petiolules, oblong, more than twice as long as broad.

Petiolules more than 1 cm. long, the blades of the leaflets truncate to acute at the base, acuminate at the apex; umbels spaced on the rachises.

Mature leaflets beneath and inflorescences ascent- or ferruginous-sericeous; leaflets numerous (usually 10-12).

Mature leaflets and inflorescences glabrous; leaflets 3-5.

Petiolules up to 1 cm. long, the blades of the leaflets attenuate at the base, rounded or emarginate at the apex; umbels arranged in terminal clusters.

Blades of the leaflets about twice as long as the petiolules, broadly ovate, less than twice as long as broad.

Branches of the inflorescence compound-umbellate, the ultimate umbels clustered at the ends of the peduncles; styles free nearly to the base, recurved in fruit.

1. *D. Morototoni*.

2. *D. Urbanianus*.

3. *D. Gleasonii*.

4. *D. tremulus*.

Inflorescence compound-paniculate, the umbels racemously arranged; styles connate nearly to the apex.

Leaflets 4-6; petioles comparatively slender, the ligule 2-4 mm. long; bracts of the inflorescence minute, less than 2 mm. long.

Leaflets 5-9; petioles stout, the ligule 15-30 mm. long; bracts of the inflorescence conspicuous, 3-16 mm. long.

5. *D. attenuatus*.

6. *D. Pittieri*.

1. *Didymopanax Morototoni* (Aubl.) Dec. & Planch.

Rev. Hort. IV. 3: 109. 1854.

Panax Morototoni Aubl. Pl. Guian. 949. 1775.

Aralia micans Humb. & Bonpl.; R. & S. Syst. Veg. 6: 701. 1820.

Panax speciosum sensu Eggers, Fl. St. Croix 59. 1879; not *P. speciosum* Willd.

Didymopanax micans Krug & Urban, Symb. Ant. 1: 204. 1899.

Slender tree, up to 15 m. high, the foliage and inflorescences often clustered at the summit of the slender trunk; petioles glabrous, stout (often 1 cm. in diameter), up to 1 m. in length, the ligule up to 1 cm. long; leaflets usually 10-12, the petiolules straight, up to 14 cm. long, terete, glabrous, the blades coriaceous, oblong or obovate-oblong, up to 45 cm. long and 19 cm. broad (usually about 25 × 8 cm.), often rounded at the base, acuminate at the apex, entire or slightly undulate at the margins, glabrous above, densely and minutely canescent-sericeous beneath, the costa and numerous lateral nerves often prominent; (juvenile leaflet-blades papyraceous, conspicuously mucronate-serrate, hispid-pilose above, sparsely sericeous beneath;) inflorescences at the apices of branchlets, up to 50 cm. or more in length, compound-paniculate, densely canescent-sericeous throughout (or glabrescent in fruit), the branchlets stout, spreading, the bracts oblong, up to 5 mm. long, the umbels racemously arranged, the peduncles 10-15 mm. long, the pedicels 7-15 per umbel, 2-5 mm. long; calyx coriaceous, cupuliform, at anthesis 1-1.5 mm. long and in diameter, the teeth callose-tipped, the sinuses flattened; bud subglobose, the petals oblong, 1.5-2.5 mm. long, 1-1.5 mm. broad, glabrous within, the midnerve obvious; filaments short, the anthers subglobose or oblong, 1-1.5 mm. long, apiculate at the apex; summit of the ovary flattened, sparsely pilose; styles distinct to the base, 0.5-1 mm. long; fruit coriaceous, transversely oblong, 4-6 mm. long, 7-10 mm. broad, canescent-sericeous or glabrous, the styles about 1.5 mm. long, recurved, the seeds oblong, flattened.

TYPE LOCALITY: Guiana.

DISTRIBUTION: Oaxaca, Guatemala, British Honduras, Cuba, Puerto Rico, and southward; also in South America.

ILLUSTRATION: Aubl. Pl. Guian. pl. 360 (as *Panax undulata*).

2. *Didymopanax Urbanianus* Marchal, Bot. Jahrb. 15:

326. 1892.

Large tree, up to 20 m. high or more, glabrous throughout, the branchlets stout, brownish, rugose; petioles 10-20 cm. long, the sheath about 2 cm. broad, the ligule inconspicuous, not more than 3 mm. long; leaflets 3-5, the petiolules 1-4.5 cm. long, the blades coriaceous, elliptic or oblong, 10-20 cm. long, 4-10 cm. broad, cuneate or rounded at the base, short-acuminate at the apex, thickened and slightly undulate at the margins, the costa prominent, the secondary nerves spreading, slightly raised or plane; inflorescences lateral or terminal, up to 12 cm. long, branched from the base, the branches racemously or paniculately umbelliferous, the bracts minute, the pedicels 4-10 per umbel, 1-3 mm. long; calyx cupuliform; filaments elongate; styles connate into a carnose column, free at the apices; summit of the ovary somewhat flattened; fruit coriaceous, subglobose, about 3 mm. long, surmounted by the stylar column (less than 1 mm. long), the styles free only at the apices, the seeds 2.

TYPE LOCALITY: Martinique.

DISTRIBUTION: Martinique.

3. *Didymopanax Gleasonii* Britton & Wilson, Sci. Surv.

Porto Rico 6: 365. 1926.

Leafy shrub up to 2 m. high, glabrous throughout at maturity except the flowers, the branchlets brownish, rugose; petioles 6-12 cm. long, slightly dilated at the base, the ligule

coriaceous, about 2 mm. long; leaflets 3-7, the petiolules 5-10 mm. long, narrowly winged above, the blades coriaceous, oblong or obovate-oblong, 4-8 cm. long, 1.2-2.5 cm. broad, attenuate at the base, rounded or emarginate at the apex, slightly recurved at the margins, the costa prominent on both surfaces, the lateral nerves obscure; inflorescences axillary or clustered at the apices of branchlets, compound-umbellate, the primary peduncle 5-12 cm. long, the branches spreading, up to 5 cm. long, the bracts inconspicuous, the pedicels 10-15 per umbel, at anthesis up to 3 mm. long and minutely canescent-sericeous, at length about 10 mm. long and glabrescent; calyx coriaceous, obconic, 1-1.5 mm. long, about 2 mm. broad, minutely canescent-sericeous, the teeth deltoid, callose-tipped, minutely fimbriate; bud conic, 5-ribbed, the petals deltoid, 1-1.5 mm. long and broad, minutely sericeous or glabrous without; filaments filiform, tapering distally, about 1 mm. long, the anthers deltoid-oblong, about 1.5 mm. long, obtuse, the locules separate; summit of the ovary flattened, the styles about 1 mm. long, free distally; mature fruit black, canescent-sericeous or glabrous, flattened-subglobose, 6-8 mm. long and broad, the styler column 1-2 mm. long, the styles separate and recurved about half their length.

TYPE LOCALITY: Puerto Rico.

DISTRIBUTION: Puerto Rico, at about 1300 m.

4. *Didymopanax tremulus* Krug & Urban, Symb. Ant. 1:

206. 1899.

Tree, up to 20 m. high, glabrous throughout, the branchlets stout, terete; leaves and inflorescences at the apices of branchlets; petioles terete, sitrate, 10-14 cm. long, the sheath about 15 mm. broad, the ligule 5-10 mm. long; leaflets 4 or 5, the petiolules up to 7 cm. long, often jointed at the base, the blades broadly ovate or rhombic-deltoid, 7-12 cm. long, 5-9.5 cm. broad, acute to truncate at the base, acuminate at the apex (the acumen 1-2 cm. long), entire and slightly thickened at the margins, the costa and few straight spreading lateral nerves slightly raised on both surfaces; inflorescence a lateral compound panicle, up to 15 cm. long, umbellately divided from the base, each branch proliferous-umbellate (or imperfectly so), the ultimate portions compound-umbellate, the bracts oblong, not more than 5 mm. long, the pedicels 4-10 per umbel, up to 4 mm. long; calyx obconic, about 1 mm. long, 1.5-2 mm. broad; bud often apiculate, the petals ovate-deltoid, about 2 mm. long and 1.5 mm. broad, acute; filaments about 2 mm. long, the anthers oblong-deltoid, about 1 mm. long, obtuse at both ends; styles about 1 mm. long, free to the base, the summit of the ovary somewhat flattened; fruit subglobose-flattened, 3-4 mm. in diameter, the styles recurved.

TYPE LOCALITY: Santo Domingo.

DISTRIBUTION: Santo Domingo and Haiti, 400-1700 m.

5. *Didymopanax attenuatus* (Sw.) Marchal in Mart. Fl.

Bras. 11¹: 234. 1878.

Panax attenuata Sw. Prodr. 54. 1788.

Panax caribaea Sieber; Urban, Symb. Ant. 1: 207, as syn. 1899.

Small tree, glabrous throughout, the branchlets stout, terete; leaves and inflorescences at the apices of branchlets; petioles terete, 10-25 cm. long, the sheath 10-15 mm. broad, the ligule 2-4 mm. long; leaflets 4-6, the petiolules 3-8 cm. long, somewhat jointed at the base, the blades often thin-coriaceous, broadly ovate or deltoid, 7-16 cm. long, 4-11 cm. broad, acute to truncate at the base, caudate-acuminate at the apex (the acumen very slender, 1-5 cm. long), thickened and slightly undulate at the margins, the costa often prominent, the secondary nerves spreading, slightly raised on both surfaces; inflorescence compound-paniculate, terminal or subterminal, up to 20 cm. long, divided and spreading from the base, the secondary branches few, often again branched, the ultimate umbels racemously arranged, the bracts oblong, up to 2 mm. long, the pedicels 5-12 per umbel, up to 5 mm. long; calyx obconic, about 1 mm. long and 1.5-2 mm. broad; bud often apiculate, the petals ovate-deltoid, 1.5-2 mm. long, 1-1.3 mm. broad; filaments at length to 1.5 mm. long, the anthers oblong-deltoid, about 1 mm. long, obtuse at both ends; styles 2, rarely 3, connate into a short carnosic conic column, some-

what free at the apex; locules 2, rarely 3; fruit subglobose-flattened (rarely trigonous), 2-4 mm. in diameter, the wall thin, dry, the seeds 2, rarely 3.

TYPE LOCALITY: West Indies.

DISTRIBUTION: Lesser Antilles, St. Kitt's to Grenada, up to 1500 m.

6. *Didymopanax Pittieri* Marchal; Durand & Pittier,
Bull. Soc. Bot. Belg. 30: 280. 1891.

Tree, up to 20 m. high, glabrous throughout, the branchlets stout, terete; leaves and inflorescences at the apices of branchlets; petioles terete, often striate, 10-35 cm. long, the sheath 10-20 mm. broad, the ligule 15-30 mm. long; leaflets 5-9, the petiolules slender, up to 10 cm. long, somewhat swollen and jointed at the base, the blades thin-coriaceous, broadly ovate, 7-14 cm. long, 5-9 cm. broad, obtuse to rounded at the base, acuminate at the apex (the acumen 1-3 cm. long), thickened and slightly undulate at the margins, the costa often prominent, the secondary nerves spreading, slightly raised on both surfaces; inflorescence paniculate, the rachis stout, often short, the branches few, straight, spreading, up to 35 cm. long, each subtended by an oblong bract 1-2 cm. long; umbels racemously arranged, the peduncles straight, 15-30 mm. long, subtended by oblong bracts 3-16 mm. long, the pedicels 7-20 per umbel, up to 6 mm. long; calyx soft-carnose, obconic, at anthesis about 1 mm. long and 2 mm. broad, the teeth callose-apiculate, the sinuses flattened; buds apiculate, the petals deltoid-ovate, about 1.5 mm. long and 1 mm. broad, calyprate; filaments very short, the anthers oblong-globose, less than 1 mm. long; stilar column carnosose, short-conic, the styles 2 or 3; fruit coriaceous, subglobose, 2.5-4 mm. in diameter, the styles united nearly to the apex, the stigmas minutely divaricate, the ovary-wall hard, the seeds 2 or 3.

TYPE LOCALITY: Costa Rica.

DISTRIBUTION: Costa Rica and western Panama, 1500-2500 m.

7. *DENDROPANAX* Dec. & Planch. Rev. Hort. IV.
3: 107. 1854.

Gilibertia R. & P. Fl. Per. Prodr. 50. 1794. Not *Gilibertia* J. F. Gmel. 1791.
Wangenheimia Dietr. Lex. 10: 536. 1810. Not *Wangenheimia* Moench, 1794.
Ginannia Dietr. Lex. Nachtr. 3: 483. 1817. Not *Ginannia* Scop. 1777.
Gilibertia subgen. *Melopanax* Marchal, Bull. Acad. Belg. II. 47: 77. 1879.

Shrubs or trees, our species glabrous throughout. Leaves simple, the juvenile blades occasionally lobed, the mature blades usually entire. Inflorescence consisting of a single terminal or axillary umbel or of 2-20 umbels (or very rarely heads) racemously or umbellately arranged, the peduncles subtended by small bracts, sometimes bracteate and articulate above the base, swollen distally into an often carnosose receptacle. Flowers hermaphrodite or polygamo-monoecious, 5-9-merous. Pedicels continuous with the calyx. Calyx obconic or cupuliform, the limb short, usually denticulate. Petals valvate, usually carnosose and greenish-white, subacute and slightly cucullate at the apex. Stamens as many as the petals, inflexed in the bud, the anthers with loosely coherent locules. Disk carnosose, short-conic, confluent with the styles. Styles connate in a short column or cone or essentially free. Ovary thick-walled, the locules and ovules 5-9. Fruit subglobose or ellipsoid, sulcate, surmounted by the persistent short calyx-limb and stilar column or styles, the seeds usually as many as the locules.

Type species, *Aralia arborea* L.

The question of *Dendropanax* vs. *Gilibertia* has been discussed by the writer (Trop. Woods 66: 1-3. 1941) and the conclusion reached that it is unnecessary to propose *Gilibertia* R. & P. for conservation.

Umbels 3-20 per inflorescence, racemously or umbellately arranged.

Inflorescence slender, divaricate, the peduncles (3-) 5-7 cm. long, the pedicels (6-) 10-20 mm. long; Mexico and Guatemala.

Leaves ovate-deltoid, rounded to a truncate base; peduncles bracteate and articulate 10-15 mm. below the apex; flowers 15-20 per umbel, consistently 6-merous, the styles free and spreading in fruit.

Leaves oblong or elliptic-lanceolate, acute or cuneate at the base; peduncles bracteate and articulate below the middle or not at all; flowers 5-10 (rarely to 20) per umbel, usually 5-merous, the styles free only at the apex.

1. *D. populifolius*.

2. *D. leptopodus*.

- Inflorescence comparatively compact, the peduncles 1-5 (rarely to 7) cm. long, the pedicels up to 8 (rarely to 12, in fruit) mm. long.
- Mature leaf-blades entire or undulate or remotely crenate-denticulate or serrate at the margins; rachis 1-10 cm. long; calyx not broader than long.
- Inflorescence usually terminal; peduncles striate or smooth, without horizontal fissures, not (or rarely) jointed, the bracts (if present) rarely connate.
- Leaf-blades entire or undulate or remotely crenate at the margins, obtusely acuminate or cuspidate at the apex (the acumen rarely slender and then scarcely exceeding 15 mm. in length); widespread and variable species.
- Leaf-blades remotely serrate at the margins with linear teeth 1-4 mm. long, very slenderly acuminate at the apex (the acumen 15-25 mm. long); Panama.
- Inflorescence terminal or lateral; peduncles rugose, often marked with short transverse fissures, uniformly articulate, often geniculate, the bracts usually connate into a small coriaceous cupule.
- Flowers 5-merous, 10-50 per umbel.
- Leaf-blades coriaceous, oblong or obovate-oblong; umbels 5-11 per inflorescence; rachis 0.5-1.5 cm. long; Puerto Rico.
- Leaf-blades chartaceous or thin-coriaceous, broadly elliptic or ovate-elliptic; umbels 10-16 per inflorescence, the rachis 2-5.5 cm. long; Costa Rica and western Panama.
- Flowers pedicellate; bracts of the peduncles about 1 mm. long; leaf-blades entire or undulate at the margins.
- Flowers sessile; bracts of the peduncles 3-4 mm. long; leaf-blades undulate-crenate at the margins.
- Flowers 7-9-merous, 8-15 per umbel; Guatemala.
- Mature leaf-blades entire or deeply 3-lobed, irregularly sinuate-serrate at the margins, the teeth obtuse, often conspicuous; primary peduncle stout, 5-13 mm. long; calyx flattened, somewhat broader than long; Costa Rica and western Panama.
- Umbel 1 per inflorescence (rarely with one or two smaller inconspicuous secondary umbels).
- Flowers less than 35 per umbel.
- Calyx at anthesis less than 3 mm. long; petals less than 4 mm. long; fruit less than 8 mm. long.
- Peduncle 0.5-2.5 cm. long.
- Leaves acuminate at the apex; peduncle 5-18 mm. long, bracteate only at the base; Costa Rica and western Panama.
- Leaves obtuse or subacute at the apex; peduncle 15-25 mm. long, bracteate slightly above the base; British Honduras.
- Peduncle at least 3 cm. long.
- Pedicels filiform, 25-35 mm. long or more; Panama.
- Pedicels not more than 25 mm. long, usually much shorter.
- Leaves conspicuously and densely pellucid-punctate, the glands prominulous on both surfaces; Cuba: Santa Clara and westward.
- Leaves obscurely pellucid-punctate or epunctate.
- Styles free distally, connate only toward the base (at least soon after anthesis).
- Veinlets and secondary nerves conspicuously prominulous on both leaf-surfaces; Cuba: Oriente.
- Veinlets immersed at least beneath, the secondary nerves scarcely or slightly raised.
- Leaf-blades thin-coriaceous, acute and callose-mucronate at the apex, the secondary nerves about 10 per side; Jamaica.
- Leaf-blades papyraceous, acuminate at the apex, the secondary nerves 4-6 per side; southern Mexico and Guatemala.
- Styles, even in fruit, connate to the apex; Jamaica.
- Calyx at anthesis 6-8 mm. long; petals 7-8 mm. long; fruit 10-12 mm. long; Jamaica.
- Flowers more than 40 per umbel (fruits sometimes slightly fewer).
- Leaves (of mature plants) usually 3-lobed, 3- or 5-plinerved, conspicuously punctate; Haiti.
- Leaves entire, pinnately veined, obscurely punctate or epunctate; Jamaica.
- Peduncle pendulous, 25-35 cm. long or more, conspicuously bracteate and articulate 5-15 cm. above the base.
- Peduncle rarely to 23 cm. long, usually much shorter, bracteate and articulate within 5 cm. of the base or not at all.
- Leaves acute to attenuate at the base.
- Peduncle 3-11 cm. long, articulate (if at all) less than 12 mm. above the base; leaves broadly elliptic or ovate-elliptic.

3. *D. arboreus*.4. *D. stenodontus*.5. *D. laurifolius*.6. *D. gonatopodus*.7. *D. sessiliflorus*.8. *D. oliganthus*.9. *D. praestans*.10. *D. querceti*.11. *D. Schippii*.12. *D. darienensis*.13. *D. cuneifolius*.14. *D. nervosus*.15. *D. filipes*.2. *D. leptopodus*.16. *D. Blakeanus*.17. *D. grandiflorus*.18. *D. selleanus*.19. *D. pendulus*.20. *D. nutans*

- Peduncle 10-23 cm. long, articulate 15-30 mm. above the base; leaves lanceolate to narrowly elliptic.
Leaves obtuse to subcordate at the base.
21. *D. Swartzii*.
Peduncle articulate very near the base or not at all; leaves ovate or broadly elliptic, about twice as long as broad. Leaf-blades rounded at the base, decurrent on the petiole; peduncle about 4 cm. long.
22. *D. grandis*.
Leaf-blades cordate or rounded at the base, not decurrent on the petiole; peduncle 12-16 cm. long.
23. *D. cordifolius*.
Peduncle articulate 1.5-5 cm. above the base; leaves oblong or elliptic-lanceolate, about 3 times as long as broad.
24. *D. elongatus*.

1. *Dendropanax populifolius* (Marchal) A. C. Smith,

Trop. Woods 66: 3. 1941.

Gilibertia populifolia Marchal, Bull. Acad. Belg. II. 47: 77. 1879.

Slender tree, the branchlets rugose; petioles slender, striate, up to 13 cm. long, swollen at the base and the apex; leaf-blades thin-coriaceous, ovate-deltoid, 10-15 cm. long, 5.5-9 cm. broad, rounded to a truncate base, abruptly acuminate at the apex, slightly undulate at the margins, 3- or 5-nerved from the base, the costa prominent beneath, the secondary nerves about 5 per side, spreading, raised beneath; umbels arranged in a composite axillary umbellate inflorescence (according to Marchal), the peduncles slender, straight, 5-7 cm. long, conspicuously bracteate and articulate 10-15 mm. below the apex (the bracts coriaceous, ovate, 1-2 mm. long, connate); flowers 6-merous, 15-20 per umbel, the receptacle 5-7 mm. broad, the pedicels slender, striate, 15-20 mm. long; calyx obconic, 2-3 mm. long and in diameter; petals carnose, oblong, about 3 mm. long and 2 mm. broad; filaments carnose, short, the anthers oblong, about 2 mm. long; styles coherent into a carnose column about 2 mm. long, at length free; fruit globose, 7-9 mm. in diameter, surmounted by the persistent spreading styles, the wall often brittle, the seeds 6.

TYPE LOCALITY: Tepitongo, Mexico.

DISTRIBUTION: Known only from the type locality.

2. *Dendropanax leptopodus* (Donn. Smith) A. C. Smith,

Trop. Woods 66: 3. 1941.

Gilibertia leptopoda Donn. Smith, Bot. Gaz. 57: 421. 1914.

Slender tree, the branchlets slender, cinereous, rugose; petioles slender, 1-6 cm. long; juvenile leaf-blades sometimes deeply 3-lobed; mature leaf-blades papyraceous, oblong or elliptic-lanceolate, 7-16 cm. long, 2-7 cm. broad, acute or cuneate at the base, acuminate at the apex, entire and slightly revolute at the margins, pinnately veined, the costa prominent beneath, the secondary nerves 4-6 per side, slightly raised; umbels 3-10 per inflorescence (sometimes reduced to 1 or 2), arranged in a terminal raceme, the distal ones fasciculate; rachis up to 5 cm. long, the peduncles slender, divaricate, 3-7 cm. long, subtended by small deciduous bracts, sometimes articulate and slightly geniculate just below the middle; flowers 5-10 (rarely to 20) per umbel, the receptacle 2-3 mm. broad, the pedicels slender, 6-19 mm. long; flowers 5- or 6-merous, the calyx obconic, 1.3-2.5 mm. long, 1.3-2 mm. broad; petals oblong, 1.5-2 mm. long, about 1 mm. broad; filaments short, the anthers subglobose-oblong, about 0.6 mm. in diameter; styles connate in a short carnose conic column, free distally at anthesis or soon after; young fruits ellipsoid, surmounted by the persistent stylar column (about 1 mm. long), the styles distally free and recurved.

TYPE LOCALITY: Guatemala.

DISTRIBUTION: Chiapas and Guatemala to Honduras.

3. *Dendropanax arboreus* (L.) Dec. & Planch. Rev. Hortic.

IV. 3: 107. 1854.

Aralia arborea L. Syst. Nat. ed. 10. 967. 1759.

Hedera arborea Sw. Fl. Ind. Occ. 1: 518. 1797.

Hedera alaris Schlecht. Linnaea 9: 605. 1834.

Dendropanax alare Dec. & Planch. Rev. Hortic. IV. 3: 107. 1854.

Sciadophyllum Jacquini Griseb. Fl. Brit. W. Ind. 306. 1860.

- Dendropanax Juergenseni* Seem. Jour. Bot. 2: 301. 1864.
Sciadophyllum samydifolium Wright; Griseb. Cat. Pl. Cub. 117. 1866.
Dendropanax samydifolium Seem. Jour. Bot. 6: 140. 1868.
Gilbertia Langeana Marchal, Bull. Acad. Belg. 11. 47: 79. 1879.
Sciadophyllum capitatum Eggers, Vidensk. Meddel. 1889: 17. 1889.
Schefflera arborea Maza, Anal. Soc. Esp. Hist. Nat. 19: 249. 1890.
Schefflera samydifolia Maza, Anal. Soc. Esp. Hist. Nat. 19: 249. 1890.
Gilbertia arborea Marchal, Bull. Soc. Bot. Belg. 30: 281. 1891.
Sciadophyllum arboreum Hitchc. Rep. Mo. Bot. Gard. 4: 91. 1893.
Aralia fruticosa Sessé & Moc. Fl. Mex. 86. 1894.
Aralia tuxtensis Sessé & Moc. Fl. Mex. 86. 1894.
Gilbertia Rothschildii Harms, Bot. Jahrb. 23: 126. 1896.
Gilbertia insularis Rose, N. Am. Fauna 14: 83. 1899.
Gilbertia samydifolia Marchal; Urban, Symb. Ant. 1: 201. 1899.
Gilbertia brachypoda Urban, Symb. Ant. 5: 452. 1908.
Dendropanax brachypodum R. C. Schneid. Bull. Torrey Club 36: 644. 1909.
Dendropanax insulare R. C. Schneid. Bull. Torrey Club 36: 644. 1909.
Gilbertia stenocarpa Donn. Smith, Bot. Gaz. 55: 435. 1913.
Gilbertia Smithiana I. M. Johnston, Contr. Gray Herb. 70: 81. 1924.
Gilbertia eurycarpa I. M. Johnston, Contr. Gray Herb. 70: 82. 1924.
Gilbertia alaris I. M. Johnston, Contr. Gray Herb. 70: 82. 1924.
Dendropanax Langeanum Marchal; Standley, Contr. U. S. Nat. Herb. 23: 1084, as syn. 1924.
Dendropanax Juergenseni Standley, Contr. U. S. Nat. Herb. 23: 1084. 1924.
Dendropanax monticola Standley, Jour. Wash. Acad. 17: 316. 1927.
Gilbertia concinna Standley, Trop. Woods 18: 30. 1929.
Gilbertia Matudai Lundell, Phytologia 1: 372. 1940.
Dendropanax Matudai A. C. Smith, Trop. Woods 66: 3. 1941.

Shrub or slender tree, up to 12 m. high, the branchlets slender, terete, often rugose; juvenile leaves long-petioled (the petioles up to 40 cm. long), the blades papyraceous, up to 45 cm. in diameter, often deeply 3- or 5-lobed, the lobes oblong or obovate, the principal nerves spreading from the base; petioles of mature leaves slender, up to 23 cm. long (averaging about 6 cm.), the blades usually thin-coriaceous, ovate to elliptic or oblong or obovate-oblong, 6-28 (usually about 15) cm. long, 3-14 (usually about 7) cm. broad, obtuse to acute or cuneate at the base, usually obtusely acuminate or cuspidate at the apex, entire or undulate or remotely crenate at the margins, pinnately veined, the costa usually prominent, the secondary nerves 4-8 per side, often raised on both surfaces, the veinlets reticulate, often conspicuously prominent on both surfaces, sometimes obscure; umbels 5-20 per inflorescence, arranged in a terminal raceme, the distal ones fasciculate, appearing to form a compound umbel; rachis stout, 1-10 cm. long, the peduncles divaricate, usually straight, 1-7 cm. long, sometimes bracteate slightly below the middle (the bracts coriaceous, about 1 mm. long); flowers 3-35 (usually 20-25) per umbel, the receptacle 3-5 mm. broad, the pedicels slender, 3-8 mm. long at anthesis (up to 13 mm. in fruit); flowers 5-7-merous, the calyx 1-2 mm. long and in diameter, the teeth usually inconspicuous, sometimes deltoid; petals oblong or deltoid-oblong, 1.5-2 mm. long, 1-1.5 mm. broad; filaments up to 2 mm. long, the anthers subglobose-oblong, less than 1 mm. long; styles connate in a very short column or cone, free only at the apex; fruit 4-8 mm. in diameter, sometimes considerably narrower, the persistent styler column 1-2 mm. long, the styles free in the distal half, the seeds 5-7.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Sinaloa to Tamaulipas, Cuba, Puerto Rico, and southward; also in South America; common.

ILLUSTRATIONS: Plumier, Pl. Am. pl. 148 (as *Aralia foliis ovatis* etc.); Jacq. Hort. Schoenb. 1: pl. 51 (as *Aralia arborea*); Fawcett & Rendle, Fl. Jam. 5: 419 (as *Gilbertia arborea*).

NOTE: The inclusive concept expressed by the above synonymy is conservative. Discussing these entities in 1936 (Brittonia 2: 249, 250), the writer concluded that subspecific entities are not at present advisable in this species, although it is quite possible that future field study of the complex will demonstrate the existence of tendencies worth naming. The only entity described since 1936, *Gilbertia Matudai*, has remotely undulate-crenate leaf-blades, a character shared by several collections from southern Mexico.

4. *Dendropanax stenodontus* (Standley) A. C. Smith, Trop. Woods 66: 3. 1941.

Gilbertia stenodonta Standley, Ann. Mo. Bot. Gard. 24: 196. 1937.

Shrub about 4 m. high, the branchlets slender, subterete, with elongate internodes; petioles 2-5 cm. long; leaf-blades papyraceous, oblong or oblanceolate-oblong, 14-21 cm. long, 4-7 cm. broad, acute at the base, narrowed into a long slender acumen 15-25 mm. long, re-

motely serrate at the margins with spreading or ascending linear teeth 1-4 mm. long, the costa prominent, the secondary nerves 7-9 per side, nearly plane above, raised beneath, anastomosing very close to the margins, the veinlets reticulate, prominulous on both surfaces; umbels 4-6 per inflorescence, arranged in a terminal raceme, the rachis slender, 1.5-3 cm. long, the peduncles slender, straight, 1.5-2.5 cm. long, obscurely bracteate near the middle; flowers 15-25 per umbel, the receptacle small, 2-3 mm. broad, the pedicels slender, 4-5 mm. long at anthesis; flowers 5-merous, the calyx less than 1 mm. long and in diameter, with inconspicuous teeth; petals oblong or deltoid-oblong, about 1.5 mm. long and 0.8 mm. broad; filaments 1-1.5 mm. long, the anthers oblong, about 0.7 mm. long; styles connate into a short conic column, scarcely free at the apex.

TYPE LOCALITY: Panama (Canal Zone).

DISTRIBUTION: Known only from the type locality.

5. *Dendropanax laurifolius* (Marchal) R. C. Schneid. Bull. Torrey Club 36: 644. 1909. Not *D. laurifolius* Dec. & Planch. 1854 (nomen nudum).

Gilibertia laurifolia Marchal; Urban, Symb. Ant. 1: 203. 1899.

Slender tree, 5-10 m. high, the branchlets subterete, cinereous, rugose; petioles straight, up to 12 cm. long, often swollen at the base and the apex; leaf-blades coriaceous, oblong or obovate-oblong, 7-22 cm. long, 3-12 cm. broad, attenuate to broadly cuneate at the base, short-acuminate or cuspidate at the apex, entire or undulate or crenate-denticulate at the margins, 3-nerved from the base (the marginal nerves inconspicuous), the costa prominent beneath, the secondary nerves spreading, with the reticulate veinlets prominulous on both surfaces; umbels 5-11 per inflorescence, arranged in terminal or axillary crowded racemes; rachis very stout, 5-15 mm. long, the peduncles stout, divaricate, 10-40 mm. long, conspicuously bracteate, articulate, and often geniculate near the middle (the bracts coriaceous, ovate, 1-2 mm. long, connate); flowers 5-merous, 15-40 per umbel, the receptacle about 5 mm. broad, the pedicels 3-6 mm. long; calyx carnose, obconic, 1.5-2 mm. long and broad, the teeth small, broadly deltoid, apiculate, often fimbriate; petals oblong, about 2 mm. long and 1 mm. broad; filaments carnose, about 2 mm. long, the anthers about 1 mm. long; styles connate at the base, free above; fruits subglobose, 3-6 mm. in diameter, the styler column about 1 mm. long, the seeds 5.

TYPE LOCALITY: Puerto Rico.

DISTRIBUTION: Puerto Rico, up to 950 m.

6. *Dendropanax gonatopodus* (Donn. Smith) A. C. Smith, Trop. Woods 66: 3. 1941.

Gilibertia gonatopoda Donn. Smith, Bot. Gaz. 55: 434. 1913.

Slender tree, up to 13 m. high, the branchlets stout, rugose, cinereous; petioles slender, up to 12 cm. long, swollen at the base and the apex; leaf-blades chartaceous or thin-coriaceous, broadly elliptic or ovate-elliptic, 11-30 cm. long, 5-18 cm. broad, acute to rounded at the base, obtusely short-acuminate at the apex, entire or undulate at the margins, pinnately veined, the costa prominent, the secondary nerves 8-10 per side, straight, spreading, raised on both surfaces, the veinlets reticulate, often prominulous; umbels 10-16 per inflorescence, arranged in terminal or lateral racemes; rachis stout, 2-5.5 cm. long, the peduncles stout, divaricate, 2-6 cm. long, conspicuously bracteate, articulate, and usually geniculate slightly below the middle (the bracts coriaceous, about 1 mm. long, connate); flowers 20-50 per umbel, the receptacle 4-6 mm. broad, the pedicels slender, 2-12 mm. long; flowers 5-merous, the calyx obconic, about 2 mm. long and 1.5 mm. broad; petals oblong, 1.5-2 mm. long, 1-1.5 mm. broad; filaments carnose, 1-2 mm. long, the anthers subglobose-oblong, small; styles connate, free distally, forming a carnose column about 0.5 mm. long; fruit coriaceous, subglobose, 3-4 mm. in diameter, the styles free and recurved in the distal half; seeds 5.

TYPE LOCALITY: Costa Rica.

DISTRIBUTION: Costa Rica and western Panama, up to 1400 m.

7. *Dendropanax sessiliflorus* (Standley & Smith) A. C. Smith,
Trop. Woods 66: 3. 1941.

Gilibertia sessiliflora Standley & Smith, Ann. Mo. Bot. Gard. 27: 326. 1940.

Tree, glabrous throughout, the branchlets stout, cinereous, rugose; petioles slender, 3-7 cm. long; leaf-blades chartaceous or thin-coriaceous, broadly elliptic, 12-20 cm. long, 7-13 cm. broad, obtuse at the base, obtuse or obtusely short-acuminate at the apex, undulate-crenate at the margins, pinnately veined, the costa prominent, the secondary nerves 7-9 per side, arcuate-ascending, slightly raised on both surfaces, the veinlets faintly prominulous; flower-heads probably 10 or more per inflorescence (detached in our specimen), the rachis not seen; peduncles stout, 2.5-4 cm. long, conspicuously bracteate and articulate near the middle (the bracts coriaceous, 3-4 mm. long, connate); flowers capitate, 10-15 per head, sessile, 5 merous, subtended by papery deltoide bracts about 2 mm. long, the receptacle 5-8 mm. broad; calyx obconic or short-cylindric, 2-3 mm. long and about 2 mm. in diameter, the lobes deltoide, acute, about 0.7 mm. long; petals deltoide-lanceolate, 2.5-3 mm. long, 1-1.5 mm. broad, acute and inflexed at the apex; filaments 3 mm. long at anthesis, the anthers subglobose-oblong, about 0.7 mm. long; styles connate into a short carnose column, the stigmas more or less distinct.

TYPE LOCALITY: Panama (Chiriquí).

DISTRIBUTION: Panama (Chiriquí), about 1150 m.

8. *Dendropanax oliganthus* A. C. Smith,
Trop. Woods 66: 3. 1941.

Gilibertia oligantha A. C. Smith, Brittonia 2: 251. 1936.

Tall tree, the branchlets stout, terete, rugose; petioles striate, shallowly canaliculate, 1.5-6 cm. long; leaf-blades coriaceous, oblong or narrowly obovate, 9-15 cm. long, 3-6.5 cm. broad, acute or obtuse at the base, acute or short-acuminate or obtusely cuspidate at the apex, entire or remotely callose-denticulate at the margins, pinnately veined, the costa prominent, the secondary nerves about 7 per side, curved, with the reticulate veinlets prominulous or plane; umbels probably 3-5 per inflorescence, arranged in abbreviated axillary racemes, the rachis very short, the peduncles stout, about 1.5-2 cm. long, conspicuously bracteate, articulate, and often geniculate 5-10 mm. from the base (the bracts coriaceous, 1-3 mm. long, connate); flowers 8-15 per umbel, the receptacle about 6 mm. broad, the pedicels stout, 3-7 mm. long; flowers 7-9-merous, the calyx cupuliform, 3-4 mm. long and in diameter, the teeth deltoide, short; petals oblong-deltoide, 2.5-3 mm. long, 1-2 mm. broad; filaments short, ligulate, narrowed distally, the anthers globose-oblong, about 1 mm. long; styles connate in a carnose rounded cone; fruit coriaceous, irregularly subglobose, 6-8 mm. in diameter, the styles free and spreading toward the apex.

TYPE LOCALITY: Alta Verapaz, Guatemala.

DISTRIBUTION: Guatemala.

9. *Dendropanax praestans* Standley, Jour. Wash. Acad. 17:
316. 1927.

Gilibertia praestans A. C. Smith, Brittonia 2: 251. 1936.

Small tree, the branchlets cinereous, rugose, densely leafy at the tips; petioles of juvenile leaves 20-25 cm. long, the blades suborbicular in outline, up to 40 cm. in diameter, deeply 5-7-lobed, conspicuously serrate at the margins; petioles of mature leaves striate, 2-8 cm. long, the blades thin-coriaceous, entire or deeply 3-lobed, the lobed blades 8-15 cm. long and broad, conspicuously 3-nerved from base, the lobes narrowly oblong, 1.5-3 cm. broad, attenuate to the apex, irregularly sinuate, the entire blades ovate-oblong, 8-13 cm. long, 3-6 cm. broad, obtuse or broadly cuneate at the base, obtusely acuminate at the apex, irregularly sinuate-serrate, the teeth obtuse, frequently unequal, the costa prominent, the secondary nerves about 6 per side, raised on both surfaces; inflorescence an axillary compound umbel, the primary peduncle stout, 5-13 mm. long, the secondary peduncles 5-10, stout, straight, 13-25

mm. long, conspicuously bracteate at the base (the bracts coriaceous, ovate, 2-3 mm. long), sometimes also bearing near the base a short sheath of connate bracts, the flowers 6-15, the receptacle subglobose, about 3 mm. in diameter, the bractlets inconspicuous, the pedicels stout, 3-5 mm. long; flowers 5-7-merous, the calyx obconic, usually about 2 mm. long and 3 mm. broad, the teeth apiculate; petals deltoid-oblong, 2-3 mm. long, about 1.5 mm. broad; filaments carnose, 1-2 mm. long, the anthers about 1.5 mm. long; styles connate at base, forming a stout carnose column about 1 mm. long, free at the apex; fruit subglobose, 4-5 mm. in diameter, the styles free and recurved in the distal half.

TYPE LOCALITY: Chiriquí, Panama.

DISTRIBUTION: Costa Rica and western Panama, 1700-2200 m.

10. *Dendropanax querceti* Donn. Smith, Bot. Gaz. 42:

297. 1906.

Gilibertia querceti Donn. Smith, Bot. Gaz. 55: 436. 1913.

Small tree or shrub, 1-7 m. high, the branchlets cinereous, often rugose; petioles rugose, up to 40 (usually 5-20) mm. long; leaf-blades thin-coriaceous, elliptic to oblong-lanceolate, 5-13 cm. long, 1.5-5 cm. broad, attenuate at the base, acuminate at the apex, entire or remotely callose-denticulate at the margins, pinnately veined, the costa raised on both surfaces, the short secondary nerves and veinlets usually prominulous; inflorescence a simple terminal or axillary umbel, rarely accompanied by 1 or 2 smaller inconspicuous lateral umbels, the peduncle stout, 5-18 mm. long, the flowers 8-35, the receptacle 2-4 mm. broad, the pedicels 3-15 mm. long; flowers 5-merous; calyx obconic, about 2 mm. long and broad, the teeth small, apiculate; petals oblong, 1.5-2 mm. long, 1-1.5 mm. broad; filaments about 1 mm. long or more, the anthers about 1 mm. long; styles connate into a carnose column about 0.5 mm. long, truncate; fruit subglobose, 4-7 mm. in diameter, the apices of the styles at length minutely spreading; seeds 5.

TYPE LOCALITY: Costa Rica.

DISTRIBUTION: Costa Rica and western Panama, 1400-2200 m.

11. *Dendropanax Schippii* A. C. Smith,

Trop. Woods 66: 3. 1941.

Gilibertia Schippii A. C. Smith, Brittonia 2: 252. 1936.

Shrub 1-2 m. high, the branchlets slender, cinereous, rugose; petioles often canaliculate, 5-25 mm. long; leaf-blades thin-coriaceous, oblong or obovate-elliptic, 7-13 cm. long, 3-5 cm. broad, acute or narrowly cuneate at the base, obtuse or subacute and callose-mucronate at the apex, remotely callose-denticulate at the margins, pinnately veined, the costa prominent beneath, the secondary nerves about 6 per side, with the reticulate veinlets prominulous on both surfaces; inflorescence a simple terminal umbel, the peduncle straight, 15-25 mm. long, bracteate about 5 mm. above the base (the bracts about 3, ovate, 1-2 mm. long, separate); flowers not seen; fruits 10-20 per umbel, the receptacle about 4 mm. broad, the pedicels slender, 5-7 mm. long, the fruits coriaceous, subglobose, 4-7 mm. in diameter, 5-sulcate, surmounted by the short 5-denticulate calyx-limb and stylar column (the styles 5, connate into a column about 1 mm. long, free at the apex).

TYPE LOCALITY: British Honduras.

DISTRIBUTION: Known only from the type locality, near sea level.

12. *Dendropanax darienensis* Seem. Jour. Bot. 2:

300. 1864.

Gilibertia darienensis I. M. Johnston, Contr. Gray Herb. 70: 82. 1924.

Slender tree, the branchlets slender, cinereous, terete; petioles slender, 1-5 cm. long; leaf-blades papyraceous, oblong or obovate-oblong, 10-14 cm. long, 5-6.5 cm. broad, acute at the base, bluntly acuminate at the apex, entire and slightly revolute at the margins, pinnately veined, the costa raised on both surfaces, the secondary nerves about 6 per side, with the veinlets slightly raised; inflorescence a simple umbel, terminal on a short branchlet, the

peduncle 3-6 cm. long, minutely bracteate at the base and inconspicuously bracteate slightly above the base, the flowers about 15 (to 30?), the receptacle about 4 mm. broad, the pedicels filiform, 25-35 (to 50?) mm. long; young fruit ovoid, about 5 mm. in diameter, surmounted by the short persistent 5-denticulate calyx-limb and short styler column, the styles 5, sharply reflexed, free for the distal 0.8 mm.

TYPE LOCALITY: Darien, Panama.

DISTRIBUTION: Known only from the type locality.

13. *Dendropanax cuneifolius* (Wright) Seem. Jour. Bot. 6:

140. 1868.

Hedera cuneifolia Wright; Griseb. Cat. Pl. Cub. 117. 1866.

Schefflera cuneifolia Maza, Anal. Soc. Esp. Hist. Nat. 19: 249. 1890.

Giliberthia cuneifolia Marchal; Urban, Symb. Ant. 1: 201. 1899.

Giliberthia macradenia Urban & Ekman; Urban, Repert. Sp. Nov. 22: 93. 1925.

Shrub or slender tree, up to 7 m. high, the branchlets slender, terete, cinereous; juvenile leaf-blades deeply 3-lobed, up to 16 cm. long and broad, the sinuses rounded, the lobes oblong or obovate, subacute at the apex; mature leaves entire, the petiole up to 6 cm. long (frequently negligible), the blade coriaceous, usually lanceolate-obovate or cuneate-spatulate, occasionally elliptic or oblong, 5-16 cm. long, 1.5-6 cm. broad, attenuate or acute at the base, acute to rounded and often callose-mucronate at the apex, entire and slightly revolute at the margins, conspicuously and densely pellucid-punctate (the glands prominulous on both surfaces), pinnately veined, the costa prominent beneath, the secondary nerves 4-12 per side, spreading; inflorescence a simple terminal umbel, the peduncle 4-18 cm. long, usually straight, minutely bracteate at the base, rarely articulate slightly above the base, the receptacle flattened, 3-5 mm. broad, the flowers 5-merous, 15-35 per inflorescence, the pedicels 7-25 mm. long; calyx obconic, 2-3 mm. long and broad, the limb sometimes fimbriate; petals oblong, 2-3 mm. long and 1.5-2 mm. broad; filaments ligulate, up to 4 mm. long, the anthers oblong, stout, 1.5-2 mm. long; summit of the ovary flattened, the styles connate into a carnos column about 1.5 mm. long, truncate at the apex; fruit subglobose, 4-7 mm. long, the styler column often 2-4 mm. long; seeds 5.

TYPE LOCALITY: Cuba.

DISTRIBUTION: Cuba, Pinar del Río and Isle of Pines to Santa Clara, 700-1000 m.

14. *Dendropanax nervosus* (Urban & Ekman) A. C. Smith,

Trop. Woods 66: 3. 1941.

Giliberthia nervosa Urban & Ekman; Urban, Repert. Sp. Nov. 22: 92. 1925.

Slender tree, the branchlets slender, terete, rugose, cinereous; petioles striate, 0.5-8 cm. long; leaf-blades oblong or obovate-elliptic, 7-15 cm. long, 2.5-5 cm. broad, obtuse or acute at the base, short-acuminate and callose-mucronate at the apex, entire and revolute at the margins, shining above, obscurely punctate, pinnately veined, the costa prominent beneath, the secondary nerves about 9 per side, with the veinlets often prominulous on both surfaces; inflorescence a simple terminal or axillary umbel, the peduncle straight, 4-8 cm. long, the receptacle flattened, 3-4 mm. broad, the flowers 5-merous, 10-15 per umbel, the pedicels 6-8 mm. long; calyx obconic, about 2 mm. long and broad; petals and stamens not seen; summit of the ovary slightly convex, the styles about 1 mm. long, connate at the base, free above, recurved after anthesis.

TYPE LOCALITY: Cuba, Oriente.

DISTRIBUTION: Cuba, Oriente, about 700 m.

15. *Dendropanax filipes* Britton, Bull. Torrey Club

41: 9. 1914.

Giliberthia filipes Fawcett & Rendle, Fl. Jam. 5: 422. 1926.

Slender straggling shrub, up to 3 m. high, the branchlets slender, cinereous, terete; petioles slender, swollen at the base, up to 3 cm. long; leaf-blades thin-coriaceous, oblong-oblancoate,

7-12 cm. long, 1.5-3 cm. broad, obtuse or acute at the base, acute and callose-mucronate at the apex, entire and narrowly revolute at the margins, obscurely pellucid-punctate, pinnately veined, the costa prominent beneath, the secondary nerves about 10 per side; inflorescence a simple axillary or terminal umbel, the peduncle very slender, 4-10 cm. long, often cernuous, inconspicuously bracteate at the base, the receptacle often convex, 2-3 mm. broad, the pedicels filiform, 5-15 mm. long; flowers 5-merous, 10-15 per umbel, the calyx obconic, about 1.5 mm. long and 2 mm. broad, the limb sparsely fimbriate; petals oblong, about 2 mm. long and 1 mm. broad; filaments about 1 mm. long, subequal to the anthers; summit of ovary carnose, conic, surmounted by the minute free styles.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Jamaica.

16. *Dendropanax Blakeanus* Britton, Bull. Torrey Club

39: 4. 1912.

Gilibertia Blakeana Fawcett & Rendle, Fl. Jam. 5: 422. 1926.

Slender tree, about 8 m. high, the branchlets slender, cinereous, subterete; petioles slender, up to 3.5 cm. long; leaf-blades coriaceous, elliptic or obovate-elliptic, 7-10 cm. long and 3-5.5 cm. broad, acute or attenuate at the base, acute and callose-mucronate at the apex, entire and revolute at the margins, pinnately veined, the costa prominent on both surfaces, the secondary nerves 6-8, slightly raised; inflorescence a simple umbel, usually terminal, the peduncle erect, slender, striate, 6-14 cm. long, bracteate at the base, the bracts coriaceous, deltoid, 1-2 mm. long; flowers 5-merous, 10-35 per umbel, the receptacle 5-7 mm. broad, the pedicels 10-20 mm. long; calyx obconic, about 2.5 mm. long, 3-4 mm. broad, the limb essentially truncate; petals oblong, 3-4 mm. long, about 2 mm. broad; filaments carnose, short, the anthers about 2 mm. long; styles connate into a carnose conic column 1.5-2 mm. long, truncate; fruit subglobose, 5-7 mm. in diameter, the styler column persistent, 2-3 mm. long, entire to the apex.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Jamaica.

17. *Dendropanax grandiflorum* Britton, Bull. Torrey Club

39: 3. 1912.

Gilibertia grandiflora Fawcett & Rendle, Fl. Jam. 5: 422. 1926.

Slender tree, 5-10 m. high, the branchlets subterete, cinereous, rugose; petioles stout, rugose, up to 25 mm. long; leaf-blades coriaceous, obovate or obovate-oblong, 8-13 cm. long, 4-7 cm. broad, attenuate or narrowly cuneate at the base, obtuse or rounded at the apex, entire and revolute at the margins, pinnately veined, the costa prominent on both surfaces, the secondary nerves about 10, spreading, raised; inflorescence a simple umbel (rarely with a smaller secondary umbel borne halfway along the peduncle), usually terminal, the peduncle stout, erect, 1.5-5 cm. long, minutely bracteate at the base, conspicuously 2-bracteate just above the base; flowers 5-merous, 4-9 per umbel, the receptacle 4-5 mm. broad, the pedicels often erect, 12-20 mm. long; calyx obconic or campanulate, 6-8 mm. long, 5-7 mm. in diameter, the limb slightly flaring, about 1 mm. long, essentially truncate; petals oblong, 7-8 mm. long, 3-3.5 mm. broad; filaments carnose, short, the anthers oblong, about 4 mm. long; styles connate in a carnose column 4-6 mm. long; fruit coriaceous, elliptic-subglobose, 10-12 mm. long, about 7 mm. broad.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Jamaica, at about 700 m.

18. *Dendropanax selleanus* (Urban & Ekman) A. C. Smith,

Trop. Woods 66: 3. 1941.

Gilibertia selleana Urban & Ekman, Ark. Bot. 20A: 32. 1926.

Shrub or tree, the branchlets slender, terete; petioles slender, striate, 1-5 cm. long; leaf-blades papyraceous, sometimes subentire but usually 3-lobed, 6-10 cm. long, 3-10 cm. broad,

acute or broadly cuneate at the base, acuminate at the apex and at the apices of lobes, undulate or remotely crenate at the margins, densely and minutely (usually pellucid-) punctate, 3- or 5-plinerved from the base, the principal nerves prominent, the secondary nerves few, spreading, slightly raised; inflorescence a simple axillary or terminal umbel, the peduncle straight, erect, 10-15 cm. long, inconspicuously bracteate at the base, the receptacle 5-7 mm. broad, the bracteoles minute, the flowers 5-merous, 40-50 per umbel, the pedicels 10-18 mm. long; calyx cupuliform, 1.5-2 mm. long, about 3 mm. broad, the teeth apiculate; petals oblong, about 3 mm. long and 1.5 mm. broad, reflexed at maturity; stamens not observed; summit of ovary short-conic, the styles connate at the base into a carnosose column about 1.5 mm. long, free and recurved distally.

TYPE LOCALITY: Haiti.

DISTRIBUTION: Haiti, at about 1800 m.

19. *Dendropanax pendulus* (Sw.) Dec. & Planch. Rev. Hort.

IV 3: 107. 1854.

Hedera pendula Sw. Prodr. 51. 1788.

Gilibertia pendula Marchal; Urban, Symb. Ant. 1: 200. 1899.

Gilibertia ovalifolia Fawcett & Rendle, Jour. Bot. 64: 158. 1926.

Shrub or slender tree, 3-8 m. high, the branchlets slender, terete, cinereous; petioles straight, up to 11 cm. long, slightly swollen at the base and the apex; leaf-blades thin-coriaceous, ovate-oblong to narrowly elliptic, up to 15 cm. long and 9 cm. broad, obtuse, rounded, or subcordate at the base, obtuse or cuspidate and callose-mucronate at the apex, entire and narrowly revolute at the margins, pinnately veined, the costa prominent beneath, the secondary nerves about 5 per side, spreading, slightly raised; inflorescence a simple terminal umbel, the peduncle striate, 25-35 cm. long or more, cernuous, minutely bracteate at the base, conspicuously bracteate and articulate 5-15 cm. above the base (the bracts ovate, 1-2 mm. long, often connate), the receptacle 6-10 mm. broad, the flowers 5-merous, 60-120, the pedicels slender, striate, 15-20 mm. long; calyx carnosose, cupuliform, about 2 mm. long and 3 mm. broad, the limb often minutely fimbriate; petals oblong, 3-4 mm. long, about 2 mm. broad; filaments carnosose, up to 5 mm. long, the anthers about 2 mm. long; styles firmly connate into a carnosose column 1-1.5 mm. long, truncate at the apex.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Jamaica, about 400-600 m.

ILLUSTRATION: Sw. Ic. Pl. Ind. Occ. pl. 9 (as *Hedera pendula*).

20. *Dendropanax nutans* (Sw.) Dec. & Planch. Rev. Hort.

IV 3: 107. 1854.

Hedera nutans Sw. Prodr. 51. 1788.

Gilibertia nutans Marchal; Urban, Symb. Ant. 1: 201. 1899.

Tree, 4-7 m. high, the branches drooping, the branchlets slender, cinereous, terete, rugose; petioles up to 7 cm. long; leaf-blades thin-coriaceous, broadly elliptic or ovate-elliptic, 6-14 cm. long, 2.5-9 cm. broad, acute to attenuate at the base, obtuse, acute, or cuspidate and callose-mucronate at the apex, entire or undulate and narrowly revolute at the margins, often pellucid-punctate, pinnately veined, the costa prominent, the secondary nerves about 6 per side, slightly raised; inflorescence a simple terminal or axillary umbel, the peduncle straight, 3-11 cm. long, inconspicuously bracteate at the base, sometimes also bracteate and articulate 12 mm. or less above the base (the bracts coriaceous, about 2 mm. long, often connate), the receptacle flattened or convex, 8-12 mm. broad, the flowers 5-merous, 50-120 per umbel, the pedicels 15-30 mm. long; calyx obconic, 2-3 mm. long, 3-4 mm. broad, the limb undulate or denticulate; petals about 4 mm. long, 2-2.5 mm. broad; filaments up to 5 mm. long, the anthers about 1.5 mm. long; styles connate in a stout carnosose truncate column 1.5-2 mm. long; fruit coriaceous, subglobose, 6-8 mm. in diameter, the seeds 5.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Jamaica, 1700-2200 m. or perhaps lower.

21. *Dendropanax Swartzii* (Fawcett & Rendle) A. C. Smith,
Trop. Woods 66: 3. 1941.

Gilbertia Swartzii Fawcett & Rendle, Jour. Bot. 64: 158. 1926.

Slender tree, the branchlets slender, cinereous, terete; petioles up to 5 cm. long; leaf-blades chartaceous, elliptic-lanceolate, 7-15 cm. long, 2-4.5 cm. broad, attenuate at the base, short-acuminate and callose-mucronate at the apex, entire or slightly undulate at the margins, minutely and densely pellucid-punctate, pinnately veined, the costa raised beneath, the secondary nerves about 6 per side, sharply ascending, slightly raised; inflorescence a simple terminal umbel, the peduncle striate, 10-23 cm. long, conspicuously bracteate and articulate 15-30 mm. above the base (the bracts coriaceous, about 2 mm. long, connate), the receptacle flattened, 5-8 mm. broad, the flowers 5-merous, 50-90, the pedicels 15-20 mm. long; calyx obconic, 3-4 mm. long and broad, the limb essentially truncate; petals oblong, about 3 mm. long and 2 mm. broad; filaments short, the anthers about 2 mm. long; styles connate into a carnosic conic column about 1.5 mm. long, truncate; fruit ellipsoid, about 6 mm. long, the seeds 5.

TYPE LOCALITY: Jamaica.
DISTRIBUTION: Jamaica.

22. *Dendropanax grandis* Britton, Bull. Torrey Club
39: 4. 1912.

Gilbertia grandis Fawcett & Rendle, Fl. Jam. 5: 422. 1926.

Tree, up to 16 m. high, the branchlets stout, cinereous, terete; petioles stout, 4-10 cm. long, swollen at the base; leaf-blades coriaceous, ovate or broadly elliptic, 11-15 cm. long, 6-10 cm. broad, rounded and abruptly cuneate at the base, rounded and obtusely callose-tipped at the apex, entire and narrowly revolute at the margins, pinnately veined, the costa very prominent, the secondary nerves about 8 per side, raised on both surfaces, the veinlets reticulate, prominulous; inflorescence a simple terminal umbel, the peduncle stout, about 4 cm. long, bracteate at the base and slightly above (the bracts coriaceous, ovate, about 2 mm. long), the receptacle carnosic, about 10 mm. broad, the flowers about 50, the pedicels 18-20 mm. long; calyx carnosic, cupuliform, 3-4 mm. long, 4-5 mm. in diameter, the limb truncate or irregularly undulate; petals oblong, 4-5 mm. long, 1.5-2 mm. broad; filaments 5-6 mm. long, the anthers 1.5-2 mm. long; styles connate in a carnosic conic truncate column about 1 mm. long.

TYPE LOCALITY: Jamaica.
DISTRIBUTION: Jamaica.

23. *Dendropanax cordifolius* Britton, Bull. Torrey Club
39: 4. 1912.

Gilbertia cordifolia Fawcett & Rendle, Fl. Jam. 5: 421. 1926.

Slender tree, about 6 m. high, the branchlets cinereous, rugose, subterete; petioles stout, swollen at the base, 2-11 cm. long; leaf-blades chartaceous, broadly ovate, 9-20 cm. long, 6-12 cm. broad, cordate or rounded at the base, obtuse, acute, or short-cuspidate at the apex, entire and narrowly revolute at the margins, pinnately veined, the costa very prominent, the secondary nerves about 5 per side, spreading, raised on both surfaces, the veinlets copiously reticulate, prominulous on both surfaces; inflorescence a simple terminal umbel, the peduncle striate, stout, 12-16 cm. long, minutely bracteate at the base, conspicuously bracteate slightly above the base (the bracts broadly ovate, 1-2 mm. long, often connate), the receptacle carnosic, convex, about 10 mm. broad, the flowers 60-80, the pedicels 20-30 mm. long; calyx obconic, 3-4 mm. long, 4-5 mm. in diameter, the limb truncate; petals oblong, 4-5 mm. long, about 1.5 mm. broad; filaments 5-6 mm. long, the anthers about 1.5 mm. long; stylar column stout, conic, 1-2 mm. long, nearly 1 mm. in diameter near the apex.

TYPE LOCALITY: Jamaica.
DISTRIBUTION: Jamaica.

24. *Dendropanax elongatus* Britton, Bull. Torrey Club
39: 3. 1912.

Gilbertia elongata Fawcett & Rendle, Fl. Jam. 5: 421. 1926.

Slender tree, about 8 m. high, the branchlets stout, cinereous, subterete; petioles stout, often canaliculate, up to 6 cm. long; leaf-blades coriaceous, oblong or elliptic-lanceolate, 11–18 cm. long, 3–6 cm. broad, obtuse or rounded at the base, acute and callose-mucronate at the apex, entire or slightly undulate at the margins, pinnately veined, the costa very prominent, the secondary nerves about 10, spreading, slightly raised; inflorescence a simple terminal umbel, the peduncle 8–14 cm. long, minutely bracteate at the base, conspicuously bracteate about one-fourth of the length above the base (the bracts 3–5, ovate, 1–2 mm. long, connate), the receptacle carnosely flattened or sharply recurved, 6–10 mm. broad, the flowers apparently 50–100 per umbel, immature and subsessile on our specimen.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Jamaica.

8. *SCHEFFLERA* Forst. Char. Gen. 45. 1776;
nomen conservandum propositum.

Sciadaphyllum P. Br. Hist. Jam. 190. 1756.

Sciadaphyllum Reichenb. Consp. 145. 1828.

Shrubs or small trees, rarely epiphytic, glabrous or variously pubescent. Leaves palmately compound or rarely simple (in our species only in *S. epiphytica*), the petiole dilated at the base into a coriaceous ligulate sheath, this often very conspicuous, the leaflets of compound leaves radiate, sometimes diverse in size. Inflorescences terminal or lateral, ample, paniculately umbelliferous or rarely (in our species) capituliferous, the branchlets subtended by small coriaceous bracts, the umbels (or heads) numerous, the pedicels continuous with the calyx. Flowers hermaphrodite, 5-merous. Calyx obovate or cupuliform, the limb short, erect, usually denticulate. Petals valvate, in our species usually connate and calyptrate, subacute and slightly thickened at the apex. Stamens inflexed in the bud, the anthers oblong, obtuse at both ends, the locules loosely coherent or separate. Disk carnosely, small, slightly raised at the margin. Styles 5–7, connate into a column or free distally. Ovary-wall carnosely, the locules and ovules 5–7. Fruit coriaceous, subglobose, surmounted by the persistent calyx-limb and stylar column or styles, the seeds 5–7 or fewer, oblong.

Type species, *Schefflera digitata* Forst.

Schefflera has recently been proposed for conservation over *Sciadaphyllum* by the writer (Trop. Woods 66: 3–5. 1941). The spelling *Sciadaphyllum* vs. *Sciadophyllum* has also been discussed (Brittonia 2: 254. 1936).

Epiphytic shrub with simple short-petiolate leaves; Panama.

Shrubs or small trees with palmately compound long-petiolate leaves.

Leaflets white-farinose-puberulent beneath; inflorescence (including petals without) densely and uniformly appressed-white-tomentose throughout; Jamaica.

Leaflets glabrous or sparsely appressed-pubescent beneath; inflorescence not tomentose as above, the petals glabrous.

Summit of ovary short-conic or rounded, the styles completely fused and essentially suppressed; petals apparently separating at anthesis, strongly 3–5-parallel-veined; Martinique.

Summit of ovary prolonged into obvious styles or a stylar column; petals connate, calyptrate, faintly veined.

Petiolar ligule oblong, 1–3 cm. long; styles free in the distal half, conspicuously recurved or spreading in fruit.

Petioles 10–40 cm. long; blades of the leaflets thin-coriaceous; petals 2–2.5 mm. long; Jamaica.

Petioles 2.5–8 cm. long; blades of the leaflets chartaceous; petals about 1.5 mm. long; Costa Rica.

Petiolar ligule oblong-lanceolate or oblong-linear, 3–10 cm. long; styles connate into a carnosely column, minutely free only at the apices; Nicaragua to Panama.

Leaflets 4–9; flowers distinctly pedicellate in 5–14-flowered umbels.

Blades of the leaflets 3–8 cm. broad, the secondary nerves 12–18 per side; inflorescence 1–3-branched near the base, the umbel-peduncles 10–15 mm. long.

1. *S. epiphytica*.

2. *S. troyana*.

3. *S. Belangeri*.

4. *S. Sciadaphyllum*.

5. *S. Brenesii*.

6. *S. systyla*.

Blades of the leaflets (6-) 8.5-16 cm. broad; inflorescence copiously branched, the umbel-peduncles 5-10 mm. long.

Flowers about 5 per umbel; blades of the leaflets 25-40 × 9.5-16 cm., sparsely appressed-pubescent beneath, the secondary nerves 15-20 per side.

Flowers 7-14 per umbel; blades of the leaflets 15-30 × (6-) 8.5-11 cm., glabrous (or tomentellous along the costa beneath when young), the secondary nerves 7-12 per side.

Leaflets 8-21; flowers sessile, in 10-20-flowered heads (fruits sometimes as few as 5 per head).

7. *S. nicaraguensis*.

8. *S. Seibertii*.

9. *S. robusta*.

1. *Schefflera epiphytica* A. C. Smith, Ann. Mo. Bot. Gard. 28: 437. 1941.

Epiphytic shrub 1.5-2 m. high, glabrous throughout except for the inflorescence, the branchlets stout, striate; leaves simple, the petiole stout, 7-15 mm. long, broadly winged below, distally lightly canaliculate, toward the middle conspicuously ligulate, the ligule coriaceous, oblong-linear, up to 2.5 cm. long, persistent; leaf-blades chartaceous, elliptic-oblong, 18-25 cm. long, 9-12 cm. broad, subcordate or rounded at the base, abruptly acuminate at the apex (the acumen acute, up to 1 cm. long), entire at the margins, the costa prominent, the secondary nerves 10-16 per side, spreading, curved toward the margins, raised on both surfaces, the veinlet-reticulation prominulous; inflorescence compound-paniculate, the rachis and branches slender, puberulent, soon glabrescent, the peduncle essentially lacking, the rachis 2-4 cm. long, the branches few, 15-35 cm. long, subtended by chartaceous oblong bracts 1.5-3 cm. long, the peduncles numerous, slender, up to 9 mm. long at anthesis and 15 mm. long in fruit, puberulent, soon glabrescent; flowers 5-merous, 3-8 per umbel, the pedicels slender, 3-6 mm. long; calyx obconic, 1-1.5 mm. long and slightly broader, the limb obscurely apiculate; petals glabrous, membranous, connate into a semiglobose umbrone calyptra 2-2.5 mm. in diameter; filaments slender, 0.4-0.7 mm. long, the anthers about 1.5 mm. long; styles 5, connate into a carnosous column, minutely free at the apices; fruit subglobose, up to 3.5 mm. in diameter, conspicuously 5-costate, surmounted by the disk and stylar column.

TYPE LOCALITY: Panama (Coclé).

DISTRIBUTION: Panama, known only from the type locality, about 1000 m.

2. *Schefflera troyana* (Urban) A. C. Smith, Trop. Woods 66: 5. 1941.

Sciadophyllum troyanum Urban, Symb. Ant. 5: 451. 1908.

Actinophyllum troyanum R. C. Schneid. Bull. Torrey Club 36: 644. 1909.

Small tree, up to 7 m. high, the branchlets stout, brownish, rugose; petioles subterete, up to 40 cm. long, minutely puberulent or glabrous, lenticellate near base, the ligule coriaceous, broadly oblong, 1-2 cm. long; leaflets 6-12, the petiolules deciduously puberulent, up to 9 cm. long, the blades coriaceous, oblong, up to 25 cm. long and 10 cm. broad, rounded or subcordate at the base, acuminate at the apex, slightly recurved at the margins, glabrous above, white-farinose-puberulent beneath, the costa prominent, the lateral nerves 9-11 per side, often impressed above, raised beneath; inflorescences essentially terminal, 1-3-branched from the base, densely and uniformly appressed-white-tomentose throughout, the branches stout, up to 45 cm. long, the peduncles stout, 5-10 mm. long, the bractlets small, somewhat coalescent, the flowers sessile or short (up to 2 mm.)-pedicellate; calyx coriaceous, obconic, at anthesis 2-3 mm. long, about 4 mm. in diameter, the limb glabrous within, the teeth broadly deltoid, acute, about 0.5 mm. long; bud conic, apiculate, the petals thin-carnosous, oblong-deltoid, about 3 mm. long and 1.5 mm. broad, often connate and calyptrate, tomentellose without, glabrous within; filaments carnosous, about 1 mm. long, the anthers 1-1.2 mm. long; styles 5, carnosous, erect, connate at the base, free distally, 1-1.5 mm. long, slightly incurved at the apex; young fruit tomentose, the styles spreading.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Jamaica, 650-900 m.

3. *Schefflera Belangeri* (Marchal) Harms;
E. & P. Nat. Pfl. 3⁸: 37. 1894.

Sciadophyllum Belangeri Marchal, Bull. Acad. Belg. II. 47: 92. 1879.
Actinophyllum Belangeri R. C. Schneid. Bull. Torrey Club 36: 643. 1909.

Shrub or small tree (?), glabrous throughout (except the inflorescences); petioles striate; leaflets about 7, the blades thin-coriaceous, oblong or elliptic, 12-18 cm. long, 6-9 cm. broad, rounded or obtuse at the base, acuminate at the apex (the acumen 1-2 cm. long), entire, thickened and slightly undulate at the margins, the costa and 6-9 arcuate secondary nerves prominent, the veinlets copiously reticulate, prominulous on both surfaces; inflorescences incomplete in our specimen, the branches striate, glabrous or sparsely puberulent, the bracts elliptic-lanceolate, subciliate (according to Marchal), the peduncles about 10 mm. long, with the pedicels sparsely tomentellose, the bractlets apparently deciduous, the pedicels 6-15 per umbel, about 1.5 mm. long; flowers glabrous, the calyx broadly obconic, about 1.5 mm. in diameter, the teeth broadly deltoid, submembranous, acute; petals 5 or 6, submembranous, oblong, about 2.5 mm. long and 1 mm. broad, loosely connate, apparently free at anthesis, the veins 3-5, distinct, parallel, ending in the apex; filaments thin-carnose, 1-2 mm. long, the anthers 1-1.5 mm. long; summit of the ovary short-conic or rounded, carnose, the styles completely fused, suppressed; locules 5 or 6.

TYPE LOCALITY: Martinique.
DISTRIBUTION: Martinique.

4. *Schefflera Sciadophyllum* (Sw.) Harms; E. & P. Nat. Pfl. 3⁸:
37 [as *Schefflera Sciadophyllum* (L.) Harms]. 1894.

Aralia Sciadophyllum Sw. Prodr. 55. 1788.
Hedera Sciadophyllum Sw. Fl. Ind. Occ. 1: 519. 1797.
Sciadophyllum Brownii [sic] Spreng. Syst. 1: 953. 1825.
Actinophyllum Sciadophyllum [sic] R. C. Schneid. Bull. Torrey Club 36: 643. 1909.
Sciadophyllum praetermissum C. Norman; Fawcett & Rendle, Jour. Bot. 64: 159. 1926.

Shrub or tree up to 10 m. high, glabrous throughout (except the inflorescences), the branchlets terete, rugose, lenticellate; petioles striate, 10-40 cm. long, often lenticellate near the base, the ligule coriaceous, broadly oblong, often up to 3 cm. long; leaflets 5-16, the large and small ones often mixed, the petiolules up to 9 cm. long, slightly swollen at the base, the blades thin-coriaceous, elongate-oblong, up to 25 cm. long and 10 cm. broad, obtuse, rounded, or subcordate at the base, short-acuminate at the apex, entire and slightly undulate at the margins, the costa prominent, the lateral nerves spreading, slightly raised on both surfaces; inflorescences lateral or terminal, consisting of 1-6 elongate branches, these stout, up to 70 cm. long, minutely pale-tomentellose or glabrescent, the peduncles slender, 2-15 mm. long, with the pedicels and calyces cinereous-puberulent, soon glabrous, the bractlets 1-2 mm. long, frequently coalescent, the pedicels 6-10 per umbel, up to 2 mm. long at anthesis, to 4 mm. long in fruit; flowers 5-merous, the calyx coriaceous, obconic or cupuliform, at anthesis about 2 mm. long and 3 mm. in diameter, cinereous-puberulent especially near the base, glabrescent, the teeth often ciliate; bud often apiculate, the petals thin-carnose, glabrous, deltoid, 2-2.5 mm. long, 1.5-2 mm. broad; filaments very short, at length to 2.5 mm. long, carnose, the anthers 1-1.5 mm. long, stout; styles carnose, 1-1.5 mm. long, united at the base into a short cone, free and erect distally, obliquely truncate and somewhat incurved at the apex; fruit sharply 5-angled, 3-4 mm. in diameter, the styles connate about half their length, spreading distally.

TYPE LOCALITY: Jamaica.
DISTRIBUTION: Jamaica, 500-1900 m.
ILLUSTRATIONS: P. Br. Hist. Jam. pl. 19. f. 1, 2; Fawcett & Rendle, Fl. Jam. 5: 415.

5. *Schefflera Brenesii* A. C. Smith,
Trop. Woods 66: 5. 1941.

Sciadophyllum chartaceum A. C. Smith, Field Mus. Publ. Bot. 18: 1562. 1938. Not *Schefflera chartacea* Merr. 1915.

Shrub (?), glabrous throughout (except the young inflorescences), the branchlets terete; petioles 2.5-8 cm. long, the ligule coriaceous, oblong-lanceolate, 1.5-2.5 cm. long, deciduous;

leaflets probably 5 (detached in our specimens), the petiolules slender, 1-4 cm. long, the blades chartaceous, oblong or oblong-ovate or oblong-lanceolate, 10-18 cm. long, 4.5-9 cm. broad, acute or obtuse at the base, caudate-acuminate at the apex (the acumen acute, 1-2 cm. long), entire at the margins, the costa prominent beneath, the secondary nerves 7-13 per side, arcuate-spreading, raised on both surfaces; inflorescence apparently narrowly paniculate (incomplete in our specimens), 15-20 cm. long, laxly pale-puberulent throughout when young, soon glabrous, the peduncles slender, 2-10 mm. long, the pedicels 3-6 per umbel, 1-3 mm. long; flowers 4- or 5-merous, the calyx cupuliform, at anthesis 1-1.5 mm. long including the short denticulate limb, about 1 mm. in diameter; petals membranous, connate, deltoid, 1.5 mm. long, brown-lineolate; filaments short, the anthers deltoid, 1-1.2 mm. long; styles 4 or 5, free distally; fruit angled, 3-4 mm. in diameter, the styler column coriaceous, the styles conspicuously recurved, the seeds 5 or fewer.

TYPE LOCALITY: Costa Rica.

DISTRIBUTION: Costa Rica.

6. *Schefflera systyla* (Donn. Smith) Viguier, Ann. Sci. Nat.

IX. 9: 363. 1909.

Sciadophyllum systylum Donn. Smith, Bot. Gaz. 31: 113. 1901.

Shrub or small tree, up to 10 m. high, the young parts ferruginous-tomentellose, at length glabrous, the branchlets terete, rugose; petioles terete, 15-30 cm. long, the ligule coriaceous, oblong-lanceolate, 3-8 cm. long, deciduous; leaflets 7-9, the petiolules shallowly canaliculate, 3-6 cm. long, the blades thin-coriaceous, elongate-oblong, 12-25 cm. long, 3-8 cm. broad, obtuse or rounded at the base, caudate-acuminate at the apex (the acumen 2-4 cm. long), entire or slightly undulate at the margins (the juvenile leaflets serrate?), the costa and 12-18 arcuate-ascending lateral nerves prominent on both surfaces; inflorescence terminal, 1-3-branched near the base, the branches 30-40 cm. long, the peduncles spreading, slender, 10-15 mm. long, with the pedicels deciduously tomentellose, the pedicels 7-10 per umbel, 3-5 mm. long; flowers 5-merous, the calyx carnos, obconic, at anthesis about 1 mm. long, 1.5-2 mm. in diameter, closely brownish-tomentellose, the limb membranous, truncate; bud conic, rounded at the apex, the petals submembranous, glabrous, deltoid, 1.5-2 mm. long, about 1.5 mm. broad; filaments thin-carnose, at length to 2.5 mm. long, the anthers about 1 mm. long; styles 5-7, less than 1 mm. long, coherent into a carnos column, minutely free at the apex (or not); fruit sharply angled, 2.5-4 mm. in diameter, the styler column coriaceous, up to 2 mm. long, the styles often minutely spreading at the apex, the seeds 5-7 or fewer.

TYPE LOCALITY: Costa Rica.

DISTRIBUTION: Costa Rica, 900-1800 m.

7. *Schefflera nicaraguensis* (Standley) A. C. Smith,

Trop. Woods 66: 5. 1941.

Sciadophyllum nicaraguense Standley, Jour. Wash. Acad. 17: 316. 1927.

Essentially glabrous shrub, 2-3 m. high, the branchlets stout; petioles stout, terete, striate, about 40 cm. long, the ligule coriaceous, oblong-lanceolate, about 8 cm. long; leaflets 4-8, the petiolules stout, 4-13 cm. long, swollen at the base and the apex, the blades thin-coriaceous, oblong, 25-40 cm. long, 9.5-16 cm. broad, cuneate to rounded at the base, acuminate at the apex (the acumen about 2 cm. long), entire at the margins, glabrous above, sparsely appressed-pubescent beneath, the costa prominent, the lateral nerves 15-20 per side, spreading, raised on both surfaces; inflorescence fragmentary in our specimen, the branches, peduncles, pedicels, and calyces minutely brown-strigulose, the bracts and bractlets deciduous, the umbels racemously arranged, the peduncles 5-10 mm. long, the pedicels about 5 per umbel, 2-3 mm. long; flowers 5-merous, the calyx carnos, obconic, about 1 mm. long and 2 mm. in diameter, the limb submembranous, the teeth cuspidate, short, the sinuses flattened; petals and stamens not seen; styles 5, less than 1 mm. long, connate into a carnos cone, free at the apices.

TYPE LOCALITY: Nicaragua (San Juan del Norte).

DISTRIBUTION: Known only from the type locality.

8. *Schefflera Seibertii* A. C. Smith,
Trop. Woods 66: 5. 1941.

Shrub or tree up to 5 m. high, the branchlets stout, sparsely ferruginous-tomentellose, soon glabrous; petioles stout, terete, lenticellate, up to 32 cm. long, the ligule coriaceous, oblong-linear, up to 10 cm. long, subacute, cinereo-sericeous; leaflets 5 or 6, the petiolules subterete, slender, 2-8 cm. long, swollen at the base and the apex, the blades chartaceous, glabrous (or furfuraceous-tomentellose along the costa beneath when young), elliptic-oblong, 15-30 cm. long, (6-) 8.5-11 cm. broad, broadly obtuse to subcordate at the base, cuspidate to acuminate at the apex (the acumen 5-10 or occasionally to 30 mm. long), entire at the margins, the costa prominent, the secondary nerves 7-12 per side, curved, slightly raised on both surfaces, the veinlet-reticulation copious; inflorescence robust, up to 50 cm. long or more, compound-paniculate, the rachis and branches subterete, sparsely puberulent or sericeous, at length subglabrescent, the branches several, up to 45 cm. long, subtended by papyraceous oblong-linear bracts 2.5-3.5 cm. long, the peduncles very numerous, slender, 7-10 mm. long; flowers 5-merous, 7-14 per umbel, the pedicels slender, puberulent, 3-4 mm. long; calyx cupuliform, 1-1.5 mm. in diameter, minutely 5-dentate; petals membranous, essentially glabrous, connate into a calyptra; filaments slender, about 2 mm. long, the anthers oblong, about 1 mm. long; styles 5, connate into a carnosous column about 0.7 mm. long, minutely free at the apices.

TYPE LOCALITY: Panama (Chiriquí Lagoon region).

DISTRIBUTION: Panama; known only from the vicinity of the type locality.

9. *Schefflera robusta* A. C. Smith,
Trop. Woods 66: 5. 1941.

Sciodaphyllum robustum A. C. Smith, Brittonia 2: 254. 1936.

Small tree (?), the young parts cinereo-puberulent, soon glabrous, the branchlets stout, terete, rugose; petioles terete, lenticellate, up to 55 cm. long or more, sheathing at the base, the ligule coriaceous, oblong-lanceolate, 3-9 cm. long; leaflets 8-21, the petiolules subterete, 4-20 cm. long, the blades thin-coriaceous, elongate-oblong, (12-) 15-30 cm. long, 4-11 cm. broad, obtuse or rounded at the base, caudate-acuminate at the apex (the acumen 2-3 cm. long), entire at the margins, the costa and 8-20 pairs of secondary nerves somewhat prominent; inflorescence terminal, robust, compound-paniculate, up to 60 cm. long, the branches numerous, 30-50 cm. long, the peduncles 3-10 mm. long; flowers sessile, the heads compact, 3-6 mm. in diameter at anthesis, 10-20-flowered; flowers 5-merous, glabrous, the calyx cupuliform, small, the limb minute, truncate or undulate; petals membranous, valvate, connate, deltoid, about 1.5 mm. long; filaments slender, about 1.5 mm. long, the anthers small, globose-oblong; styles 5, about 1.5 mm. long, coherent into a carnosous column, free at the apex; locules and ovules 5; fruits about 5-15 per head, sharply 5-angled, about 3 mm. in diameter, with a thick stylar column about 1.5 mm. long, the styles shortly free and spreading at the apex.

TYPE LOCALITY: Costa Rica.

DISTRIBUTION: Costa Rica and Panama.

9. *OREOPANAX* Dec. & Planch. Rev. Hort. IV.
3: 107. 1854.

Monopanax Regel, Gartenflora 18: 35. 1869.

Shrubs or trees, frequently scandent epiphytes when juvenile, sometimes epiphytic at maturity, glabrous or variously pubescent. Leaves palmately compound or simple, lobed or entire, the petiole often dilated at the base but without a prominent extended ligule. Inflorescence terminal or subterminal, often ample and spreading, paniculately or racemously capituliferous, the peduncles swollen distally, the flowers sessile or essentially so (the staminate flowers short-pedicellate in *O. echinops*) in globose or ellipsoid heads, the heads bracteolate. Flowers polygamo-dioecious (rarely polygamo-monoecious), subtended by 2 or more bracteoles, 5 (rarely 4- or 6)-merous. Calyx cupuliform, the limb short, usually minutely denticulate. Petals valvate, white or greenish, usually submembranous, subacute at the apex. Stamens inflexed

in the bud, the anthers oblong, obtuse at both ends. Styles in staminate flowers 1 or 2, slender, imperfect, in pistillate flowers 2-10, free or slightly connate at the base. Ovary thick-walled, the locules as many as the styles. Fruit subglobose or ellipsoid, surmounted by the persistent calyx-limb, the styles often deciduous, the seeds as many as the locules or fewer by abortion.

Type species, *Aralia capitata* Jacq.

Leaves digitately compound; inflorescence racemously capituliferous (rarely with 1 or 2 short lateral branches from the base).

Leaflets usually 5 (sometimes 3), often sessile, stellate-pilose with stalked hairs; staminate heads 13-20 mm. in diameter; bracteoles 5-7 mm. long, densely villose; staminate pedicels often 2-5 mm. long; Mexico and Guatemala.

Leaflets usually 5-10, petiolulate; staminate heads 5-13 mm. in diameter; bracteoles not more than 3 mm. long, puberulent or glabrous; staminate flowers sessile.

Lower surface of leaflets glabrous or stellate-pubescent, the hairs small, sessile, about 8-branched, often simulating scales; Mexico to Panama.

Lower surface of leaflets stellate-pilose, the hairs slender, 4- or 5-branched, stalked; Mexico and Guatemala.

Leaves simple; inflorescence paniculately capituliferous.

Leaf-blades 5-9-lobed.

Lower surface of leaves closely stellate-tomentose, the hairs many-branched, sessile, obscuring the surface; styles and locules of hermaphrodite flowers and fruits 5; Martinique and Guadeloupe.

Leaves cordate at the base, lobed about one-third their length, the veinlets immersed, obscured beneath by the tomentum; inflorescence comparatively few-branched, up to 20 cm. long and broad.

Leaves truncate or obtuse at the base, lobed one-half to three-quarters their length, the veinlets prominent beneath; inflorescence many-branched, up to 40 cm. long and broad.

Lower surface of leaves stellate-tomentellose, the hairs 4-6-branched, stalked, not obscuring the surface; styles and locules of the hermaphrodite flowers and fruits 2 or 3; continental.

Heads not more than 10 mm. in diameter, the bracteoles short-tomentellose or glabrous, the fruits 5-10 per head; lobes of the leaf irregularly lobed or sinuate at the margins; Mexico to Honduras.

Heads (hermaphrodite) 12-17 mm. in diameter, the bracteoles copiously and persistently bright ferruginous-tomentose (tomentum 2-3 mm. long), the fruits numerous (15-35 per head); lobes of the leaf (not known for no. 8) entire at the margins.

Inflorescence brownish or dark ferruginous-tomentose; hermaphrodite heads solitary, pedunculate; British Honduras.

Inflorescence pale ferruginous-tomentose; hermaphrodite heads paired, sessile; Nicaragua.

Leaf-blades entire or 3-dentate or 3-lobed (very rarely shallowly 5-lobed in *O. Sanderianus*).

Apex of leaves acuminate, cuspidate, or acute.

Leaves glabrous.

Leaf-blades entire (sometimes broadly lobed in no. 12); heads pedunculate.

Basal lateral nerves of the leaf-blades inconspicuous, the venation essentially pinnate, the blades narrowly elliptic or oblong or obovate, 3-5 times as long as broad.

Leaf-blades 2-6 cm. broad, glabrous, the secondary nerves 6-10 per side; staminate heads 1.5-4 mm. in diameter, the flowers 4-8 or sometimes to 15 per head; bracts and bracteoles of fruiting heads inconspicuous, the mature fruits 3-5 mm. in diameter; Mexico to Panama.

Leaf-blades 5-10 cm. broad, sparsely stellate-pilose beneath, glabrescent, the secondary nerves 8-14 per side; staminate heads 3-7 mm. in diameter, the flowers 20-28 per head; bracts and bracteoles of fruiting heads large, 3-4 mm. long, about 7 mm. broad, the mature fruits 6-8 mm. in diameter; Guatemala.

Basal lateral nerves of the leaf-blades 1 or 2 pairs, conspicuous, ascending or spreading, the blades 1-2 (rarely 3) times as long as broad; staminate flowers 10-25 per head.

1. *O. echinops*.

2. *O. xalapensis*.

3. *O. Langlassei*.

4. *O. Dussi*.

5. *O. ramosissimus*.

6. *O. peltatus*.

7. *O. lachnocephalus*.

8. *O. geminatus*.

9. *O. Liebmanni*.

10. *O. Steyermarkii*.

- Mature leaves ovate or elliptic or oblong-elliptic, averaging slightly more than half as broad as long (widespread and common species).
- Mature leaves broadly deltoid or rhomboid-ovate, nearly as broad as long.
- Young leaves peltate, equally 3-lobed, the mature leaves acute or gradually acuminate at the apex, rounded or cordate or truncate or shallowly peltate at the base; branchlets brownish; Guatemala and southern Mexico.
- Young leaves not lobed, the mature leaves abruptly acuminate at the apex, usually broadly cuneate at the base; branchlets nigrescent, conspicuously lenticellate; Costa Rica.
- Leaf-blades suborbicular, tridentate, the teeth broadly deltoid, cuspidate, about 1 cm. long; fruiting heads sessile; Mexico.
- Leaves beneath and young branchlets stellate-tomentose.
- Bracts of the inflorescence subtending principal branches lanceolate, often subfoliaceous in texture, 5-30 mm. long.
- Leaf-blades scabrous above with numerous prominent papillae, densely tomentose beneath; staminate inflorescence up to 20 cm. long and broad; staminate flower-heads with ovate bracts and bracteoles not enveloping the flowers; Mexico.
- Leaf-blades smooth above, sparsely pilose beneath; hermaphrodite inflorescences compact, 5-7 cm. long and broad; hermaphrodite flowers 2 or 3 per head, the subtending bracts and bracteoles very broad, concave, enveloping the flowers; Guatemala.
- Bracts of the inflorescence subtending the principal branches small, less than 2 mm. long.
- Hairs of young branchlets with very stout and conspicuous stalks about 2 mm. long; inflorescence ample, up to 20 cm. long and broad; styles of hermaphrodite flowers 5 or 6; Costa Rica.
- Hairs of young branchlets sessile or with short slender stalks.
- Leaf-blades thin-coriaceous, 3- or 5-nerved from the base; staminate flowers 8-20 per head; fruits usually 6 or more per head, the subtending bracts and bracteoles inconspicuous; Costa Rica and western Panama.
- Styles of hermaphrodite flowers and fruits 4 or 5; inflorescence up to 10 cm. long and broad; leaf-blades 3.5-7 cm. broad, the hairs of the lower surface short-stalked or subsessile.
- Styles of hermaphrodite flowers and fruits 9-12; inflorescence up to 25 cm. long and broad; leaf-blades 6-20 cm. broad, the hairs of the lower surface with long slender stalks.
- Leaf-blades thick-coriaceous, obviously pinnate-nerved, the basal nerves short and inconspicuous; staminate flowers 20-28 per head; fruits 2 or 3 per head, the subtending bracts and bracteoles large, conspicuous; Guatemala.
- Apex of leaves rounded.
- Hermaphrodite flowers few, the fruits 3-7 per head, smooth; staminate flowers 12-35 per head; inflorescence often 20 cm. long and broad or more.
- Inflorescence (including bractlets and bracteoles) glabrous, 5- or 6-branched from the base; mature leaves elliptic (about twice as long as broad), attenuate to acute at the base; styles and locules 8-10; Costa Rica and western Panama.
- Inflorescence pilose, copiously paniculately branched; mature leaves broadly ovate or broadly elliptic or elliptic-rhomboid (nearly as broad as long), obtuse to cordate at the base.
- Leaves broadly ovate or broadly elliptic, rounded or cordate at the base; styles and locules 8-10; Costa Rica.
- Leaves elliptic- or obovate-rhomboid, the base obtuse or cuneate (rarely cordate); styles and locules 5-7; southern Mexico to Honduras.
- Hermaphrodite flowers and fruits 20-40 per head, the fruits sharply angled; staminate flowers 25-40 per head; inflorescence compact, 8-13 cm. long and broad, branching from the base; Costa Rica.

11. *O. capitatus*.12. *O. Sanderianus*.13. *O. nubigenus*.14. *O. platyphyllus*.15. *O. flaccidus*.16. *O. arcanus*.17. *O. Oerstedianus*.18. *O. vestitus*.19. *O. Standleyi*.10. *O. Steyermarkii*.20. *O. costaricensis*.21. *O. Donnell-Smithii*.22. *O. guatemalensis*.23. *O. pycnocarpus*.

1. *Oreopanax echinops* (Schlecht. & Cham.) Dec. & Planch.

Rev. Hort. IV. 3: 108. 1854.

Alalia echinops Schlecht. & Cham. *Linnaea* 5: 174. 1830.*Hedera echinops* G. Don, *Gen. Hist.* 3: 394. 1834.

Shrub or tree, to 10 m. high, the branchlets densely ferruginous-stellate-tomentose, at length glabrescent; leaves palmately compound, the petiole resembling the branchlets, up to 50 cm. long, dilated at the base, the leaflets of mature leaves 5 (the juvenile leaves simple or trilobed or trifoliolate), radiate, sessile or with inconspicuous petiolules up to 1.5 cm. long, the blades papyraceous, obovate-elliptic, up to 40 cm. long and 19 cm. broad, acute or subattenuate at the base, acuminate at the apex (acumen 1-3 cm. long), subentire or remotely denticulate (the teeth apiculate, terminating lateral nerves), scabrous and stellate-pilose above, densely stellate-pilose beneath especially on the nerves (the hairs slender, stalked, 3-6-branched), the costa nearly plane above, prominent beneath, the lateral nerves about 6-9, spreading; inflorescence racemously capituliferous, up to 50 cm. long, the rachis and peduncles densely stellate-tomentose, the bracts oblong, acute, 4-8 mm. long, tomentose, the peduncles 10-25 mm. long; staminate heads globose, 13-20 mm. in diameter, the bractlets oblong-spatulate, about 5 mm. long; flowers very numerous, the bracteoles submembranous, spatulate or linear, 5-7 mm. long, about 1.5 mm. broad or much narrower, densely villose distally without; pedicels often 2-5 mm. long, passing imperceptibly into obconic calyces, the calyx about 1 mm. in diameter, the lobes rounded; petals oblong, about 2.5 mm. long and 1 mm. broad, slightly thickened at the apex; filaments up to 4 mm. long, the anthers 1-1.5 mm. long; summit of the ovary slightly raised, the disk inconspicuous, the style about 1.5 mm. long; hermaphrodite heads up to 30 mm. in diameter, the young fruit sessile, the bracteoles 7-10 mm. long, 1.5-5 mm. broad, often caudate-acuminate at the apex, densely villose without; fruit obovoid, coriaceous, 7-10 mm. long, 3-5 mm. broad, the styles 5, separate to the base, 3-4 mm. long, at length deciduous; seeds often reduced to 1.

TYPE LOCALITY: Vera Cruz.

DISTRIBUTION: Michoacán and Vera Cruz to Guatemala.

2. *Oreopanax xalapensis* (H.B.K.) Dec. & Planch.

Rev. Hort. IV. 3: 108. 1854.

Alalia xalapensis H.B.K. *Nov. Gen. & Sp.* 5: 8. 1821.*Hedera xalapensis* DC. *Prodr.* 4: 264. 1830.*Alalia Ghiesbreghtii* A. Verschaffelt; E. Morren, *Belg. Hort.* 13: 3. 1863.*Alalia Thibautii* A. Verschaffelt; E. Morren, *Belg. Hort.* 13: 3. 1863.*Monopanax Ghiesbreghtii* Regel, *Gartenflora* 18: 35. 1869.*Alalia mexicana* Hort.; Lavallée, *Arb. Segrez*, 125, as syn. 1877.*Oreopanax Thibautii* Hook. f. *Bot. Mag., pl.* 6340. 1878.*Oreopanax xalapense* var. *laxiflorum* Kuntze, *Rev. Gen.* 1: 271. 1891.*Oreopanax xalapense* var. *spiciforme* Kuntze, *Rev. Gen.* 1: 271. 1891.*Oreopanax Taubertianum* Donn. *Smith, Bot. Gaz.* 19: 4. 1894.*Oreopanax Loesenerianum* Harms, *Bot. Jahrb.* 23: 127. 1896.

Shrub or tree, up to 10 m. high or more, the branchlets terete, glabrous or essentially so; leaves palmately compound, the petiole slender, striate, up to 30 cm. (rarely to 60 cm.) long, glabrous or sparsely stellate-pilose, swollen and dilated at the base, the leaflets 5-10 (rarely 3-12), radiate, the petiolules slender, striate, usually 10-35 mm. long, often swollen at the base, glabrous or stellate-pilose, the blades often coriaceous, ovate- to obovate- or lanceolate-elliptic, up to 30 cm. long and 7 cm. broad (often only 2 cm. broad, rarely 1.5 cm. broad, and rarely to 11 cm. broad when juvenile), attenuate or acute at the base, short-acuminate at the apex, entire or serrate at the margins (the serrations often conspicuous, usually remote, apiculate, each terminating a vein), glabrous or essentially so above, glabrous or more or less densely ferruginous-stellate-pubescent beneath (the hairs small, sessile, about 8-branched, often simulating scales), the costa prominent beneath, the secondary nerves spreading, usually plane above and raised beneath; inflorescence racemously capituliferous, up to 50 cm. long, the rachis frequently stout (up to 6 mm. in diameter), glabrous or stellate-tomentose, the bracts ovate-oblong, often to 8 mm. long, usually subulate and soon deciduous, the peduncles very numerous, 0.5-4 (usually about 2) cm. long, glabrous or tomentellose; staminate heads globose

or slightly elongate, 5–13 mm. in diameter, the bracts deltoid, acute, usually about 3 mm. long, the outer ones often connate, usually puberulent without, the flowers 20–50 per head, the bracteoles about 2 mm. long, densely puberulent without or glabrous; calyx 1–1.5 mm. long, the limb essentially truncate; petals oblong, 1.5–3 mm. long, 1–1.5 mm. broad; filaments up to 3 mm. long, the anthers 1–2 mm. long; style 1, short; fruiting heads up to 15 mm. in diameter, the fruits 2–12 (usually about 6) per head, coriaceous, ellipsoid or subglobose, at maturity 5–7 mm. in diameter, the persistent styles usually 5, spreading from the base, the seeds frequently 4 or 5, sometimes fewer.

TYPE LOCALITY: Vera Cruz.

DISTRIBUTION: Jalisco to Vera Cruz (and Socorro I.), southward to western Panama, 800–3000 m.

ILLUSTRATIONS: *Gartenflora* 18: pl. 606 (as *Monopanax Ghiesbreghtii*); *Bot. Mag. pl.* 6340 (as *Oreopanax Thibautii*).

3. *Oreopanax Langlassei* Standley, Contr. U. S. Nat.

Herb. 23: 1083. 1924.

Shrub or small tree, up to 5 m. high; leaves palmately compound, the petiole slender, stellate-tomentellose, up to 25 cm. long, swollen at the base, the leaflets 6–9, radiate, the petiolules up to 20 mm. long, the blades papyraceous or subcoriaceous, lanceolate- or elliptic-oblong, 10–18 cm. long, 1.5–3.5 cm. broad, attenuate at the base, acuminate at the apex, entire or sparsely serrate at the margins, sparsely stellate-pilose above, more densely so beneath (the hairs slender, 4- or 5-branched, stalked), eventually subglabrescent, the costa prominent beneath; inflorescence slender, up to 50 cm. long, the rachis and peduncles stellate-tomentellose, the bracts ovate, 1–2 mm. long, the peduncles very numerous, 2–3 (1–4.5) cm. long; staminate heads 5–6 mm. in diameter, the bracts about 2 mm. long, often connate, puberulent without, the bracteoles small, puberulent, the flowers glabrous; calyx obconic, 1–1.3 mm. long and broad; petals oblong, about 1.5 mm. long and 1 mm. broad; filaments at length 2 mm. long, the anthers 0.6–1 mm. long; style 1, short; fruiting heads 10–15 mm. in diameter, the fruits usually 3–10 per head, ellipsoid, at maturity about 6 mm. in diameter, the persistent styles 5, connate into a column below, spreading distally, the seeds 5 or fewer.

TYPE LOCALITY: Michoacán or Guerrero.

DISTRIBUTION: Guerrero (and Michoacán?) to Oaxaca and Guatemala, 1700–2400 m.

4. *Oreopanax Dussi* Krug & Urban; Duss, Ann. Inst.

Col. Marseille 3: 322. 1897.

Tree, 6–14 m. high, the branchlets stout, terete, soon glabrous; leaves simple, the petiole stout, up to 30 cm. long, densely pale-stellate-tomentose when young, soon glabrous, the blade coriaceous, suborbicular in outline, up to 30 cm. in diameter, cordate at the base, shallowly 5- or 7-lobed about one-third the length of the leaf, the sinuses rounded, the lobes oblong or deltoid, acuminate at the apex, entire or slightly sinuate at the margins, the upper surface stellate-puberulent when young, soon glabrous, the lower surface densely and closely stellate-tomentose (the hairs many-branched, sessile), the primary nerves prominent, the secondary nerves spreading; inflorescence up to 20 cm. long and broad, the branches and peduncles closely stellate-tomentose, the bracts 2–4 mm. long, the peduncles 5–15 mm. long, the bractlets ovate, small, tomentose; staminate heads 5–6 mm. in diameter, the bracteoles obovate- or linear-spatulate, 1–2 mm. long, densely pale-tomentellose without; mature flowers not seen, the petals tomentellose without when young; hermaphrodite heads 10–12 mm. in diameter, the flowers glabrous (or the calyx puberulent); calyx carnos, about 1.5 mm. long, the limb truncate or minutely 5-lobed; petals oblong, about 2.5 mm. long, the veins somewhat conspicuous; filaments about 4 mm. long, the anthers about 1 mm. long; styles 5, carnos, distinct to the base, less than 1 mm. long; bractlets persistent in fruit, the fruits about 10 per head, obovoid-oblong, 4–5 mm. long, the styles spreading, at length deciduous, the seeds often 2 or 3.

TYPE LOCALITY: Martinique.

DISTRIBUTION: Martinique and Guadeloupe, in the mountains.

5. *Oreopanax ramosissimum* A. C. Smith,
Brittonia 2: 256. 1936.

Tree; leaves simple, the petiole stout, up to 50 cm. long, closely ferruginous-tomentellose, glabrescent, the blade coriaceous, suborbicular in outline, up to 45 cm. in diameter, truncate or obtuse at the base, deeply 5-9-lobed, the sinuses rounded, cut to one-half or three-fourths the length of the leaf, the lobes oblong or elliptic, 4-8 cm. broad, gradually narrowed distally, acuminate at the apex, often sinuate at the margins, the upper surface glabrous, the lower surface densely and closely ferruginous-stellate-tomentose (the hairs many-branched, sessile), the primary nerves very prominent, the secondary nerves numerous, spreading, the veinlets copiously reticulate, prominent beneath; inflorescence many-branched, up to 40 cm. long and broad, the branches and peduncles closely stellate-tomentose, the bracts small, ovate, the peduncles racemously arranged, 10-15 mm. long; hermaphrodite heads 5-6 mm. in diameter, the bractlets few, ovate-deltoid, 1-1.5 mm. long, acute, tomentellose without, the bracteoles submembranous, obovate-spatulate, 1-1.5 mm. long, tomentellose without; flowers glabrous, 4- or 5-merous, the calyx carnos, obconic, about 1 mm. long; petals oblong-deltoid, about 1 mm. long; filaments up to 2 mm. long, the anthers less than 1 mm. long; summit of the ovary flat, the disk small, the styles 5, slender, free to the base, erect, about 0.5 mm. long.

TYPE LOCALITY: Martinique.

DISTRIBUTION: Known only from the type locality.

6. *Oreopanax peltatus* Linden; Regel, Gartenflora
11: 170. 1862.

Oreopanax Salvinii Hemsl. Diag. Pl. Nov. 16. 1878.

Oreopanax jaliscana S. Wats. Proc. Am. Acad. 25: 151. 1890.

Aralia lobata Sessé & Moc. Fl. Mex. 86. 1894.

Slender tree, up to 15 m. high, the branchlets stout, terete, stellate-tomentellose, soon glabrous; leaves simple, the petiole straight, terete, up to 50 or rarely 60 cm. long, densely stellate-tomentose or glabrous, the blade coriaceous, suborbicular in outline, up to 50 cm. in diameter, truncate or deeply cordate (occasionally peltate) at the base, usually deeply 5- or 7-lobed, rarely 9-lobed, the sinuses rounded, cut one-half or two-thirds the length of the leaf, the lobes somewhat oblong, obtuse to acuminate at the apex, irregularly lobed or sinuate at the margins, the upper surface sparsely stellate-pilose when young, soon glabrous, the lower surface densely stellate-tomentellose (the hairs slender, 4-6-branched, stalked), frequently glabrous at maturity, the primary nerves 5-9, radiating, very prominent, the secondary nerves spreading, short, the veinlets copiously reticulate; inflorescence up to 45 cm. long and broad, the branches and peduncles stellate-pubescent, at length glabrous, the bracts broadly ovate, pubescent without, 3-10 mm. long, the heads racemously arranged, the peduncles up to 15 mm. long; staminate heads 6-10 mm. in diameter, the bractlets small, ovate, tomentellose without, the bracteoles obovate-spatulate or linear, about 1.5 mm. long; calyx glabrous, about 1 mm. long; petals oblong, about 2 mm. long, puberulent or glabrous; filaments up to 3 mm. long, the anthers oblong, about 1 mm. long; style 1, carnos, short; hermaphrodite heads with about 10-13 flowers, the petals densely tomentellose without, the styles 2 (or 3), short, free to the base; fruits 5-10 per head, oblong-ovoid, 5-7 mm. long, glabrous, the styles recurved.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Sonora and Chihuahua southward to Honduras, 1000-2300 m.

ILLUSTRATIONS: Gartenflora 11: pl. 363; Hemsl. Biol. Centr. Am. Bot. 5: pl. 35 (as *Oreopanax Salvinii*); Nichols. Dict. Gard. 2: 522.

7. *Oreopanax lachnocephalus* Standley, Carn. Inst. Wash.
Publ. 461: 77. 1935.

Tree, up to 20 m. high, the trunk about 30 cm. in diameter, the branchlets stout, terete, brownish, ferruginous-tomentellose when young, at length glabrous; leaves simple, the petiole terete, striate, up to 20 cm. long or more, densely stellate-tomentellose, at length glabrous, the blade coriaceous, suborbicular in outline, up to 30 cm. in diameter, cordate at the base, 5- or

7-lobed about to the middle, the sinuses rounded, the lobes oblong, acuminate, entire at the margins, the upper surface glabrous (or sparsely pilose on the principal nerves), the lower surface densely ferruginous-stellate-tomentellose (the hairs 4-6-branched, stalked), the primary nerves prominent on both surfaces, the secondary nerves short, spreading, the veinlets copiously reticulate; inflorescence up to 25 cm. long and broad, the branches, peduncles, and bracts densely ferruginous-stellate-tomentellose, the bracts ovate, 4-6 mm. long, the heads single, racemously arranged on the branches of the inflorescence, the peduncles stout, 10-17 mm. long, the hermaphrodite heads globose or slightly ovoid, 13-17 mm. in diameter, the bracteoles numerous, oblong- or linear-spatulate, 2-3 mm. long, copiously and persistently bright-ferruginous-tomentose without, the tomentum 2-3 mm. long; staminate flowers mixed with the hermaphrodite flowers, completely hidden by the bractlets, the calyx small, the limb truncate or minutely dentate; petals deltoid-oblong, 1-1.5 mm. long, densely and persistently ferruginous-tomentellose without, the hairs forming a compact mass; filaments very short, the anthers oblong, less than 1 mm. long; style single, short, deciduous; fruits numerous, coriaceous, oblong-ellipsoid, 5-7 mm. long, the styles 2, separate to the base, 1-2 mm. long, soon deciduous, the seeds 2 (or 1).

TYPE LOCALITY: British Honduras.

DISTRIBUTION: Known only from the type locality, 600 m.

8. *Oreopanax geminatus* Marchal, Bull. Acad. Belg.

II. 47: 91. 1879.

Tree, about 5 m. high, the leaves lobed (according to Oersted); hermaphrodite inflorescences copiously branched, the branches, bracts, and peduncles densely ferruginous-stellate-tomentose, the heads globose, 12-15 mm. in diameter, arranged in sessile pairs on stout peduncles 10-15 mm. long, the bractlets ovate, small, densely tomentose, the bracteoles thin-coriaceous, oblong-spatulate, about 3 mm. long, copiously and persistently bright-ferruginous-tomentose without, the tomentum 2-3 mm. long; fruits coriaceous, oblong or obovoid-oblong, 6-7 mm. long, the styles 2 or 3, spreading, free to the base, recurved, about 2 mm. long, soon deciduous, the seeds often only 1.

TYPE LOCALITY: Segovia, northern Nicaragua.

DISTRIBUTION: Known only from the type locality.

9. *Oreopanax Liebmanni* Marchal, Bull. Acad. Belg.

II. 47: 87. 1879.

Aralia longifolia Sessé & Moc. Fl. Mex. 87. 1894.

Oreopanax microcephalum Donn. Smith, Enum. Pl. Guat. 6: 71. 1903. (Nomen nudum.)

Oreopanax meiocephalum Donn. Smith, Bot. Gaz. 37: 210. 1904.

Oreopanax oligocarpum Donn. Smith, Bot. Gaz. 37: 210, as syn. 1904.

Tree, up to 20 m. high, or epiphytic shrub, the branchlets slender, glabrous, rugose; leaves simple, glabrous, the petiole up to 15 cm. long, often swollen at the base and the apex, the blade narrowly elliptic or oblong or obovate, 10-25 cm. long, 2-6 cm. broad, attenuate to obtuse at the base, acuminate at the apex, entire and narrowly revolute at the margins, pinnately veined, the costa usually raised above, prominent beneath, the secondary nerves 6-10 per side, short, ascending, inconspicuous; inflorescence often branched from the base, up to 15 cm. long and broad (usually not exceeding 8 cm.), the branches, bracts, and peduncles often stellate-puberulent when young, at length glabrous, the bracts small, inconspicuous, the peduncles up to 7 mm. long; staminate heads subglobose, 1.5-4 mm. in diameter, the bractlets and bracteoles few, essentially glabrous or stellate-puberulent, broadly ovate, small, the flowers 4-8 (or up to 15) per head, glabrous; calyx small, the limb short, truncate or undulate; petals oblong, about 1.5 mm. long; filaments short, the anthers oblong, small; style 1, carnos, short; hermaphrodite flowers often 2 (2-5) per head, resembling the staminate, the styles 5 (or up to 8), carnos, short; fruits usually 2 or 3 (or up to 5) per head, ovoid, 3-5 mm. in diameter, surmounted by the persistent recurved styles, the seeds 5 (or 8) or fewer.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Vera Cruz and Oaxaca southward to western Panama. 600-2600 m.

10. *Oreopanax Steyermarkii* A. C. Smith, sp. nov.*

Tree to 13 m. high, sometimes epiphytic and then small, the branchlets stout, terete, rugose, glabrous or sparsely pilose with pale sessile stellate many-branched hairs; leaves simple, the petiole stout, 2.5–9 cm. long, swollen at the base and the apex, soon glabrate, the blade thick-coriaceous, narrowly elliptic-oblong, 15–30 cm. long, 5–10 cm. broad, obtuse at the base, short-acuminate at the apex, entire and narrowly recurved at the margins, glabrous above, glabrous or sparsely stellate-pilose beneath (the hairs sessile, many-branched), pinnately veined, the costa prominent, the lateral nerves 8–14 per side, erecto-patent, slightly raised or subimmersed above, elevated beneath, the veinlets immersed and obscure; staminate inflorescence copiously branched, up to 12 cm. long and broad, the peduncles 2–5 mm. long, with the branches densely stellate-puberulent, the heads oblong-ellipsoid, 4–7 mm. long, 3–5 mm. broad, 20–28-flowered, the subtending bracts and bracteoles inconspicuous, ovate, puberulent without; flowers 5-merous, the calyx obconic, 1–1.5 mm. long and in diameter, the limb essentially truncate; petals membranous, oblong-deltoid, about 1.5 mm. long; filaments slender, short, the anthers oblong, about 1 mm. long; styles 2, about 1 mm. long, free to the base; fruiting inflorescence up to 15 cm. long and broad, the rachis and branches stout, sparsely puberulent, the principal bracts coriaceous, broadly ovate, minute, the peduncles stout, about 1 cm. long, the fruits 2 or 3 per head; outer bracts of the head 2 or 3, broadly semiorbicular, 3–4 mm. long, about 7 mm. broad, rounded at the apex, puberulent without, the bracteoles 2 subtending each fruit, similar to the bracts; fruits coriaceous, strongly rugose when dry, subglobose, 6–8 mm. in diameter, the styles usually 5, free to the base, deciduous, the locules and seeds usually 5, the seeds large, about 3.5 mm. long.

TYPE: Guatemala, Dept. Zacapa, Slopes of Monte Virgen, around summit of mountain, alt. 2200–2400 m., *Steyermark 42649*, Jan. 12 or 13, 1942 (in herb. Arnold Arb.).

DISTRIBUTION: Guatemala, alt. 1400–2500 m., known from the type collection, from *Steyermark 48935*, Dept. Huehuetenango, between Xoxlac and Nucapuxlac, Sierra de los Cuchumatanes, and from *Steyermark 48676*, Dept. Huehuetenango, between Yulhuitz and Maxbal, Sierra de los Cuchumatanes.

11. *Oreopanax capitatus* (Jacq.) Dec. & Planch.

Rev. Hort. IV. 3: 108. 1854.

Aralia capitata Jacq. Enum. Pl. Carib. 18. 1760.

Hedera capitata Smith, Ic. Pict. pl. 4. 1790.

Hedera frondosa Salisb. Prodr. 144. 1796.

Botryodendrum capitatum Endl.; Heynh. Nom. 2: 75. 1846.

Sciadophyllum capitatum Griseb. Fl. Brit. W. Ind. 306. 1860.

Oreopanax destructor Seem. Jour. Bot. 7: 351. 1869.

Aralia ovata Sessé & Moc. Fl. Mex. 86. 1894.

Tree, frequently tall, sometimes epiphytic when young, glabrous throughout (except the inflorescences), the branchlets terete, rugose; leaves simple, the petiole slender, up to 30 cm. long (usually 6–13 cm.), the blade thin-coriaceous or papyraceous, ovate or elliptic or oblong-elliptic, up to 35 cm. long and 25 cm. broad (usually 10–15 × 7–10 cm.), acute to rounded (rarely cordate) at the base, short-acuminate (rarely merely acute) at the apex, entire and narrowly revolute at the margins, the primary nerves usually 5, ascending from the base, often prominent, the secondary nerves few, ascending; inflorescence up to 20 cm. long and broad (rarely to 30 cm.), the branches and peduncles closely stellate-tomentellose or puberulent, soon glabrous, the bracts usually inconspicuous, the peduncles up to 10 mm. long; staminate heads globose or slightly elongate, 4–11 mm. in diameter, the bractlets and bracteoles deltoid or ovate, small, often stellate-tomentellose without, the flowers 10–25 per head; calyx small, the limb truncate or undulate; petals oblong, up to 2.5 mm. long; anthers short; styles 1 or 2, carnos, less than 1 mm. long; hermaphrodite heads usually 5–12-flowered, the styles 5–10;

* *Oreopanax Steyermarkii*, sp. nov.; species foliorum laminis crasse coriaceis anguste elliptico-oblongis pinnatinerviis ad apicem breviter acuminatis subtus saepe obscure stellato-pilosis, capitulis masculis multifloris, capitulis fructiferis bracteis bracteolis fructuosae magnos gerentibus distinguitur; ab *O. capitato* (Jacq.) Dec. & Planch. foliis angustis pinnatinerviis, ab *O. Liebmanni* Marchal foliis majoribus coriaceis et floribus masculis numerosis, a duobus bracteis bracteolisque sub fructu magnis differt; ab *O. vestitio* A. C. Smith et *O. Standleyi* A. C. Smith foliis crasse coriaceis pinnatinerviis, floribus masculis numerosis, fructibus paucis bracteis bracteolisque magnis subtentis facile distinguitur.

fruits 2-12 per head, subglobose, 5-8 mm. in diameter, the styles recurved, short, soon deciduous, the seeds usually few.

TYPE LOCALITY: Martinique.

DISTRIBUTION: Vera Cruz and Chiapas to Cuba and Santo Domingo, and southward; also in South America; common, up to 1700 m.

ILLUSTRATIONS: Jacq. Sel. Stirp. Am. pl. 61 (as *Aralia capitata*); Jacq. Sel. Stirp. Pict. pl. 91 (as *Aralia capitata*); Lodd. Bot. Cab. pl. 946 (as *Hedera capitata*); Fawcett & Rendle, Fl. Jam. 5: 417.

12. *Oreopanax Sanderianus* Hemsl. Gard. Chron. III.

II: 718. 1892.

Tree to 15 m. high, or epiphytic shrub, the branchlets stout, terete, brownish, glabrous; leaves simple, glabrous, the petiole up to 40 cm. long, striate, the juvenile blade peltate, equally 3-lobed, up to 40 cm. in diameter, the lobes spreading, broadly deltoid, acute, entire at the margins, the mature blade variable, broadly ovate or deltoid, up to 27 cm. long and nearly as broad, rounded or cordate or truncate or shallowly peltate at the base, acute or gradually acuminate at the apex, entire at the margins (or the juvenile leaf-form sometimes persisting, the mature blade 3-lobed or rarely with an additional smaller pair of lobes at the base), the primary nerves 3 or 5, spreading from the base, prominent on both surfaces, the secondary nerves spreading; inflorescence up to 30 cm. long and broad, the branchlets and peduncles cinereous-puberulent, soon glabrous, the bracts ovate, 3-4 mm. long, the peduncles up to 5 mm. long; staminate heads 5-7 mm. in diameter, the bractlets few, small, deltoid, often connate, puberulent without or glabrous, the bracteoles inconspicuous, the flowers glabrous; calyx small, the limb membranous, somewhat undulate; petals oblong, 1.5-2 mm. long, often calyptrate; filaments short, the anthers less than 1 mm. long; styles 1 or 2, short; fruit-subtending bracts and bracteoles conspicuous, broadly ovate, up to 3 mm. long and 5 mm. broad; fruits few (2-5 per head), subglobose, 4-6 mm. in diameter, glabrous, the styles 5-7 (usually 6), free to the base, spreading, about 1 mm. long, the seeds 5-7 or fewer.

TYPE LOCALITY: Guatemala.

DISTRIBUTION: Guatemala and southern Mexico (Chiapas), 600-2000 m., often abundant.

ILLUSTRATIONS: Gard. Chron. III. 13: 451; Gartenflora 42: 344.

13. *Oreopanax nubigenus* Standley, Jour. Wash. Acad.

17: 315. 1927.

Tree, up to 10 m. high, the branchlets nigrescent, stout, glabrous, conspicuously lenticellate; leaves simple, glabrous, the petiole slender, 4-17 cm. long, the blade thin-coriaceous, broadly deltoid or rhomboid-ovate, 8-15 cm. long and nearly as broad, usually broadly cuneate at the base, abruptly and often obtusely acuminate at the apex, entire and narrowly revolute at the margins, the primary nerves 5, spreading from the base, prominent, the veinlets reticulate, often prominulous; fruiting inflorescences 9-17 cm. long and broad, the branches and peduncles cinereous-stellate-pilose, the bracts small, ovate, apiculate, the peduncles 8-15 mm. long; fruiting heads 10-15 mm. in diameter, the fruits 4-8 per head, glabrous, subglobose, 3-5 mm. in diameter, surmounted by 6 or 7 persistent recurved styles about 1 mm. long, the seeds 6 or 7.

TYPE LOCALITY: Costa Rica.

DISTRIBUTION: Costa Rica, 1500-2400 m.

14. *Oreopanax platyphyllum* Marchal, Bull. Acad. Belg.

II. 47: 88. 1879.

Shrub or small tree, glabrous throughout; leaves simple, the petiole 15-30 cm. long, the blade coriaceous, suborbicular, 13-20 cm. long and broad, rounded at the base, tridentate, the teeth broadly deltoid, cuspidate, about 1 cm. long, the primary nerves 5, spreading from the base, prominent on both surfaces, the secondary nerves few, straight, ascending; fruiting inflorescence 8-12 cm. long, compactly panicate, the heads about 10 mm. in diameter, sessile,

the bractlets ovate, about 2 mm. long, coriaceous, the fruits 5-8 per head, subglobose or ovoid, 3-4 mm. in diameter, sulcate, the styles usually 7, recurved.

TYPE LOCALITY: Jocotepec (Oaxaca?).

DISTRIBUTION: Known only from the type locality.

15. *Oreopanax flaccidum* Marchal, Bull. Acad. Belg. II.

47: 84. 1879.

Spreading shrub or tree, up to 8 m. high or more, the branchlets stout, densely pale-tomentose (the hairs stellate, long-stalked, many-branched); leaves simple, the petiole up to 12 cm. long, tomentellose, the blade papyraceous, ovate or ovate-elliptic, 20-28 cm. long, 10-17 cm. broad, rounded or broadly cuneate at the base, acuminate at the apex, entire and narrowly revolute at the margins, scabrous above (the papillae numerous, sometimes puberulent), densely stellate-tomentose beneath (the hairs slender, few-branched, stalked), the primary nerves 3 or 5, ascending from near the base, the costa conspicuous, the secondary nerves few, spreading, the veinlets usually obscure; staminate inflorescence up to 20 cm. long and broad, the branches and peduncles stellate-pubescent, the bracts lanceolate, up to 20 mm. long, soon deciduous, the peduncles 10-13 mm. long, the heads racemously arranged, elongate-globose, 5-8 mm. in diameter, the bractlets few, ovate, ferruginous-puberulent without, the bracteoles oblong-spatulate, the flowers glabrous; calyx small; petals oblong, 1-2 mm. long; filaments up to 2 mm. long, the anthers small; style 1, carnose, up to 1.5 mm. long.

TYPE LOCALITY: Huitamalco, Mexico.

DISTRIBUTION: Hidalgo, Puebla, and Vera Cruz.

16. *Oreopanax arcanus* A. C. Smith, sp. nov.*

Shrub about 8 m. high, or smaller and epiphytic, the branchlets stout, sparsely stellate-tomentellose or glabrous; leaves simple, the petioles stout, striate, (2-) 4-17 cm. long, glabrate, the blades papyraceous to subcoriaceous, ovate, 13-25 cm. long, 6-13 cm. broad, broadly obtuse to subcordate at the base, cuspidate or short-acuminate at the apex, entire and narrowly recurved at the margins, smooth on both surfaces, sparsely pilose beneath with short-stalked stellate 4-6-branched hairs, sometimes scattered-pilose above, the primary nerves 5, spreading from near the base, raised on both surfaces (or the outer pair faint), the costa with several pairs of spreading arcuate lateral nerves, the veinlets usually immersed; staminate inflorescence not seen; hermaphrodite inflorescence compactly paniculate, 5-7 cm. long and broad, the branches and peduncles tomentellose with pale stellate sessile or subsessile 4-6-branched hairs, the bracts subtending principal branches subfoliaceous in texture, lanceolate, 15-30 mm. long, the bracts subtending peduncles subcoriaceous, oblong-subulate, 2-5 mm. long, the peduncles stout, 9-13 mm. long; hermaphrodite heads subglobose, 5-7 mm. in diameter, composed of 2 or 3 flowers completely enclosed by the papyraceous strongly concave bracts and bracteoles; outer bracts of the head 2 or 3, broadly ovate, 2-3 mm. long, 5-6 mm. broad, obscurely apiculate at the apex, ciliolate at the margins, otherwise glabrous, the bracteoles 2 subtending and surrounding each flower, similar to the outer bracts but slightly smaller; flowers subglobose, about 2.5 mm. in diameter just before anthesis, the calyx strongly urceolate, carnose, truncate at the apex; petals usually 5, sometimes 4 or 6, membranous, deltoid, subcoherent in a small calyptra about 1.7 mm. across; stamens usually 5, the filaments minute, the anthers oblong, about 0.8 mm. long; styles usually 5, stout, about 0.5 mm. long, free to the base.

TYPE: Guatemala, Dept. Huehuetenango, Cerro Pixix, above San Ildefonso Ixtahuacán, alt. 1600-2800 m., *Steyermark 50645*, Aug. 15, 1942 (in herb. Arnold Arb.).

DISTRIBUTION: Guatemala, known from the type collection and from *Steyermark 50025*, Dept. Huehuetenango, above San Juan Ixcay, Sierra de los Cuchumatanes, alt. 2400 m.

* *Oreopanax arcanus*, sp. nov.; frutex, foliis ovatis, ad apicem cuspidatis vel acuminatis, subtus sparse stellato-tomentellis; inflorescentiis hermaphroditis compactis paniculatis, ramis a bracteis lanceolatis subfoliaceis subtentis, capitulis 2- vel 3-floris, floribus bracteis bracteolisque imbricatis arcanis; calyce urceolato truncato; petalis parvis in corolla calyptrata subconnatis; stylis liberis; *L. flaccido* Marchal affinis, tomento sparsiore, inflorescentia compacta, bracteis bracteolisque flores complectentibus differt.

17. *Oreopanax Oerstedianus* Marchal, Bull. Acad. Belg.

II. 47: 83. 1879.

Tree, up to 10 m. high, or epiphytic shrub, the branchlets stout, terete, densely ferruginous-tomentose (the hairs stellate, 6-8-branched, the stalks very stout and conspicuous, about 2 mm. long, the branches inconspicuous), at length glabrescent; leaves simple, the petiole up to 15 cm. long, densely tomentose, especially toward the base, with hairs resembling those of the branchlets, at length glabrescent, the blade thin-coriaceous, ovate to elliptic, up to 30 cm. long and 12 cm. broad (usually about 15×7 cm.), acute to rounded at the base, acuminate at the apex, entire and narrowly revolute at the margins, sparsely pilose above, especially on the nerves, or glabrous, stellate-tomentellose beneath (the hairs usually 4- or 5-branched, stout-stalked), 3-nerved from the base or essentially pinnately nerved, the costa prominent beneath, the lateral nerves 4-7 per side, ascending; inflorescence up to 20 cm. long and broad, the branches, bracts, and peduncles closely stellate-tomentose, the bracts small, soon deciduous, the peduncles 5-10 mm. long, the heads racemously arranged; staminate heads ovoid, 3-6 mm. long, the bractlets and bracteoles small, stellate-pilose without, the flowers glabrous; calyx small; petals oblong, about 1.5 mm. long; filaments about 2 mm. long, the anthers small; styles 1 or 2, carnos, short; hermaphrodite flowers resembling the staminate, the styles 5 or 6, free to the base; young fruiting heads 5-8 mm. in diameter, the fruits 3-11 per head, globose-ovoid, the persistent styles recurved, about 1 mm. long, the seeds often few.

TYPE LOCALITY: Costa Rica.

DISTRIBUTION: Costa Rica, 1300-2500 m.

18. *Oreopanax vestitus* A. C. Smith, Ann. Mo. Bot. Gard.

27: 324. 1940.

Tree or shrub, to 15 m. high (or scandent?), the branchlets slender, densely ferruginous-tomentose (the hairs stellate, many-branched, short-stalked or subsessile), at length glabrescent; leaves simple, the petiole up to 10 cm. long, densely tomentellose, at length glabrous, the blade thin-coriaceous, obovate-elliptic or elliptic-oblong, 9-20 cm. long, 3.5-7 cm. broad, acute to rounded at the base, shortly callose-apiculate or acuminate at the apex, entire and narrowly revolute at the margins, essentially glabrous above, stellate-tomentellose beneath (the hairs 4-9-branched, short-stalked or subsessile), 3-nerved from the base, the costa prominent, the secondary nerves few, ascending; staminate inflorescence terminal, up to 10 cm. long and broad, the branches, bracts, and peduncles ferruginous-stellate-tomentellose, the bracts linear-oblong, 1-2 mm. long, the peduncles slender, 4-9 mm. long, the heads racemously arranged, subglobose, 3-5 mm. in diameter, the bracteoles minute; flowers 8-15 per head, glabrous, the calyx cupuliform, 1-1.3 mm. in diameter, the limb essentially truncate; petals 4 or 5, ovate-deltoid, 1.4-1.7 mm. long; filaments 3-3.5 mm. long at anthesis, the anthers nearly 1 mm. long; styles 2, about 0.5 mm. long; hermaphrodite inflorescence slightly more compact than the staminate, the peduncles 3-5 mm. long, the flowers 5-9 per head; calyx at anthesis 1.3-1.7 mm. in diameter; petals subconnate and calyprate, about 1 mm. long and broad; filaments very short; styles 4 or 5, erect, free from the base, the locules 4 or 5; young fruits about 6 per head, the styles recurved.

TYPE LOCALITY: Costa Rica (Alajuela).

DISTRIBUTION: Costa Rica and western Panama, alt. 975-2000 m.

19. *Oreopanax Standleyi* A. C. Smith,

Brittonia 2: 259. 1936.

Tree, up to 10 m. high, the branchlets stout, ferruginous-tomentose when young (the hairs many-branched, stalked), soon glabrous and rugose; leaves simple, the petiole up to 17 cm. long, striate, essentially glabrous, the blade thin-coriaceous, ovate to elliptic, 13-30 cm. long, 6-20 cm. broad, rounded to cuneate at the base, abruptly acuminate at the apex, entire and narrowly revolute at the margins, glabrous or sparsely stellate-pilose above, stellate-tomentellose beneath (the hairs 4-7-branched, the stalks long, slender), at length glabrescent, the primary nerves 3 or 5, ascending from the base, prominent, the secondary nerves few,

ascending, the veinlets reticulate, inconspicuous; inflorescence up to 25 cm. long and broad, the branches, bracts, and peduncles stellate-tomentellose, the bractlets and bracteoles small, broadly ovate, puberulent without, the staminate flowers 15-20 per head, glabrous; calyx small, the limb inconspicuous, truncate; petals oblong, about 1.5 mm. long; filaments carnose, up to 3 mm. long, the anthers oblong, small; style carnose, short; hermaphrodite heads slightly larger than the staminate, the flowers 8-14 per head, about as large as the staminate, the styles 9-12, carnose, free to the base, erect; fruits usually 6-14 per head, subglobose, 2-3 mm. in diameter, the styles stout, recurved, about 1 mm. long, the seeds sometimes fewer than the styles.

TYPE LOCALITY: Costa Rica.

DISTRIBUTION: Costa Rica, 1600-2500 m.

20. *Oreopanax costaricensis* Marchal, Bull. Acad. Belg.

II. 47: 89. 1879.

Tree, up to 10 m. high, glabrous throughout, the branchlets stout, rugose; leaves simple, the petiole slender, 7-15 cm. long, the blade thin-coriaceous, elliptic or obovate-elliptic, 9-13 cm. long and 4-8 cm. broad, attenuate or acute at the base, rounded at the apex, entire and narrowly revolute at the margins, 3- or 5-plinerved from the base, the principal nerves slightly raised on both surfaces, the secondary nerves few; inflorescence 5- or 6-branched from the base, the primary branch paniculate, up to 25 cm. long, the bracts inconspicuous, the peduncles 7-15 mm. long; staminate heads 5-7 mm. in diameter, the bractlets and bracteoles ovate, about 1.5 mm. long, the flowers glabrous, 12-15 per head; calyx small, the limb erect, undulate; petals oblong, about 2 mm. long; filaments up to 2 mm. long, the anthers small; styles 1 or 2, carnose, short; fruits few (3 or 4 per head), oblong-ovoid, up to 7 mm. long, surmounted by 8-10 short recurved free styles, the seeds often fewer.

TYPE LOCALITY: Costa Rica.

DISTRIBUTION: Costa Rica and western Panama, 1500-2700 m.

21. *Oreopanax Donnell-Smithii* Standley, Jour. Wash. Acad.

17: 315. 1927.

Oreopanax capitatum f. *scandens* Marchal; Durand & Pittier, Bull. Soc. Bot. Belg. 30: 281. 1891.

Tree, the branchlets stout, terete, closely stellate-tomentellose when young, soon glabrous; leaves simple, the petiole slender, up to 35 cm. long, the blade papyraceous, broadly ovate or broadly elliptic, up to 35 cm. long and nearly as broad (usually about 20 cm. long), broadly rounded at the base and often deeply cordate (the smaller leaves obtuse at the base), rounded at the apex, entire and narrowly revolute at the margins, glabrous, the primary nerves 5 or 7, spreading from the base, prominent, the secondary nerves few, spreading, the veinlets obscure; inflorescence up to 40 cm. long and 30 cm. broad, copiously branching, the branches and peduncles minutely cinereous-stellate-pubescent, the bracts inconspicuous, the peduncles 5-12 mm. long; bractlets and bracteoles broadly ovate or suborbicular, about 1 mm. long, usually glabrous; staminate flowers glabrous, 15-25 per head; calyx small, the limb membranous; petals oblong, about 1.5 mm. long; filaments to 3 mm. long, the anthers short; style 1, short; hermaphrodite flowers about 6 per head, resembling the staminate, the styles 8-10; fruits 3-7 per head, globose, 4-6 mm. in diameter, the styles recurved, the seeds 10 or fewer, oblong, flattened.

TYPE LOCALITY: Costa Rica.

DISTRIBUTION: Costa Rica, 500-2200 m.

22. *Oreopanax guatemalensis* Dec. & Planch.; Hemsl. Biol.

Centr. Am. Bot. 1: 573. 1881.

Sciadophyllum sp. Lemaire, Fl. Serres 3: Misc. No. 44. 1847.

Aralia guatemalensis [sic] Hort.; Lemaire, Fl. Serres 3: Misc. No. 44. 1847.

Sciadophyllum guatemalense Lemaire; Hemsl. Biol. Centr. Am. Bot. 1: 573, as syn. 1881.

Shrub or small tree, sometimes epiphytic, the branchlets stout, terete, rugose, glabrous (the young parts stellate-puberulent); leaves simple, the petiole slender, striate, (3-) 7-15 (rarely

to 40) cm. long, swollen at the base and the apex, the blade coriaceous, elliptic- or obovate-rhomboid, up to 35 cm. long and nearly as broad (frequently 15–20 cm. long), obtuse to cordate (usually broadly cuneate) at the base, rounded at the apex, entire and narrowly revolute at the margins, glabrous, the primary nerves usually 5 (3–7), spreading from the base, prominent, the secondary nerves few, spreading, the veinlets reticulate, frequently prominulous beneath; inflorescence up to 25 cm. long and broad, the branches often flexuose, with the peduncles densely stellate-puberulent (glabrous in old fruit), the bracts deltoid, 2–7 mm. long, puberulent, the peduncles 3–10 mm. long; staminate heads ovoid, 6–8 mm. long, the bractlets and bracteoles broadly ovate, closely puberulent without, 1–2 mm. long, the flowers glabrous, 25–35 per head; calyx-limb truncate or nearly so; petals oblong, 1.5–2 mm. long; filaments up to 2.5 mm. long, the anthers small; styles 1 or 2, carnose, short; fruits 3–5 per head, subglobose, 5–6 mm. in diameter, the styles 5–7, recurved.

TYPE LOCALITY: Guatemala.

DISTRIBUTION: Southern Mexico, Guatemala, British Honduras, and western Honduras.

23. *Oreopanax pycnocarpus* Donn. Smith,

Bot. Gaz. 31: 113. 1901.

Oreopanax latissimum Cufod. Archivio Bot. 9: 198. 1933.

Tree, up to 10 m. high, often epiphytic when young, the branchlets stout, ferruginous-stellate-tomentose when young; leaves simple, the petiole 8–17 cm. long, deeply striate, stellate-tomentellose or glabrous, the blade coriaceous, elliptic-oblong, 15–25 cm. long, 7–20 cm. broad, rounded or broadly cuneate at the base, rounded at the apex, entire and slightly revolute at the margins, glabrous or minutely stellate-puberulent above, glabrous or stellate-pubescent (the hairs slender, 4- or 5-branched, stalked) beneath, the primary nerves 3 or 5, ascending from the base, prominent, the secondary nerves few, ascending, the veinlets reticulate, often prominulous; inflorescence often 2- or 3-branched from the base, compact, up to 13 cm. long and broad, the branches and peduncles stellate-tomentellose, the bracts deltoid, about 2 mm. long, soon deciduous, the peduncles stout, up to 10 mm. long; staminate heads ovoid, 5–7 mm. long, the bractlets and bracteoles ovate, 1–2 mm. long, densely pilose without; flowers glabrous, 25–40 per head; calyx small, the limb truncate; petals 5 or 6, oblong, about 2 mm. long; filaments about 1.5 mm. long, the anthers small; style 1, carnose, short, tapering; fruiting heads ovoid, at maturity 20–30 mm. long, 16–22 mm. broad, the fruits 20–40, obovoid, often sharply angled, 7–8 mm. long, the styles 6 or 7, recurved, less than 1 mm. long, the seeds 6 or 7.

TYPE LOCALITY: Costa Rica.

DISTRIBUTION: Costa Rica, 1800–2500 m.

Family 2. UMBELLIFERAE

BY MILDRED E. MATHIAS AND LINCOLN CONSTANCE

Herbaceous plants, rarely woody at base, acaulescent or caulescent, annual or perennial, with commonly hollow stems. Leaves alternate, or rarely opposite, or basal, compound or sometimes simple, usually much incised or divided, with usually sheathing petioles. Flowers small, regular, in simple or compound umbels, or the umbels sometimes proliferous or capitate; rays sometimes subtended by bracts forming an involucre; umbellets usually subtended by bractlets forming an involucre. Calyx-tube wholly adnate to the ovary; calyx-teeth obsolete or small. Petals 5, usually with an inflexed tip. Stamens 5, inserted on an epigynous disk. Ovary inferior, 2-celled, with one anatropous ovule in each cell; styles 2, sometimes swollen at the base, forming a stylopodium. Fruit consisting of two mericarps united by their faces (commissure), flattened dorsally (parallel to the commissure), laterally (at right angles to the commissure), or terete, each mericarp with 5 primary ribs, one down the back (dorsal rib), two on the edges near the commissure (lateral ribs), and two between the dorsal and lateral ribs (intermediate ribs), and rarely with secondary ribs, the ribs filiform to broadly winged, thin or corky; oil-tubes obsolete or present in the intervals (spaces between the ribs) and on the commissural surface, rarely also in the pericarp; mericarps 1-seeded, splitting apart at maturity, usually suspended from the summit of a slender prolongation of the axis (carpophore). Embryo small; endosperm cartilaginous.

Inflorescence a distinct umbel with evident rays and usually evident pedicels, more or less spreading, never capitate.

KEY 1.

Umbels simple, rarely proliferous.

Umbels variously compound.

Ovary and fruit armed with bristles, prickles, tubercles, papillae, or callous teeth.

KEY 2.

Ovary and fruit not armed, sometimes pubescent.

Ovary and fruit terete in cross-section or flattened laterally; ribs of the fruit not prominently winged.

Annuals, slender, mostly low and diffuse, caulescent, rarely pubescent; leaves mostly small, the leaflets usually linear to filiform; flowers white or rosy (yellow or purple in *Donnellsmithia*); stylopodium depressed to conic (lacking in *Donnellsmithia*).

KEY 3.

Biennials or perennials, acaulescent or caulescent, glabrous or pubescent (annuals in *Bupleurum* and *Pimpinella*); leaves mostly larger, the leaflets broader; flowers white, yellow, or purple; stylopodium lacking or present.

Low acaulescent or short-caulescent plants, subscaPOSE or with slender, naked, unbranched peduncles from a cluster of basal leaves.

KEY 4.

Tall caulescent plants with several to many stem-leaves. Fruit flattened dorsally; some or all of the ribs winged.

KEY 5.

Fruit with both lateral and dorsal wings developed or the dorsal ribs prominent.

KEY 6.

Fruit usually strongly flattened dorsally, the dorsal wings absent, the dorsal ribs filiform or obsolete, the lateral wings more or less prominent.

KEY 7.

Inflorescence capitate, with obsolete rays and pedicels, or reduced to a single axillary flower, not a distinct umbel.

KEY 8.

KEY 1.

- Foliage stellate-pubescent to glabrate; ovary and fruit stellate-pubescent or glochidiate to glabrate. 6. BOWLESIA.
- Foliage never stellate-pubescent; ovary and fruit glabrous or pubescent, never stellate-pubescent nor glochidiate.
- Leaves reduced to fistulose, transversely septate phyllodes borne at the nodes.
- Leaves with definite, entire or divided blades.
- Plants low, with slender creeping stems or rootstocks frequently rooting at the nodes.
- Leaves pinnate; peduncles obsolete; umbels 1- or 2-flowered. 1. ASCIADIUM.
- Leaves entire or parted, never pinnate; peduncles present; umbels more-than-2-flowered. 2. HYDROCOTYLE.
- Involucre wanting or inconspicuous; carpels with 3 acute or obsolete, primary dorsal ribs; secondary dorsal ribs obsolete, not reticulated. 3. CENTELLA.
- Involucre of 2 conspicuous, ovate to suborbicular bracts; carpels with 3 prominent, filiform, primary dorsal ribs and 2 secondary dorsal ribs, somewhat reticulated.
- Plants more or less erect with leafy stems, or the peduncles arising from a cluster of basal leaves.
- Plants acaulescent or short-caulescent, with basal leaves only; leaves pinnately nerved; seed-face concave to deeply sulcate.
- Plants glabrous from fascicled tuberous roots; pedicels slender, 5-85 mm. long; fruit ovoid to ellipsoid-cordate. 8. NEOGOEZIA.
- Plants more or less pubescent, from long slender taproots; pedicels stouter, 1-8 mm. long; fruit oblong, tapering toward the apex, rounded at the base. 32. OREOMYRRHIS.
- Plants caulescent with leafy stems, usually branching; leaves palmately nerved; seed-face plane to convex.
- Leaves cuneate at base, entire or 3-lobed; upper leaves much reduced; involucre shorter than or equaling the pedicels; pedicels 3-4 mm. long. 7. ASTERISCUM.
- Leaves not cuneate at base, entire, crenate, or repand; upper leaves not conspicuously reduced; involucre much shorter than the pedicels; pedicels obsolete to 40 mm. long.
- Stems simple or with few alternate branches; leaf-blades reniform; petioles naked; fruit ellipsoid-cordate, about twice as broad as long, 2 mm. long, 3-4 mm. broad. 4. MICROPLEURA.
- Stems dichotomously branching; leaf-blades deltoid-ovate, acuminate; petioles tufted at the apex with setulose hairs; fruit ovoid, usually longer than broad, 2-4 mm. long, about 2 mm. broad, rounded at the base. 5. SPANANTHE.

KEY 2.

- Ovary and fruit armed with uncinete or barbed bristles or prickles or merely tuberculate or papillate.
- Fruit with primary ribs filiform, setulose or bristly, the secondary ribs prominent to winged with hooked or barbed bristles, the intervals naked.
- Petals cuneate to obovate; fruit flattened laterally, armed with uncinete bristles; seed-face deeply sulcate. 26. CAUCALIS.
- Petals orbiculate, unequally cleft; fruit flattened dorsally, with some or all of the bristles glochidiate; seed-face shallowly concave to nearly plane. 27. DAUCUS.
- Fruit with both primary and secondary ribs filiform or obsolete, papillate to tuberculate throughout, the tubercles frequently armed with uncinete bristles.
- Leaves entire, with usually parallel venation. 46. BUPLEURUM.
- Leaves compound, with pinnate or palmate venation.
- Plants biennial or perennial; flowers greenish, yellow, or purple, in usually many-flowered capitate umbels, the sterile flowers frequently in separate umbellets; calyx-teeth conspicuous, persistent. 9. SANICULA.
- Plants annual; flowers white; umbellets not capitate, usually few-flowered, the sterile flowers mixed with the fertile; calyx-teeth obsolete to evident.
- Plants glabrous except the fruit; petals plane or with the apex scarcely inflexed; calyx-teeth obsolete; fruit ovoid, subglobose, or ellipsoid-cordate, 1.5-2 mm. long, about as broad.
- Involucel present; carpophore 2-cleft at the apex; stylopodium low-conic; fruit slightly constricted at the commissure. 11. SPERMOLEPIS.

- Involucel wanting; carpophore 2-cleft to the base; stylopodium depressed; fruit strongly constricted at the commissure.
- Plants hispid-pubescent; petals with a narrower inflexed apex; calyx-teeth evident; fruit ovoid or oblong, 3-6 mm. long, 1-2 mm. broad.
- Ovary and fruit bristly-hispid, the bristles never uncinatate nor barbed nor armed with callous teeth.
- Fruit oblong-ovoid to ovoid, rounded at base and apex, with prominent scabrous ribs, the lateral with corky appendages or callous teeth; seed-face plane to concave; petals plane, without an inflexed apex.
- Fruit ovoid to narrowly oblong, attenuate to beaked at the apex, attenuate at the base, with obsolete or rounded primary ribs, the secondary ribs obsolete (except in *Cuminum*), variously bristly or hispid; seed-face concave to sulcate; petals with a narrower inflexed apex.
- Plants perennial; leaves ternate-pinnate, the leaflets large, lanceolate to orbicular, serrate to pinnately lobed; outer petals not radiant; fruit caudate at the base.
- Plants annual or biennial, rarely perennial; leaves ternate-pinnately or pinnately decomposed, the leaflets small, filiform to oval, entire to pinnatifid; outer petals often radiant; fruit not caudate at the base.
- Fruit attenuate or narrowed at the apex into a conspicuous beak not differentiated from the body; carpophore 2-lobed part way to the base or 2-parted.
- Involucre present; calyx-teeth longer than the styles; the 3 secondary ribs prominent, bristly.
- Involucre usually wanting; calyx-teeth obsolete; secondary ribs obsolete.
- Fruit conspicuously beaked, the beak differentiated from the body; carpophore entire or bifid at the apex.
- Involucel of lobed or dissected bractlets; beak elongate, several times longer than the body, hispid on the margins.
- Involucel of entire bractlets; beak shorter than the body, glabrous.
10. *APIASTRUM*.
25. *TORILIS*.
21. *AMMOSELINUM*.
23. *OSMORHIZA*.
30. *CUMINUM*.
31. *CHAEROPHYLLUM*.
24. *SCANDIX*.
28. *ANTHRISCUS*.

KEY 3.

- Outer flowers usually radiant; fruit globose to ellipsoid, the ribs filiform to obscure, the pericarp very thin and hard; oil-tubes wanting.
- Petals oblong; calyx-teeth prominent, acute, often unequal; fruit not at all constricted at the commissure, the mericarps not separating readily at maturity; seed flattened dorsally in cross section.
- Petals obovate or orbiculate with a narrower inflexed tip; calyx-teeth evident to obsolete; fruit conspicuously constricted to a narrow commissure, the mericarps separating readily; seed subterete in cross section.
- Outer flowers rarely radiant; fruit globose to oblong, some or all of the ribs distinct, frequently corky, rarely filiform to obscure (in *Spermelepis*, *Apiastrum*, *Donnellsmithia*); oil-tubes present.
- Fruit with prominent, corky, more or less winged, contiguous lateral ribs usually forming a prominent band around the fruit.
- Plants more or less scabrous throughout; fruit usually scabrous, the pericarp composed almost exclusively of strengthening cells.
- Plants glabrous, or with the inflorescence somewhat squamose-pubescent.
- Involucre dimidiate, the bractlets longer than the flowers; outer petals radiant; calyx-teeth obsolete.
- Involucre not dimidiate, usually shorter than the pedicels; outer petals not radiant; calyx-teeth evident to prominent.
- Leaves ternately-pinnately dissected, the ultimate divisions lacinate; petals with an elongate, broad, 2-lobed, inflexed apex; carpophore divided to the base.
- Leaves palmately or pinnately compound or decomposed, the ultimate divisions entire; petals plane or the inflexed tip short and entire; carpophore subentire to bifid.
- Fruit beaked; carpophore subentire; cauline leaves palmately divided, with 3-5 leaflets.
- Fruit not beaked; carpophore bifid; cauline leaves pinnately divided with 2-9 leaflets or finely dissected.
- Petals with an inflexed apex; fruit orbicular in cross section with mostly inconspicuous lateral ribs.
- Petals plane; fruit elliptical in cross section, with prominent corky lateral wings.
- Fruit with subequal ribs, rarely winged, usually corky, rarely filiform or obscure.
- Involucre of conspicuous, entire or divided bracts (or wanting in *Chaerophyllum*); involucre of conspicuous, entire or divided bractlets.
53. *CORIANDRUM*.
54. *BIFORA*.
21. *AMMOSELINUM*.
60. *AETHUSA*.
62. *DAUCOSMA*.
64. *CYNOSCIADIUM*.
63. *PTILINIUM*.
65. *LIMNOSCIADIUM*.

- Umbels 1-20-rayed; fruit linear to narrowly oblong, 4-10 mm. long.
Plants glabrous or pubescent; involucre usually wanting; calyx-teeth obsolete; fruit glabrous or hispid, the ribs prominent, unwinged, the seed-face sulcate. 31. CHAEROPHYLLUM.
- Plants glabrous; involucre of foliaceous, entire or divided bracts; calyx-teeth prominent, linear, unequal; fruit glabrous, the primary ribs obsolete, the secondary ribs prominently corky, the seed-face plane or slightly concave. 29. TREPOCARPUS.
- Umbels 50-100-rayed; fruit ovoid-oblong to oblong, 1.5-5 mm. long. 48. AMMI.
- Involucre and involucre wanting or inconspicuous.
Carpophore 2-cleft at the apex; stylopodium short-conic.
Sheaths scarious-margined; involucre absent; fruit glabrous, the ribs narrow, subequal, obtuse, prominent. 41. APIUM.
- Sheaths not scarious-margined; involucre present; fruit usually tuberculate or echinate, the ribs filiform to obscure, never prominent. 11. SPERMOLEPIS.
- Carpophore 2-cleft to the base; stylopodium depressed. 16. DONNELLSMITHIA.
- Flowers yellow; fruit glabrous; Mexico. 10. APIASTRUM.
- Flowers white; fruit usually papillate; California.

KEY 4.

- Leaves entire or reduced to fistulose septate phyllodes.
Involucre-bractlets conspicuous, foliaceous, entire or toothed, often connate.
Involucre of 2-6 bracts; rays 5-35 mm. long; fruit 3-4 mm. long, 2-2.5 mm. broad; Yukon and Alaska to Wyoming and Montana. 46. BUPLEURUM.
- Involucre absent or of 1 bract; rays 4-7 mm. long; fruit 5-6 mm. long, 4 mm. broad; Nayarit. 17. TAUSCHIA.
- Involucre-bractlets wanting or inconspicuous.
Plants from tuberous roots; leaves not reduced; western United States. 15. OROGENIA.
- Plants from long fusiform roots; leaves reduced to fistulose septate phyllodes; Mexico and South America. 19. OTTOA.
- Leaves variously compound.
Stylopodium conic or low-conic.
Leaves ternately-pinnately decompound, the leaflets linear to ovate; involucre inconspicuous or wanting; pedicels slender, spreading-ascending. 51. LIGUSTICUM.
- Leaves 1-2-pinnate, the leaflets lanceolate to orbicular; involucre conspicuous; pedicels obsolete or short and flattened or winged. 52. PODISTERA.
- Stylopodium wanting, at least at maturity.
Plants from tuberous roots; mericarp with a corky projection extending down the middle of the commissural face its entire length.
Involucre of a few minute bractlets or wanting; petals with a narrower inflexed tip; mericarps not kidney-shaped; western United States. 15. OROGENIA.
- Involucre of foliaceous, entire, oblong or spatulate bractlets longer than the flowers or fruit; petals without an inflexed apex; mericarps kidney-shaped; eastern United States. 14. ERIGENIA.
- Plants from taproots; mericarps without a projection on the commissural face.
Involucre inconspicuous; oil-tubes numerous, scattered throughout the pericarp. 39. NEOPARRYA.
- Involucre dimidiate or subdimidiate, more or less conspicuous; oil-tubes few, not scattered throughout the pericarp.
Leaves subcoriaceous, ternate-subpinnate, the leaflets ovate, obtuse, confluent; mericarp with 7 conspicuous, obtuse, corky ribs, appearing corrugated in the immature fruit. 40. RHYSOPTERUS.
- Leaves membranaceous, pinnately or ternately compound, the leaflets mostly linear to oblong; mericarp with 5 filiform to winged ribs.
Carpophore wanting; ribs corky-winged, the wings broadly linear to subovate in cross section; seed slightly flattened dorsally in cross section; strengthening cells at the base of the wings. 68. OREOXIS.
- Carpophore present; ribs not winged, sometimes prominent; seed subterete in cross section; strengthening cells absent or inconspicuous.
Plants tomentose, rarely glabrate; inflorescence subcapitate; pedicels of sterile flowers filiform, elongate, longer than the fruit and rays, those of the fertile flowers obsolete; fruit tomentose to rarely glabrate. 18. OREONANA.

Plants glabrous, scabrous, or pubescent, never tomentose; inflorescence of loose or compact umbels; pedicels of sterile flowers inconspicuous, those of the fertile flowers present; fruit glabrous or scabrous.

Ribs prominent, acute or obtuse or corky, and the calyx-teeth evident or conspicuous.

Seed-face plane to concave; leaflets linear to orbicular, 4-35 mm. long, 0.5-10 mm. broad; Rocky Mountains, Great Plains, and Great Basin.

Plants scaberulous, at least in the inflorescence; fruit scaberulous to glabrate; oil-tubes usually several in the intervals.

Plants glabrous to puberulent, never scaberulous; fruit glabrous; oil-tubes solitary in the intervals.

Seed-face deeply sulcate; leaflets oblong to oval, 30-80 mm. long, 20-50 mm. broad; California and Baja California.

Ribs filiform, or if prominent the calyx-teeth minute, never conspicuous.

37. MUSINEON

38. ALETES.

17. TAUSCHIA.

17. TAUSCHIA.

KEY 5.

Inflorescence of irregularly compound umbels; leaves simple, repand or rarely crenate, with palmate venation.

Inflorescence of regularly compound umbels; leaves pinnate or ternately compound, rarely entire, with pinnate or parallel venation.

Plants annual; leaves entire, the cauline usually sessile and clasping, auriculate or perfoliate, with parallel venation.

Plants perennial (annual in *Pimpinella*); leaves compound, rarely entire, the cauline usually petiolate, not clasping, nor auriculate, nor perfoliate, with pinnate venation.

Leaves ternately, pinnately, or ternate-pinnately compound, the leaflets distinct, mostly large, lanceolate to suborbicular or obovate, variously serrate, dentate or lobed, occasionally incised.

Leaves ternately, pinnately, or ternate-pinnately decomposed, the leaflets usually somewhat confluent, small, filiform to ovate, pinnately incised to parted.

4. MICROPLEURA.

46. BUPLEURUM.

KEY 5 A.

KEY 5 B.

KEY 5 A.

Flowers purple; ribs winged.

Plants pubescent; fruit contracted below the seed to form a short, winged, stipe-like base.

Plants glabrous and glaucous; fruit not contracted below the seed.

Flowers white or yellow, rarely purple; ribs never winged, or narrowly winged and the flowers white.

Plants pubescent; flowers purple; fruit contracted below the seed to form a short, winged, stipe-like base.

Plants glabrous, rarely pubescent (in *Arracacia* and *Pimpinella*); flowers white or yellow (rarely purple in *Arracacia*); fruit not contracted into a stipe-like base.

Flowers bright yellow; stylopodium lacking.

Leaflets entire; involucre wanting.

Leaflets serrate or dentate; involucre present.

Leaflets callous-margined; rays webbed at the base; flowers all pedicellate.

Leaflets not callous-margined; rays not webbed at the base; central flower of each umbellet sessile.

Flowers white or greenish-yellow, rarely purple; stylopodium depressed to conic.

Involucre of numerous, usually conspicuous, foliaceous bractlets (wanting in *Cicuta*); ribs prominent, corky, subequal or unequal, or the entire pericarp thick and corky; mostly aquatic or semiaquatic plants.

Calyx-teeth minute or obsolete; fruit ovoid to ellipsoid; styles short, spreading to reflexed.

Leaves conspicuously heteromorphic; plants stoloniferous; ribs filiform, obscure in the thick corky pericarp.

Leaves homomorphic; plants not stoloniferous; ribs evident, corky, subequal or unequal.

Leaflets lanceolate to suborbicular; umbels subsessile in the axils and terminal on the branches, the terminal mostly short-pedunculate.

Leaflets linear-lanceolate to ovate; umbels terminal on the branches, mostly long-pedunculate.

Involucre of conspicuous subfoliaceous bracts; rays few; ribs subequal in cross section.

67. COULTEROPHYTUM.

66. COAXANA.

67. COULTEROPHYTUM.

34. TAENIDIA.

20. ARRACACIA.

35. ZIZIA.

55. BERULA.

41. APIUM.

56. SIUM.

- Involucre wanting or of few inconspicuous bracts; rays usually numerous; ribs unequal in cross section.
- Calyx-teeth usually lanceolate, forming a persistent conspicuous corona on the fruit; fruit oblong; styles erect, elongate and rigid after anthesis.
- Involucre wanting, rarely foliaceous, rarely filiform or obscure.
- Fruit ellipsoid-cordate; bractlets of the involucre filiform, longer than the fruit; Mexico and Central America.
- Fruit orbicular to linear-oblong; bractlets of the involucre never filiform, or if filiform shorter than the fruit.
- Leaflets often falcate, cartilaginous-serrate; ribs broader than the intervals.
- Leaflets not falcate, rarely cartilaginous-serrate; ribs narrower than the intervals.
- Plants from tuberous or fusiform fascicled roots; involucre of usually scarious or colored bractlets; calyx-teeth conspicuous.
- Plants from slender or thick fascicled roots, taproots, or rootstocks; involucre wanting or foliaceous, never scarious nor colored; calyx-teeth obsolete or minute.
- Fruit linear-oblong to linear-fusiform, usually several times longer than broad; plants from slender or thick fascicled roots.
- Flowers white; oil-tubes evident; fruit narrowed toward base and apex; seed-face plane; eastern United States.
- Flowers greenish yellow; fruit rounded at base and apex; oil-tubes obscure or wanting; seed-face deeply sulcate; western United States.
- Fruit orbicular to oblong, usually 2-3 times longer than broad; plants from creeping rootstocks, deep-seated tubers, or taproots.
- Ribs narrowly winged.
- Ribs not winged.
- Involucre usually wanting; oil-tubes obscure; seed-face plane.
- Involucre usually present; oil-tubes evident; seed-face sulcate or concave.
- Leaves usually heteromorphic; outer petals usually radiant; introduced weeds.
- Leaves homomorphic; petals equal; Mexico and Central America.
58. CUCUTA.
59. OENANTHE.
13. NEONELSONIA.
49. FALCARIA.
50. PERIDERIDIA.
22. CRYPTOTAENIA.
23. OSMORHIZA.
51. LIGUSTICUM.
45. AEGOPODIUM.
43. PIMPINELLA.
20. ARRACACIA.

KEY 5 B.

- Plants subcespitose; carpophore entire; fruit conspicuously constricted at the commissure, granular-roughened.
- Plants not cespitose; carpophore usually 2-cleft to the base or bifid, rarely entire or wanting; fruit usually not conspicuously constricted at the commissure, not granular-roughened.
- Involucre of numerous, usually foliaceous bractlets; ribs prominent, corky, or the entire pericarp thick and corky; aquatic or semi-aquatic.
- Calyx-teeth usually lanceolate, forming a persistent conspicuous corona on the fruit; fruit oblong; styles erect, elongate and rigid after anthesis.
- Calyx-teeth minute to obsolete; fruit ovoid to globose; styles short, spreading to reflexed.
- Leaves conspicuously heteromorphic; plants stoloniferous; ribs filiform, obscure in the thick, corky pericarp.
- Leaves not conspicuously heteromorphic; plants not stoloniferous; ribs evident, corky.
- Involucre present or absent; ribs obscure to somewhat prominent, never corky; mostly of dry land.
- Plants glaucous, with strong anise odor; involucre wanting.
- Plants rarely glaucous, without anise odor; involucre usually present.
- Involucre of numerous, entire or divided, more or less conspicuous bracts.
- Plants with spotted stems; ribs undulate, crenate; introduced weed.
- Plants without spotted stems; ribs neither undulate nor crenate.
- Involucre of usually scarious or colored bractlets; calyx-teeth conspicuous; rays few, 5-25.
36. HARBOURIA.
59. OENANTHE.
55. BERULA.
56. SIUM.
33. FOENICULUM.
47. CONIUM.
50. PERIDERIDIA.

- Involucel of green bractlets; calyx-teeth minute; rays numerous, 50-100. 48. AMMI.
- Involucre wanting or inconspicuous.
- Involucre and involucel usually wanting; flowers yellow or purple; stylopodium depressed or lacking. 16. DONNELLSMITHIA.
- Involucre present or absent, the involucel usually present; flowers usually white or pinkish (greenish-yellow to purple in *Arracacia* and *Petroselinum*); stylopodium conic.
- Plants hispid; fruit beaked; oil-tubes obscure. 28. ANTHRISCUS.
- Plants glabrous or somewhat puberulent; fruit not beaked; oil-tubes evident.
- Stems procumbent to erect, forming a semiglobose clump; petals without an inflexed tip; Haiti. 12. PENINOPETALUM.
- Stems all erect; petals with a narrower inflexed tip. Flowers yellow or purple.
- Involucel shorter than the flowers; fruit 2-4 mm. long, 1.5-3 mm. broad, little longer than broad; introduced weeds. 42. PETROSELINUM.
- Involucel longer than the flowers; fruit 3-12 mm. long, 2-4 mm. broad, 2-3 times longer than broad; Mexico and Central America. 20. ARRACACIA.
- Flowers white or pinkish.
- Plants without a fibrous root-crown; pedicels unequal; introduced weeds. 44. CARUM.
- Plants from fibrous root-crowns; pedicels subequal.
- Calyx-teeth minute to evident; fruit glabrous. 51. LIGUSTICUM.
- Calyx-teeth prominent; fruit pubescent. 57. SESELL.
- KEY 6.
- Plants acaulescent or short-caulescent, low, usually slender; stems subscapose.
- Leaflets with cartilaginous crenate-dentate margins, densely white-tomentose beneath; maritime. 69. GLEHNNIA.
- Leaflets with margins not cartilaginous, variously incised or lobed, glabrous or hirtellous; not maritime.
- Calyx-teeth obsolete or evident, ovate to deltoid.
- Subcaulescent to caulescent; peduncles conspicuously hirtellous-pubescent at the base of the umbel. 73. PSEUDOCYMPOTERUS.
- Acaulescent to subcaulescent; peduncles glabrous to rarely scaberulous.
- Calyx-teeth prominent, linear-lanceolate, acuminate, often unequal.
- Plants caulescent, mostly tall, sometimes stout; stems leafy. 70. CYMOTERUS.
- Involucre of several 3-cleft bracts; involucel similar. 71. PTERYXIA.
- Involucre and involucel of entire bracts and entire or rarely cleft bractlets or wanting. 80. EURYAENIA.
- Stylopodium present, conic.
- Annual, with a strong anise odor; involucel usually wanting. 79. ANETHUM.
- Perennial, without an anise odor; involucel usually present.
- Pedicels reduced to a tomentose disk; fruit cuneate-obovoid. 77. SPHENOSCIADIUM.
- Pedicels slender, spreading; fruit oblong-oval to orbicular.
- Leaflets broad and distinct, serrate, dentate, or lobed.
- Involucre and involucel of numerous conspicuous, scarious, reflexed bracts and bractlets; wings subequal. 78. LEVISTICUM.
- Involucre wanting or of a few foliaceous bracts; involucel present, foliaceous, or absent; lateral wings broader than the dorsal.
- Petiolules with a membranous or glandular-tufted stipular ring; bractlets of the involucel usually cleft or divided, rarely entire; fruit oblong to linear, 10-20 mm. long; Costa Rica and Panama. 81. MYRRHODENDRON.
- Petiolules without a stipular ring; bractlets of the involucel entire; fruit orbicular to obovoid, 3-18 mm. long; United States to Guatemala.
- Rays 2-20; pedicels 1-6; flowers greenish-yellow or purplish; dorsal ribs slender; seed-face slightly concave to sulcate or involute.
- Rays 5-45; pedicels numerous; flowers white, pink, or purplish; dorsal ribs thick; seed-face plane. 83. RHODOSCIADIUM.
- Leaflets pinnately lobed or dissected into narrow segments.
- Plants perennial; fruit 4-6 mm. long, 2-3.5 mm. broad. 76. ANGELICA.
- Plants annual; fruit 2.5-3 mm. long, 1.5-2 mm. broad; introduced weed on ballast. 75. CONIOSELINUM.
- Stylopodium absent. 74. CNIDIUM.
- Calyx-teeth prominent, linear-lanceolate, attenuate, often unequal. 71. PTERYXIA.

Calyx-teeth obsolete or evident, ovate.

Plants from long slender taproots; carpophore 2-cleft to the base; western United States, Mexico, and Central America.

Cauliscent; peduncles glabrous or pubescent throughout; involucl not dimidiate; calyx-teeth obsolete or minute; fruit 7-20 mm. long, 3-12 mm. broad; seed-face slightly concave to involute.

Subcaulescent to caulescent; peduncles conspicuously hirtellous-pubescent at the base of the umbel; involucl dimidiate; calyx-teeth ovate, evident; fruit 3-7 mm. long, 2-4 mm. broad; seed-face plane.

Plants from a fascicle of fibrous roots; carpophore wanting; eastern United States.

82. PRIONOSCIADIUM.

73. PSEUDOCYMOPTERUS.

72. THASPIUM.

KEY 7.

Leaves, at least the cauline, decomposed with filiform to linear segments.

Stylopodium present, depressed to concic.

Stylopodium lacking.

Plants usually stout, tall, with many large stem-leaves; seed-face slightly concave to involute; Mexico and Central America.

Plants usually slender, low, with no or few small stem-leaves; seed-face plane; United States and northern Mexico.

Fruit with a corky projection extending down the middle of the commissural face of each mericarp.

Fruit without a corky projection on the mericarp.

Peduncles conspicuously hirtellous-pubescent at the base of the umbel.

Peduncles glabrous or pubescent throughout.

Leaves pinnate, ternate, or ternate-pinnately compound, with broad, entire, serrate, crenate, or lobed leaflets, or the leaves reduced to hollow, acute, septate phyllodes.

Stylopodium lacking.

Leaves 2-3-ternate or ternate-pinnate, the leaflets remote, oblong to ovate, entire or rarely with a basal lobe; involucl wanting.

Plants caulescent from subfusiform tubers; peduncles not swollen at the apex; eastern United States.

Plants acaulescent or with 1 stem-leaf from a long thickened taproot; peduncles swollen at the apex; western United States.

Leaves ternate-pinnate or pinnate, the leaflets more crowded, oblong to obovate, crenate to incised-lobed; involucl present.

Dorsal ribs somewhat prominent; seed-face slightly concave to involute; carpophore 2-cleft to the base, each division usually bifid; Mexico and Central America.

Dorsal ribs filiform to obscure; seed-face plane to slightly concave; divisions of the carpophore not bifid; United States.

Calyx-teeth minute or obsolete; stem-leaves few; western United States.

Calyx-teeth ovate, acute or acuminate; stem-leaves several; eastern United States.

Stylopodium present.

Peduncles verticillate; fruit caudate; Mexico and Central America.

Peduncles not verticillate; fruit not caudate.

Plants slender, from fascicled tubers or fibrous roots; leaves simply pinnate or ternate, sometimes reduced to phyllodes, frequently glaucous; marshes and low ground.

Petals with a narrow inflexed apex; carpophore 2-cleft to the base; fruit strongly flattened dorsally.

Petals plane; carpophore shortly bifid; fruit slightly flattened dorsally.

Plants stout, from taproots or fascicled fibrous roots; leaves pinnately or ternately compound, not reduced.

Outer petals of the inflorescence radiant and often 2-cleft; plants tomentose-pubescent; oil-tubes extending only part way from the apex to the base of the mericarp.

Outer petals of the inflorescence neither radiant nor 2-cleft; plants not tomentose, sometimes glabrous; oil-tubes extending the full length of the mericarp.

Leaves pinnate; involucl usually wanting; flowers yellow or red.

Leaves mostly twice-pinnate or ternate-pinnate; involucl usually present; flowers white, pink, purple, or greenish-yellow.

Leaves ternate, the leaflets usually 3-parted, sharply serrate and incised.

Leaves ternately-pinnately or pinnately divided, the leaflets not 3-parted, variously incised, serrate, or dentate.

83. RHODOSCIADIUM.

82. PRIONOSCIADIUM.

15. OROGENIA.

73. PSEUDOCYMOPTERUS.

87. LOMATIUM.

86. PSEUDOTAENIDIA.

87. LOMATIUM.

82. PRIONOSCIADIUM.

87. LOMATIUM.

88. POLYTAENIA.

84. ENANTIOPHYLLA.

85. OXYPOLIS.

65. LIMNOSCIADIUM.

91. HERACLEUM.

90. PASTINACA.

89. IMPERATORIA.

- Rays 2-20; pedicels 1-6; flowers greenish-yellow or purplish; dorsal ribs slender; seed-face slightly concave to sulcate or involute. 83. RHODOSCIADIUM.
 Rays 5-45; pedicels numerous; flowers white, pink, or purplish; dorsal ribs thick; seed-face plane. 76. ANGELICA.

KEY 8.

- Inflorescence reduced to a solitary axillary flower. 1. ASCIADIUM.
 Inflorescence capitate with many flowers. 70. CYMPTERUS.
 Fruit winged, not squamose. 92. ERYNGIUM.
 Fruit not winged, ribless, variously squamose.

1. ASCIADIUM Griseb. Cat. Pl. Cub. 118. 1866.

Low, herbaceous, glabrous annuals with filiform, creeping stems, rooting at the nodes. Leaves often rosulate at the lower nodes, petiolate, membranaceous, pinnate with 5 crenate to lobed leaflets. Inflorescence a solitary axillary flower or a simple two-flowered umbel; peduncles obsolete, the flowers pedicellate to subsessile in the axils. Involucre, involucrel, and rays obsolete. Flowers white or greenish; petals ovate-oblong, acute, without an inflexed apex; calyx-teeth minute; styles short, the stylopodium depressed-conic. Immature fruit ovoid, flattened laterally, glabrous.

Type species, *Asciadium coronopifolium* Griseb.

1. *Asciadium coronopifolium* Griseb. Cat. Pl. Cub. 118. 1866.

Low, creeping annuals, rooting at the nodes, the internodal distance about 2 cm.; leaves pinnate, 4-9 mm. long, 3-6 mm. broad; leaflets 5, the lower remote, crenate to deeply lobed, the terminal leaflet cuneate, 3-lobed, the divisions 2-3 mm. long and about as broad; petioles slender, 4-6 mm. long; pedicels 4-5 mm. long, shorter than the leaves; immature fruit ovoid.

TYPE LOCALITY: "Cuba occidentalis," Wright 2633.

DISTRIBUTION: Known only from the type locality.

2. HYDROCOTYLE L. Sp. Pl. 234. 1753.

Hydrocotyle Crantz, Inst. 2: 140. 1766.

Hydrocotyle Neck. Delic. 136. 1768.

Low, glabrous or pubescent, herbaceous perennials with slender creeping stems or root-stocks, rooting at the nodes. Leaves petiolate, membranaceous, peltate or non-peltate, entire or parted to the base. Petioles slender, non-sheathing. Inflorescence usually a simple umbel, sometimes proliferous or an interrupted spike; peduncles axillary, obsolete to much longer than the leaves. Involucre wanting or present. Pedicels spreading to reflexed. Flowers white; greenish, or yellow; petals ovate, plane; calyx-teeth minute or obsolete; stylopodium conspicuously conic to depressed. Fruit orbicular or ellipsoid, strongly flattened laterally, the dorsal surface rounded or acute; dorsal ribs acute or obsolete; lateral ribs conspicuous, slender, acute, or rarely obsolete; mericarp orbicular to triangular in cross section; oil-bearing cells conspicuous to obsolete; seed ovate to ovate-oblong in cross section, the face plane to concave; strengthening cells surrounding the seed cavity.

Type species, *Hydrocotyle vulgaris* L.

Leaves peltate.

Inflorescence a simple umbel, not proliferous.

Fruit sessile or subsessile.

Petiole and leaf-blade more or less pubescent; dorsal surface of the fruit rounded, lateral ribs absent.

Petioles glabrous to densely retrorse-vilous; peduncles about equaling the leaves; fruit glabrous to sparingly hirsute, oil-bearing cells absent.

Petioles glabrous; peduncles exceeding the leaves; fruit glabrous, oil-bearing cells present.

Petiole and leaf-blade glabrous; dorsal surface of fruit somewhat expanded, lateral ribs evident.

Fruit pedicellate.

Leaves 5-75 mm. in diameter; peduncles usually longer than the leaves; umbels many-flowered.

1. *H. pusilla*.
2. *H. Brittonii*.
3. *H. pygmaea*.
4. *H. umbellata*.

- Leaves 3.5–8 mm. in diameter; peduncles shorter than the leaves; umbels 1–3-flowered.
 Inflorescence a proliferous umbel or an interrupted spike.
 Inflorescence usually unbranched.
 Petioles glabrous.
 Inflorescence often bifurcate; fruit sessile or subsessile; pedicels usually less than 2 mm. long.
 Inflorescence rarely bifurcate; fruit pedicellate; pedicels 1–20 mm. long.
 Leaves 5–60 mm. in diameter; pedicels 1–10 mm. long.
 Leaves 3–20 mm. in diameter; pedicels 4–20 mm. long.
- Petioles more or less pubescent.
 Leaves 10–27 mm. in diameter; petioles sparsely villous-hirsute; peduncles 10–12 mm. long.
 Leaves 3–9 mm. in diameter; petioles pilose or with white, subretorse, lanate hairs; peduncles 15–30 mm. long.
 Inflorescence profusely branched.
- Leaves not peltate.
 Leaves glabrous.
 Fruit sessile.
 Fruit pedicellate.
 Umbels subsessile; leaves shallowly lobed.
 Umbels pedunculate; leaves lobed about to the middle.
 Leaves variously pubescent.
- Inflorescence a simple umbel.
 Leaves angulate-lobed, the lobes elongate, acute or acutish.
 Leaves not angulate-lobed, entire or with shallow, broadly rounded lobes.
 Fruit sessile; peduncles shorter than or about equaling the leaves.
 Leaves 7–8-lobed; fruit glabrous.
 Leaves 5-lobed; fruit hispidulous.
 Fruit pedicellate; peduncles usually exceeding the leaves.
 Leaves more or less appressed-strigose above and below; umbels 25–70-flowered.
 Leaves not appressed-strigose, sparingly pubescent; umbels 20–30-flowered.
- Inflorescence an interrupted spike.
 Leaves pubescent on both surfaces.
 Leaves glabrous beneath.
5. *H. oligantha*.
 6. *H. verticillata*.
 6a. *H. verticillata* var. *triradiata*.
 6b. *H. verticillata* var. *cubensis*.
 6c. *H. verticillata* var. *Fetherstoniana*.
 7. *H. lanipes*.
 8. *H. bonariensis*.
 9. *H. sibthorpioides*.
 10. *H. americana*.
 11. *H. ranunculoides*.
 12. *H. ribifolia*.
 13. *H. Torresiana*.
 14. *H. bowlesiioides*.
 15. *H. mexicana*.
 16. *H. leucocephala*.
 17. *H. hirsuta*.
 17a. *H. hirsuta* var. *leptostachys*.

1. *Hydrocotyle pusilla* A. Rich. Ann. Gén. Sci. Phys. 4: 167. 1820.

Not *H. pusilla* R. Br. 1820.

Hydrocotyle brevipes DC. Prodr. 4: 63, ex descr. 1830.

Hydrocotyle costaricensis Rose; Rose & Standley, Jour. Wash. Acad. 17: 195. 1927.

Stems filiform; leaves thin, orbicular-peltate, excluding the petiole 3–20 mm. long, 4–16 mm. broad, shallowly 5–8-lobed, the lobes crenate, glabrous to sparsely villous above, glabrous beneath; petioles slender, 5–35 mm. long, glabrous to densely retrorse-villous; inflorescence a simple umbel, the peduncles about equaling the leaves, 5–15 mm. long, glabrous to retrorse-villous; involucre of a few thin lanceolate, acute bracts; umbels 2–6-flowered, the flowers sessile to subsessile; stylopodium depressed-conic; fruit ovoid in general outline, about 0.5 mm. long, about 1 mm. broad, sparingly hirsute to glabrous, the dorsal surface rounded, the ribs obsolete, the commissural face plane; oil-bearing cells absent; seed oblong-ovate in cross section.

TYPE LOCALITY: "Dans les lieux arides des environs de Montevideo," Uruguay, Commerson.

DISTRIBUTION: Haiti, Jamaica, and Puerto Rico; Mexico to Panama, extending through South America to Brazil and Uruguay; 2500–7800 feet. (*Ekman H1249, Pittier 10,355.*)

ILLUSTRATIONS: Ann. Gén. Sci. Phys. 4: pl. 52, f. 2; Mart. Fl. Bras. 11^a: pl. 72, f. 2.

2. *Hydrocotyle Brittonii* Mathias, Brittonia 2: 239. 1936.

Stems glabrous, filiform; leaves thin, peltate, orbicular, 4–11 mm. in diameter, 6–7-nerved, shallowly 6–7-crenately lobed, the crenations 1–3-crenulate, the crenulations truncate to subtruncate, glabrous to sparsely setulose above, glabrous beneath; petioles filiform, glabrous, 3–14 mm. long; inflorescence a simple umbel; peduncles longer than the leaves, 3–16 mm. long, filiform, glabrous; involucre of conspicuous ovate-lanceolate, scarious bracts; umbels

1- or 2-flowered, the flowers subsessile; fruit ellipsoid in general outline, about 1 mm. long, 1.5 mm. broad, glabrous, the dorsal surface rounded, the ribs obsolete, the commissural surface rounded, narrowly oblong in cross section; oil-bearing cells present; seed ovate in cross section.

TYPE LOCALITY: Banks, Morel's Gap, vicinity of Cinchona, Jamaica, *Britton 177*.

DISTRIBUTION: Known only from the type locality.

3. *Hydrocotyle pygmaea* C. Wright; Sauv. Anal. Acad. Ci.

Habana 6: 97. 1869.

Plants glabrous; stems filiform; leaves thin, orbicular-peltate, excluding the petioles 3-6 mm. long, 3-7 mm. broad, shallowly 5-7-lobed; petioles filiform, 3-15 mm. long; inflorescence a simple umbel; peduncles about equaling the leaves, 8-15 mm. long; involucre inconspicuous; umbels 1-3-flowered, the flowers greenish, sessile to subsessile; fruit ellipsoid in general outline, 1-1.5 mm. long, 2-3 mm. broad, the dorsal surface somewhat expanded, narrowly oblong in cross section, with 2 distinct lateral ribs, the commissural surface plane; oil-bearing cells present.

TYPE LOCALITY: "A la orilla de las lagunas circa del potrero San Julian, Nueva Filipina." Cuba, *Wright 3571*.

DISTRIBUTION: Cuba (*Britton 7181, Shafer 10,789*).

4. *Hydrocotyle umbellata* L. Sp. Pl. 234. 1753.

Hydrocotyle umbellata Michx. Fl. Bor. Am. 1: 161. 1803.

Hydrocotyle incrassatum Raf. Fl. Ludov. 81. 1817. Not *H. incrassatum* Ruiz & Pav. 1802.

Hydrocotyle polystachya A. Rich. Ann. Gén. Sci. Phys. 4: 171. 1820.

Hydrocotyle polystachya var. *quinqueradiata* Thouars; A. Rich. Ann. Gén. Sci. Phys. 4: 171. 1820.

Hydrocotyle umbellata var. *umbellata* DC. Prodr. 4: 60. 1830.

Hydrocotyle petiolaris DC. Prodr. 4: 60. 1830.

Hydrocotyle frutians DC. Prodr. 4: 69. 1830.

Hydrocotyle Caffra Meissn. Lond. Jour. Bot. 2: 529. 1843.

Hydrocotyle scaposus Steud. Flora 26: 763. 1843.

Hydrocotyle umbellata var. *microphylla* Urban in Mart. Fl. Bras. 11: 269. 1879.

Hydrocotyle umbellata var. *scaposus* Urban in Mart. Fl. Bras. 11: 270. 1879.

Hydrocotyle umbellata var. *intermedia* Urban in Mart. Fl. Bras. 11: 270. 1879.

Stems slender to somewhat fleshy, floating or creeping; leaves orbicular-peltate, excluding the petioles 5-75 mm. in diameter, crenate or crenately lobed, glabrous; petioles mostly slender, 0.5-40.5 cm. long, glabrous; peduncles usually longer than the leaves, 1.5-35 cm. long, glabrous; umbels simple, many-flowered; pedicels 2-25 mm. long, spreading and reflexed; stylopodium depressed; fruit orbicular to ellipsoid in general outline, 1-2 mm. long, 2-3 mm. broad, the dorsal surface acute, the dorsal and lateral ribs evident, obtuse; strengthening cells absent.

TYPE LOCALITY: "America" (Virginia), *Clayton 429*.

DISTRIBUTION: Nova Scotia to Florida, west to Minnesota and Texas; Oregon and California, south to Panama and South America; Bermuda and the West Indies; coastal plains and along streams below 8000 feet. (*Curtiss 5676, Ekman H5653*.)

ILLUSTRATIONS: Spreng. Sp. Umbell. pl. 1; Ann. Gén. Sci. Phys. 4: pl. 52, f. 3; pl. 53, f. 4; Bot. Gaz., 12: pl. 4, f. 43, 44 (fr.); Britt. & Brown, Ill. Fl. ed. 2. 2: 649; Fassett, Man. Aquat. Pl. 270, f. 56, 57.

5. *Hydrocotyle oligantha* Urban, Repert. Nov. Sp. 24: 7. 1927.

Plants glabrous; stems filiform, creeping; leaves thin, peltate, orbicular, 3.5-8 mm. in diameter, 7-9-nerved, 7-9-crenulate, the crenulations truncate to subtruncate; petioles slender, about 15-35 mm. long; peduncles shorter than or about equaling the leaves, slender, up to 25 mm. long; umbels simple, 2- (rarely 1- or 3-)flowered; pedicels ascending, 5-25 mm. long; immature fruit suborbicular, rounded at the base, 2 mm. broad.

TYPE LOCALITY: "Prov. Oriente prope Bayate ad lapides in Rio Jagua," Cuba, *Ekman H8578*.

DISTRIBUTION: Known only from the type locality.

6. *Hydrocotyle verticillata* Thunb. Diss. Hydrocot. 2. 1798.Not *H. verticillata* Turcz. 1849.

- Hydrocotyle vulgaris* sensu Michx. Fl. Bor. Am. 1: 161. 1803. Not *H. vulgaris* L. 1753.
Hydrocotyle interrupta Muhlb. Cat. 30. 1813.
Hydrocotyle vulgaris var. *verticillata* Pers. Syn. Pl. 1: 301. 1805.
Hydrocotyle vulgaris var. *communis* Cham. & Schlecht. Linnaea 1: 356. 1826.
Hydrocotyle interrupta var. *tuberosa* DC. Prodr. 4: 59. 1830.
Hydrocotyle interrupta var. *platyphylla* DC. Prodr. 4: 667. 1830.
Hydrocotyle cuneata Coult. & Rose, Contr. U. S. Nat. Herb. 7: 28. 1900.
Hydrocotyle verticillata var. *cuneata* Jepson, Madroño 1: 124. 1923.

Plants glabrous; stems filiform, creeping; leaves orbicular-peltate, 5–60 mm. in diameter, 7–14-veined, shallowly 8–13-lobed, the lobes crenate; petioles slender, 0.5–26 cm. long; inflorescence an axillary, simple, interrupted, once or twice bifurcate (rarely trifurcate or quadrifurcate) spike, 1.5–17 cm. long, with 2–7 few-flowered verticils, the interverticillar distance 2–60 mm., the flowers sessile or subsessile; involucre of a few inconspicuous lanceolate bracts; fruit ellipsoid, 1–3 mm. long, 2–4 mm. broad, the dorsal surface acute, narrowly rounded to cuneate at the base, oblong in cross section, the dorsal and lateral ribs distinct, acute, the commissural surface constricted; oil-bearing cells conspicuous; seed oblong-ovate in cross section.

TYPE LOCALITY: Not given by Thunberg; a collection of *Michaux* from "America" cited by A. Richard.

DISTRIBUTION: Massachusetts to Florida, west to Missouri and Texas; southern Utah, California, New Mexico, and Arizona, south to Mexico; Bermuda, Jamaica, and the West Indies. (*Curtiss 5377*, *Suksdorf 563*.)

ILLUSTRATIONS: Thunb. Diss. Hydrocot. *pl.*; Thunb. Diss. Acad. 2: *pl. 3*; Bot. Gaz. 12: *pl. 4*, *f. 49*, *50* (*fr.*); Contr. U. S. Nat. Herb. 7: 25; Britt. & Brown, Ill. Fl. ed. 2: 2: 649; Britton, Fl. Bermuda 273; Fassett, Man. Aquat. Pl. 269, *f. 53*, *54*.

6a. *Hydrocotyle verticillata* var. *triradiata* (A. Rich.) Fernald,*Rhodora* 41: 437. 1939.

- Hydrocotyle tribotrys* R. & P. Fl. Per. 3: 24. 1820.
Hydrocotyle polystachya var. *triradiata* A. Rich. Ann. Gén. Sci. Phys. 4: 171. 1820.
Hydrocotyle racemosa DC. Prodr. 4: 70. 1830.
Hydrocotyle bonariensis var. *tribotrys* G. Don, Gen. Hist. 3: 249. 1834.
Hydrocotyle prolifera Kellogg, Proc. Calif. Acad. 1: 15. 1854; ed. 2: 1: 14. 1873.
Hydrocotyle natans sensu Torr. Bot. Mex. Bound. Surv. 69. 1859. Not *H. natans* Cyrill. 1788.
Hydrocotyle umbellata var. ? *ambigua* A. Gray, Man. ed. 5. 190. 1867. Not *H. ambigua* Pursh. 1814.
Hydrocotyle verticillata var. *tenella* Urban in Mart. Fl. Bras. 11¹: 268. 1879.
Hydrocotyle verticillata var. *13-nervis* Urban in Mart. Fl. Bras. 11¹: 268. 1879.
Hydrocotyle verticillata var. *longipedunculata* Urban in Mart. Fl. Bras. 11¹: 268. 1879.
Hydrocotyle verticillata var. *pluriradiata* Urban in Mart. Fl. Bras. 11¹: 268. 1879.
Hydrocotyle Canbyi Coult. & Rose, Bot. Gaz. 12: 103. 1887.
Hydrocotyle ambigua B. S. P. Prel. Cat. N. Y. 21. 1888. Not *H. ambigua* Pursh 1814.
Hydrocotyle australis Coult. & Rose, Contr. U. S. Nat. Herb. 7: 28. 1900.
Hydrocotyle trilobulata Gand. Bull. Bot. Soc. Fr. 65: 31. 1918.
Hydrocotyle verticillata var. *racemosa* Mathias, Brittonia 2: 204. 1936.

Leaves 5–60 mm. in diameter, 8–14-nerved, shallowly 8–14-lobed; petioles slender, 1.5–35 cm. long; inflorescence an axillary, interrupted, simple or rarely branched spike, 8–22 cm. long, with few 4–15-flowered verticils, the interverticillar distance 4–40 mm., the flowers pedicellate, the pedicels 1–10 mm. long.

TYPE LOCALITY: Mexico, *Sesse & Mociño*.

DISTRIBUTION: Massachusetts to Florida to southern Nevada and California, south through Mexico and Central America to Chile, Paraguay, and northern Argentina; Cuba, Haiti, and Puerto Rico; coastal and lower elevations. (*Curtiss 5376*, *Heller 1935*, *Leonard 12,209*.)

ILLUSTRATIONS: Moc. & Sessé, Calq. Dess. *pl. 425*; Bot. Gaz. 12: *pl. 4*, *f. 45*, *47*; E. & P. Nat. Pl. 3^a: 117; Britt. & Brown, Ill. Fl. ed. 2: 2: 649.

6b. *Hydrocotyle verticillata* var. *cubensis* Rose; Mathias,*Brittonia* 2: 240. 1936.

Stems weak, spreading; leaves 3–20 mm. in diameter, 10-veined; petioles 0.7–10 cm. long; inflorescence a simple, axillary, interrupted spike, 3.5–11 cm. long, with few 7–10-flowered

verticils, the interverticillar distance 3–20 mm., the flowers pedicellate, the pedicels 4–20 mm. long, spreading.

TYPE LOCALITY: In mud along Rio Canto, Paso Estancia, Oriente, Cuba, *Shafer 1649*.
DISTRIBUTION: Cuba and Dominican Republic (*Pollard 314, Wright 214*).

6c. *Hydrocotyle verticillata* var. *Fetherstoniana** (O. Jennings)

Mathias, Brittonia 2: 240. 1936.

Hydrocotyle Fetherstoniana O. Jennings; *Fetherston, Torreya* 32: 7. 1932.

Leaves 10–27 mm. in diameter, shallowly 6–7-lobed; petioles slender, 2–10 cm. long, sparsely villous-hirsute; inflorescence an axillary, unbranched, interrupted spike, shorter than the leaves, 10–12 mm. long, with 1–2 few-flowered verticils, the interverticillar distance 0.5–2 mm.; flowers sessile or subsessile, whitish; commissural surface of the fruit plane; oil-bearing cells obsolete.

TYPE LOCALITY: Fetherston Garden, Pittsburgh, Pennsylvania, originally collected in moist woods along a stream in virgin forest, one mile north of Washington Hunt, Wyoming County, New York, and a few miles east of Letchworth Park, July 1926, *Edith Fetherston*.

DISTRIBUTION: Known only from the type locality.

7. *Hydrocotyle lanipes* Urban & Ekman; *Urban, Ark. Bot.* 22A¹⁰:

42. 1929.

Stems filiform, creeping, glabrous; leaves thin, peltate, suborbicular, 3–9 mm. in diameter, 7-nerved, 7-crenate, the crenations 2–3-crenulate, sparsely setulose near the margins above, glabrous beneath; petioles 3–15 mm. long, pilose or with white, subretorse, lanate hairs; inflorescence a simple, axillary, interrupted spike, 15–30 mm. long, with 1–5 few-flowered verticils; flowers subsessile; peduncles filiform, more or less pilose; involucre of triangular-lanceolate or lanceolate bracts; fruit suborbicular, 0.7–0.8 mm. long, 1 mm. broad, glabrous.

TYPE LOCALITY: Haiti, "Central Plain prope Belladere ad Riviere Jouan-de-Vere, ubi via ad Savanette cum rivulo ducussatur, in lapide," *Ekman H5640*.

DISTRIBUTION: Known only from the type locality.

8. *Hydrocotyle bonariensis* Lam. *Encyc.* 3: 153. 1789.

Hydrocotyle multiflora R. & P. *Fl. Per.* 3: 24. 1802.

Hydrocotyle bonariensis var. *multiflora* DC. *Prodr.* 4: 60. 1830.

Hydrocotyle bonariensis var. *texana* Coult. & Rose, *Bot. Gaz.* 15: 259. 1890.

Hydrocotyle umbellata var. *bonariensis* Speg. *Anal. Soc. Ci. Argent.* 48: 54. 1899.

Hydrocotyle yucatanensis Millsp. *Field Mus. Publ. Bot.* 2: 81. 1900.

Plants glabrous; stems slender, creeping; leaves orbicular- to ovate-peltate, excluding the petioles 1.2–12 cm. in diameter, shallowly 12–19-lobed, the lobes crenate; petioles slender, 2–37.5 cm. long; peduncles longer than the leaves, 2.5–35 cm. long; umbels proliferous, many-flowered; pedicels 2–20 mm. long, spreading and reflexed; involucre bracts lanceolate, acute; flowers white to yellow; stylopodium depressed; fruit ellipsoid, 1–2 mm. long, 2–4 mm. broad, the dorsal surface acute, the dorsal and lateral ribs evident, acute, the commissural surface constricted.

TYPE LOCALITY: "Aux environs de Monte-Video (Uruguay), pres de Buenos Ayres (Argentina), dans les sables voisins de la mer," *Sellow*.

DISTRIBUTION: North Carolina to Florida west to Texas, south through Mexico and Central America to Panama; Puerto Rico; South America, to Brazil, northern Argentina, Uruguay, and Chile. (*Curtiss 5922, Pringle 6359*.)

ILLUSTRATIONS: *Cav. Ic.* 5: *pl. 488*; *Ber. Deuts. Bot. Ges.* 14: *pl. 5, f. 7*; R. & P. *Fl. Per.* 3: *pl. 246*; *Mart. Fl. Bras.* 11¹: *pl. 72, f. 1*.

9. *Hydrocotyle sibthorpioides* Lam. *Encyc.* 3: 153. 1789.

Hydrocotyle rotundifolia Roxb. *Hort. Beng.* 21. 1814. *Not II. rotundifolia* Wall. 1828.

Stems filiform, creeping, glabrous; leaves not peltate, suborbicular, 5–10 mm. in diameter, shallowly 7-lobed, the lobes crenate, the apical crenation slightly longer than the lateral,

* As "*Fetherstoniana*."

glabrous; petioles very slender, 5–20 mm. long, glabrous; peduncles filiform, longer than the leaves, 5–20 mm. long, glabrous; umbels not proliferous, 3–10-flowered; styles persistent; stylopodium depressed-conic; fruit sessile, orbicular in general outline, 1–1.5 mm. long and about as broad, glabrous, the dorsal and lateral ribs evident, filiform.

TYPE LOCALITY: "À l'Isle de France" (Mauritius); collector unknown.

DISTRIBUTION: Malaya to Mauritius; introduced and established in lawns, reported from Pennsylvania, District of Columbia, Kentucky, and Indiana.

ILLUSTRATIONS: Wight, *Icon. Pl. Ind. Or.* 2: *pl.* 564; Britt. & Brown, *Ill. Fl. ed. 2*, 2: 650; L. H. Bailey, *St. Cycl. Hort.* 1624.

10. *Hydrocotyle americana* L. Sp. Pl. 234. 1753.

Not *H. americana* Walt. 1788.

Stems filiform, branching and creeping, the stolons slender, tuberiferous; leaves thin, orbicular to ovate, not peltate, excluding the petioles 5–45 mm. long, 7–60 mm. broad, shallowly 6–10-lobed, the lobes crenate, glabrous; petioles slender, 1–11 cm. long, glabrous; umbels axillary (or borne on the petioles), sessile to subsessile, 2–7-flowered, the pedicels 0.5–1 mm. long; involucre absent; flowers greenish-white; fruit suborbicular, about 1.5 mm. long and broad, the dorsal surface acute, the dorsal and lateral ribs evident, acute, the commissural surface plane; oil-bearing cells absent.

TYPE LOCALITY: "In America septentrionali," *Kalm.*

DISTRIBUTION: Newfoundland to North Carolina, west to Wisconsin (*Biltmore Herb.* 4003a, *Fernald* 320).

ILLUSTRATIONS: *Ann. Gén. Sci. Phys.* 4: *pl.* 55, *f.* 10; *Bot. Gaz.* 12: *pl.* 4, *f.* 51; Britt. & Brown, *Ill. Fl. ed. 2*, 2: 650; Rydb. *Fl. Pr. & Pl.* 592; Fassett, *Man. Aquat. Pl.* 269, *f.* 52.

11. *Hydrocotyle ranunculoides* L. f. *Suppl.* 177. 1781.

Hydrocotyle americana Walt. *Fl. Car.* 113. 1788. Not *H. americana* L. 1753.

Hydrocotyle natans Cirillo, *Pl. Rar. Neap.* 1: 20. 1788.

Hydrocotyle cymbalarifolia Muhl. *Cat.* 30. 1813.

Hydrocotyle batrachioides DC. *Prodr.* 4: 667. 1830.

Hydrocotyle adoensis Hochst.; Hoppe & Furrrohr, *Flora* 24: *Intell.* 28. 1841.

Hydrocotyle ranunculoides α *genuina* Urban in *Mart. Fl. Bras.* 11: 284. 1879.

Hydrocotyle ranunculoides δ *natans* Urban in *Mart. Fl. Bras.* 11: 284. 1879.

Hydrocotyle ranunculoides var. *lobata* Urban in *Mart. Fl. Bras.* 11: 283. 1879.

Hydrocotyle ranunculoides var. *inciso-crenata* Urban in *Mart. Fl. Bras.* 11: 284. 1879.

Hydrocotyle ranunculoides β *adoensis* Urban in *Mart. Fl. Bras.* 11: 284. 1879.

Hydrocotyle ranunculoides γ *brasiliensis* Urban in *Mart. Fl. Bras.* 11: 284. 1879.

Hydrocotyle ranunculoides [sic] f. *minima* Kuntze, *Rev. Gen.* 3: 114. 1898.

Stems slender to somewhat fleshy, floating or creeping; leaves not peltate, roundish-nerviform with a sinus at the base, excluding the petioles 5–80 mm. long, 5–80 mm. broad, 5–6-lobed about to the middle, the lobes crenate or lobulate, glabrous; petioles mostly slender, 1–3.5 cm. long, glabrous; peduncles shorter than the leaves, axillary, 4–60 mm. long, glabrous; umbels simple, 5–10-flowered; pedicels 1–3 mm. long, spreading and ascending; stylopodium depressed; fruit suborbicular, 1–3 mm. long, 2–3 mm. broad, the dorsal surface rounded, the ribs obsolete; strengthening cells absent.

TYPE LOCALITY: Mexico, *Mutis.*

DISTRIBUTION: Pennsylvania and Delaware to Florida, west to Arkansas, Texas, and Arizona; Washington, south along the coast to Panama; Cuba; also in South America. (*Curtiss* 5888, *Elmer* 4657.)

ILLUSTRATIONS: *Ann. Gén. Sci. Phys.* 4: *pl.* 58, *f.* 18; *pl.* 59, *f.* 20; *Mart. Fl. Bras.* 11: *pl.* 76, *f.* 3; *Bot. Gaz.* 12: *pl.* 4, *f.* 53; Britt. & Brown, *Ill. Fl. ed. 2*, 2: 650; Madroño 1: 123; Fassett, *Man. Aquat. Pl.* 269, *f.* 55.

12. *Hydrocotyle ribifolia* Rose & Standley, *Jour. Wash. Acad.*

17: 196. 1927.

Stems somewhat stout, creeping, more or less hirsute; leaves not peltate, orbicular in general outline, 40–90 mm. long, 40–100 mm. broad, angulately 5-lobed, the lobes serrate to incised, the terminal lobule elongate, acute or acutish, somewhat hirsute above on the nerves and veins, more or less densely divaricate-hirsute beneath especially on the nerves; petioles stout,

3-14 cm. long, divaricate-hirsute with yellowish hairs especially toward the apex; peduncles shorter than the leaves, 3-5 cm. long, essentially glabrous; umbels not proliferous, 20-35-flowered; pedicels glabrous, spreading and reflexed, 3-5 mm. long; flowers greenish-white, the styles persistent; stylopodium depressed; fruit orbicular in general outline, 1.5-2 mm. long and broad, shallowly emarginate at base and apex, glabrous, one carpel usually abortive, the dorsal ribs obscure, the lateral slender, distinct.

TYPE LOCALITY: Moist forest. Cerro de Las Vueltas, Provincia de San José, Costa Rica, alt. 3000 meters, *Standley & Valerio 43506*.

DISTRIBUTION: Known only from the type locality (*Standley & Valerio 43,749, 43,799*).

13. *Hydrocotyle Torresiana* Rose & Standley, Jour. Wash. Acad.
17: 196. 1927.

Stems slender, creeping, sparingly hirsute; leaves not peltate, roundish-reniform with a sinus at the base, excluding the petioles 4-20 mm. long, 5-25 mm. broad, shallowly 7-8-lobed, the lobes rounded, serrate, the apical lobule slightly elongate, hirsute especially on the nerves and veins; petioles slender, 0.5-7 cm. long, reflexed-hirsute especially above; peduncles shorter than or about equaling the leaves, axillary, slender, 5-35 mm. long, subglabrous to densely hirsute with reflexed or spreading hairs; umbels not proliferous, many-flowered, globose; styles persistent, the stylopodium depressed; fruit sessile, ellipsoid in general outline, about 1 mm. long, 1-1.5 mm. broad, glabrous, the dorsal ribs evident, acute, the lateral somewhat obscure.

TYPE LOCALITY: Wet potrero on the southern slope of Volcan de Turrialba, near the Finca del Volcan de Turrialba, Costa Rica, alt. about 2400 meters, *Standley 34950*.

DISTRIBUTION: Known only from the type locality (*Standley 35,105, 35,232*).

14. *Hydrocotyle bowlesioides* Math. & Const. Bull. Torrey
Club 69: 151. 1942.

Stems slender, creeping, hirsute; leaves not peltate, roundish-reniform with a sinus at the base, excluding the petioles 10-20 mm. long, 15-30 mm. broad, shallowly 5-lobed, the lobes obtusely triangular, crenate, subequal, hirsute on both surfaces; petioles slender, 1-12 cm. long, reflexed-hirsute especially above; peduncles much shorter than the leaves, axillary, slender, 2-12 mm. long, sparsely hirsute; umbels not proliferous, 2-10-flowered, globose; styles persistent, the stylopodium depressed; fruit sessile, ellipsoid in general outline, about 1 mm. long, 1.5 mm. broad, finely hispidulous in the intervals, the ribs evident, acute, subequal.

TYPE LOCALITY: Wet pasture, Vara Blanca de Sarapiquí, north slope of Central Cordillera, between Poas and Barba volcanoes, Costa Rica, alt. 1740 m., *Skutch 3573*.

DISTRIBUTION: Known only from the type locality.

15. *Hydrocotyle mexicana* Schlecht. & Cham. Linnaea 5:
208. 1830.

Stems slender, creeping or suberect, glabrous to hirsutulous; leaves not peltate, orbicular-reniform, excluding the petioles 8-75 mm. long, 15-90 mm. broad, the mature leaves averaging about 30 mm. in breadth, 7-11-lobed, the lobes crenate, the apical lobule somewhat elongate, sparingly to densely appressed-strigose on the nerves and veins; petioles slender, 1-23 cm. long, hirsute especially toward the apex; peduncles usually longer than the leaves, slender, axillary, 0.5-20 cm. long, more or less hirsute; umbels not proliferous, 25-70-flowered, globose, compact; pedicels glabrous, 1-7 mm. long, spreading and reflexed; petals green; stylopodium depressed; fruit suborbicular to ellipsoid in general outline, 1-1.5 mm. long, 1-1.5 mm. broad, glabrous, the lateral and dorsal ribs evident, acute.

TYPE LOCALITY: "In sylvis umbrosis prope Jalapam," Mexico, *Schiede & Deppe 416*.

DISTRIBUTION: Central Mexico to Panama, extending to central Ecuador; sea level to 11,500 feet. (*Heyde & Lux 3350, Pringle 6036*.)

16. *Hydrocotyle leucocephala* Cham. & Schlecht. *Linnaea* 1:

364. 1826.

? *Hydrocotyle citrodora* R. & P. *Fl. Per.* 3: 26. 1802.*Hydrocotyle leucocephala* var. *truncatiloba* Urban in *Mart. Fl. Bras.* 11¹: 279. 1879.*Hydrocotyle chamaemorus* var. *citrodora* Reiche, *Fl. Chile* 3: 54. 1902.*Hydrocotyle Hazenii* Rose; Britton, *Bull. Torrey Club* 48: 335. 1922.*Hydrocotyle Maxonii* Rose; Rose & Standley, *Jour. Wash. Acad.* 17: 197. 1927.

Stems slender, creeping, glabrous; leaves not peltate, orbicular-reniform, 10–55 mm. long, 10–75 mm. broad, 9–11-nerved, truncate-crenate to very shallowly lobed with the lobes truncate, subentire, undulate or crenate, the middle crenation equaling or shorter than the lateral, glabrous or sparingly pubescent; petioles 1.5–20 cm. long, pilose especially toward the apex with reflexed or divaricate hairs; peduncles longer than the leaves, 5–10 cm. long, pilose especially toward the apex with somewhat crispate reflexed hairs; umbels not proliferous, 20–30-flowered; pedicels glabrous, spreading and reflexed, 1–3 mm. long; styles persistent, the stylopodium depressed; fruit ellipsoid or suborbicular, about 1 mm. long, 1–1.5 mm. broad, glabrous, the dorsal and lateral ribs filiform, acute.

TYPE LOCALITY: "In Provincia Rio de Janeiro in graminosis humidis circa urbem," Brazil, *Beyrich*.

DISTRIBUTION: Oaxaca to Costa Rica, south to Bolivia and Brazil; sea level to 8200 feet. (*Seler 3399a*, *Standley 37,302, 46,838*.)

17. *Hydrocotyle hirsuta* Sw. *Prodr.* 54. 1788.Not *H. hirsuta* Blume 1825–1826.*Hydrocotyle spicata* Lam. *Encyc.* 3: 153. 1789.*Hydrocotyle brachystachya* DC. *Prodr.* 4: 68. 1830.*Hydrocotyle hirsuta* var. *spicata* Urban in *Mart. Fl. Bras.* 11¹: 282. 1879.*Hydrocotyle spicata* Sessé & Moc. *Fl. Mex.* 82. 1894.

Stems slender, creeping, glabrous; leaves not peltate, reniform to suborbicular-cordate in general outline, excluding the petioles 5–45 mm. long, 6–55 mm. broad, shallowly 5–9-lobed, the lobes crenate, villous-hirsute to setiform-pilose on both surfaces; petioles slender, 0.3–11.5 cm. long, densely villous; inflorescence a densely villous, axillary, interrupted spike, 2–15 cm. long, with 4–27 few-flowered verticils, the interverticillar distance 1–14 mm.; involucre of a few lanceolate, entire or lobed, sometimes lacerate, acute bracts; flowers sessile or subsessile, greenish-white; fruit ellipsoid, 1–1.5 mm. long, about 1.5 mm. broad, the dorsal surface rounded, the ribs obsolete, the commissural surface plane; oil-bearing cells absent; seed oblong-ovate in cross section.

TYPE LOCALITY: "In silvis montosis Hispaniolae, in humidis umbris," Dominican Republic, collector unknown.

DISTRIBUTION: Cuba, Haiti, Dominican Republic, and Puerto Rico (*Leonard 4475*, *Wright 213*).

ILLUSTRATION: *Ann. Gén. Sci. Phys.* 4: *pl. 57, f. 15*.

17a. *Hydrocotyle hirsuta* var. *leptostachys** (A. Rich.) Urban in*Mart. Fl. Bras.* 11¹: 282. 1879.*Hydrocotyle leptostachys* A. Rich. *Ann. Gén. Sci. Phys.* 4: 191. 1820.

Leaves 8–20 mm. long, 9–22 mm. broad, 5–7-lobed, sparsely setiform-pilose above, glabrous beneath; petioles 5–50 mm. long, glabrate to villous; inflorescence slightly villous, 3–9.5 cm. long, with 3–9 few-flowered verticils, the interverticillar distance 5–22 mm.; the entire plant less pubescent than the inflorescence less compact than in the species.

TYPE LOCALITY: "Mexique, dans la province de Loxa," *Humboldt & Bonpland* (error, since this is probably Peru).

DISTRIBUTION: Cuba and Dominican Republic (*Curtiss 581*, *Wright 2634*).

ILLUSTRATION: *Ann. Gén. Sci. Phys.* 4: *pl. 57, f. 16*.

3. *CENTEELLA* L. *Gen. Pl. ed.* 6. 485. 1764.*Trisanthus* Lour. *Fl. Cochinch.* 175. 1790.*Glyceria* Nutt. *Gen.* 1: 177. 1818.*Chondrocarpus* Nutt. *Gen.* 2: errata. 1818.

* As *leptostachya*; an error in transferring the epithet.

Herbaceous, caulescent, glabrous or pubescent perennials from slender creeping rootstocks rooting at the nodes. Leaves petiolate, membranaceous, simple, entire or repand-dentate, palmately veined. Petioles sheathing at base. Inflorescence of simple, loose to subcapitate umbels. Peduncles axillary, shorter or longer than the leaves. Involucre of usually 2 conspicuous bracts. Pedicels slender to obsolete. Flowers white or rose-tinged; petals orbicular with a narrower inflexed apex; calyx-teeth obsolete; styles short, the stylopodium obsolete. Carpophore entire. Fruit orbicular to ellipsoid, reniform, constricted at the commissure and flattened laterally, glabrous; primary ribs prominent, filiform, the secondary ribs and reticulations evident; seed narrowly oblong in cross section, the face plane; an oil-bearing layer beneath the epidermis, occasionally containing small oil tubes, and a thick layer of strengthening cells surrounding the seed cavity.

Type species, *Centella villosa* L.

1. *Centella erecta* (L.f.) Fernald, *Rhodora* 42: 295. 1940.

- Hydrocotyle erecta* L.f. Suppl. 177. 1781.
Hydrocotyle reniformis Walt. Fl. Car. 113. 1788.
Hydrocotyle ficarioides Michx. Fl. Bor. Am. 1: 161. 1803. Not *H. ficarioides* Lam. 1789.
Hydrocotyle repanda Pers. Syn. Pl. 1: 302. 1805.
Hydrocotyle ficarifolia Stokes, Bot. Mat. Med. 2: 57. 1812.
Glyceria repanda Nutt. Gen. 1: 177. 1818.
Chondrocarpus erectus Nutt.; S. Wats. Bibl. Ind. 425. 1878. (Error for Nuttall's merely implied *C. repandus*.)
Hydrocotyle asiatica sensu Coult. & Rose, Rev. N. Am. Umbell. 136. 1888. Not *H. asiatica* L. 1753.
Hydrocotyle asiatica var. *floridana* Coult. & Rose, Rev. N. Am. Umbell. 136. 1888.
Centella asiatica sensu Coult. & Rose, Contr. U. S. Nat. Herb. 7: 30. 1900. Not *Centella asiatica* Urban, 1879.
Centella asiatica var. *floridana* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 30. 1900.
Centella repanda Small, Fl. SE. U. S. 859. 1903.
Centella repanda floridana Small, Fl. SE. U. S. 859. 1903.
Centella floridana Nannfeldt, Sv. Bot. Tidskr. 18: 411. 1924.
 ? *Centella biflora* Nannfeldt, Sv. Bot. Tidskr. 18: 419, as to Guadeloupe specimens cited, only. 1924.

Stems 1-several dm. long; leaves ovate-cordate to oblong, excluding the petioles 0.5-10 cm. long, 0.8-9 cm. broad, obtuse, entire or repand-toothed; petioles 0.3-52 cm. long, glabrous to fulvous-pubescent, with a tuft of hairs at the apex; peduncles shorter than to exceeding the leaves, 0.3-11.5 cm. long; involucre of 2 conspicuous, ovate to suborbicular, scarious bracts; pedicels 2-5, 0.5-4 mm. long; flowers white to rosy-edged; fruit ellipsoid, 3-4 mm. long, 3-5 mm. broad.

TYPE LOCALITY: Jamaica, no collector designated.

DISTRIBUTION: Along the coast from Delaware to Florida, west to Texas; Oregon (on ballast); Bermuda; West Indies; Mexico and Central America. (*Curtiss 988, Lindheimer 613, Purpus 5237.*)
 ILLUSTRATIONS: Bot. Gaz. 12: pl. 4, f. 55 (fr.); Coult. & Rose, Rev. N. Am. Umbell. f. 167; Contr. U. S. Nat. Herb. 7: 29 (fr.); Britt. & Brown, Ill. Fl. 2: 541; ed. 2: 651; Britton, Fl. Bermuda 273.

4. *MICROPLEURA* Lag. Obs. Umbell. 15. 1826.

Erect, caulescent, simple or branching, villous to glabrate perennials, from tuberous roots. Leaves petiolate, membranaceous, simple, repand or rarely crenate, palmately veined. Petioles scarious-sheathing. Inflorescence of loose, simple or irregularly compound umbels. Peduncles terminal and axillary. Involucre of 1 or more small bracts. Involucel of several linear or lanceolate bractlets. Rays few, slender, ascending, very unequal. Pedicels short, the central fertile pedicel often obsolete. Flowers white; petals oval with a short acute inflexed apex; calyx-teeth obsolete; styles short, the stylopodium depressed. Carpophore wanting. Fruit ellipsoid, cordate, membranaceous, compressed at the commissure and flattened laterally, glabrous; ribs filiform, curved; oil-tubes very small, numerous in the intervals; seed strongly flattened laterally in cross section, the face plane.

Type species, *Micropleura renifolia* Lag.

1. *Micropleura renifolia* Lag. Obs. Umbell. 15. 1826.

- Hydrocotyle grumosa* DC. Prodr. 4: 70. 1830.
Centella renifolia Urban in Mart. Fl. Bras. 11: 286. 1879.

Plants 1.5-4 dm. high, the younger parts frequently rufous-villous, the stems sparsely villous at the nodes; leaves reniform, cordate, excluding the petioles 1.5-5 cm. long, 1.5-6 cm. broad, repand or rarely crenate; petioles 2-30 cm. long; peduncles 2-15 cm. long; rays 2-40 mm. long; pedicels short or obsolete; fruit 2 mm. long, 3-4 mm. broad.

TYPE LOCALITY: "In Chiloe Insula" (no collector designated; locality is an error, since the species is not known south of Central America).

DISTRIBUTION: Sinaloa and Nayarit, south to Guatemala; alt. 3000-8800 feet. (*Pringle 4664*, *Seler 2969*.)

5. SPANANTHE Jacq. Coll. 3: 247. 1789.

Erect, tall, herbaceous, caulescent, dichotomously branching, glabrous or pubescent annuals. Leaves petiolate, opposite, membranaceous, simple, crenate-dentate, palmately veined. Petioles with lacerate, scarious sheaths, tufted at the apex with setulose hairs. Inflorescence of loose, simple umbels. Peduncles paniculately arranged, axillary and terminal. Involucre of several small, narrow bracts. Pedicels slender, spreading-ascending. Flowers white or greenish-white; petals obovate with a short acute inflexed apex; calyx-teeth prominent; styles short, the stylopodium depressed-conic. Carpophore entire. Fruit ovoid, constricted at the commissure and flattened dorsally, glabrous; ribs filiform; oil-tubes minute in the intervals or wanting; seed dorsally flattened in cross section, the face plane.

Type species, *Spananthe paniculata* Jacq.

1. *Spananthe paniculata* Jacq. Coll. 3: 247. 1789.

Hydrocotyle Spananthe Willd. Sp. Pl. 1: 1363. 1798.

Spananthe setosa Moench, Meth. Suppl. 34. 1802.

Phellandrium ciliatum DC. Prodr. 4: 81, as syn. 1830.

Spananthe angulosa Turcz. Bull. Soc. Nat. Mosc. 20: 171. 1847.

Plants 2-15 dm. high; leaves deltoid-ovate, excluding the petioles 1.5-14 cm. long, 0.5-14 cm. broad, acuminate, subcordate to truncate, dentate-crenate, sparingly setose-pubescent on the veins, with a tuft of setulose hairs at the junction of petiole and blade; petioles 0.7-14 cm. long; cauline leaves becoming lanceolate above; peduncles 0.7-14 cm. long, hirtellous-pubescent at base of the umbel; involucre of several lanceolate, mostly entire bracts, 2-3 mm. long; pedicels several, spreading-ascending, 7-10 mm. long; fruit ovoid, 2-4 mm. long, about 2 mm. broad.

TYPE LOCALITY: "Circa Caracas," Venezuela, no collector designated.

DISTRIBUTION: Central Mexico and Central America to South America; West Indies. (*Heyde & Lux 3351, 4192, Pringle 6231*.)

ILLUSTRATIONS: Dict. Sci. Nat. Veg. Dicot. pl. 111; Jacq. Ic. Pl. Rar. 2: pl. 350; Ann. Gén. Sci. Phys. 4: pl. 50 (fl.); Nova Acta Acad. Leop.-Carol. 12: pl. 10, f. 66-68 (fr.); Schnizl. Ic. pl. 162a, f. 32, 33 (fr.); Mart. Fl. Bras. 11: pl. 77.

6. BOWLESIA R. & P. Fl. Per. Prodr. 44. 1794.

Homalocarpus H. & A. Bot. Misc. 3: 348. 1833.

Elsneria Walp. Nova Acta Acad. Leop.-Carol. 19: Suppl. 1, 346. pl. 7. 1843.

Erect or prostrate, slender, herbaceous, caulescent, branching, stellate-pubescent to glabrate annuals, from slender taproots. Leaves petiolate, stipulate, opposite, membranaceous, simple, palmately lobed and palmately veined. Petioles not sheathing, the stipules scarious, lacerate. Inflorescence of simple, few-flowered, subcompact umbels. Peduncles slender, axillary. Involucre of a few subulate, lacerate bracts. Pedicels very short or obsolete. Flowers white or purplish; petals orbicular, obtuse; calyx-teeth prominent, ciliate; styles very short, the stylopodium depressed-conic. Carpophore entire. Fruit broadly ovoid to narrowly oblong, constricted at the commissure and flattened laterally, the mericarps flattened dorsally, glabrate to stellate-pubescent or glochidiate; ribs obsolete; oil-tubes obsolete; seed flattened dorsally in cross section, the face plane or convex.

Type species, *Bowlesia palmata* R. & P.

Leaves rounded-deltoid in general outline; fruit oblong, narrowed toward the apex, 2-4 mm. long, more or less glochidiate.

Leaves suborbicular; fruit broadly ovoid, 1-1.5 mm. long, not glochidiate, terete, depressed on the dorsal surface, the dorsal region inflated.

1. *B. palmata*.

2. *B. incana*.

1. *Bowlesia palmata* R. & P. Fl. Per. 3: 28. 1802.

Plants procumbent, dichotomously branched, 1.5–12 dm. long, stellate- to villous-pubescent throughout; leaves rounded-deltoid in general outline, excluding the petioles 8–35 mm. long, 6–35 mm. broad, palmately 5-lobed, the lobes apiculate, entire to dentate, stellate-pubescent to villous, especially on the veins beneath, ciliate on the margins; petioles 1–5 cm. long; peduncles 1–40 mm. long, shorter than the leaves; umbels 2–3-flowered; fruit sessile or subsessile, oblong, narrowed toward the apex, 2–4 mm. long, about 2 mm. broad, stellate-pubescent to glabrate, more or less glochidiate along the ribs.

TYPE LOCALITY: "Prov. Chancay ad Torreblanca, Pasamayo et Jequan," Peru, Ruiz & Pavon. DISTRIBUTION: Chihuahua and Mexico; South America. (*Pringle 1248*, *Purpus 1700*.)

ILLUSTRATIONS: R. & P. Fl. Per. Prodr. pl. 34; R. & P. Fl. Per. 3: pl. 251; Ann. Gén. Sci. Phys. 4: pl. 51; Engler & Drude, Veg. Erde 12: 142.

2. *Bowlesia incana* R. & P. Fl. Per. 3: 28, 1802.

Bowlesia tenera Spreng. Syst. 1: 850. 1825.

Bowlesia geraniiifolia Cham. & Schlecht. Linnaea 1: 382. 1826.

Bowlesia lobata sensu T. & G. Fl. N. Am. 1: 601. 1840. Not *B. lobata* R. & P. 1802.

Bowlesia incana f. *crassifolia* Urban in Mart. Fl. Bras. 11: 292. 1879.

Bowlesia incana f. *tenera* Urban in Mart. Fl. Bras. 11: 292. 1879.

Bowlesia septentrionalis Coult. & Rose, Contr. U. S. Nat. Herb. 7: 31. 1900.

Plants prostrate to suberect, dichotomously branched, 1.2–5 dm. long or high, stellate-pubescent to glabrate throughout; leaves suborbicular in general outline, excluding the petioles 4–30 mm. long, 5–45 mm. broad, palmately 5–7-lobed, the lobes entire to dentate, stellate-pubescent to glabrate; petioles 0.5–7 cm. long; peduncles 1–21 mm. long, shorter than the leaves; umbels 2–6-flowered; fruit sessile or subsessile, ellipsoid, 1–1.5 mm. long, 2–3 mm. broad, stellate-pubescent to glabrate, not glochidiate, the carpels depressed on the dorsal surface, the dorsal region inflated.

TYPE LOCALITY: Huanaco, Rondos & Pillao, Peru, Ruiz & Pavon.

DISTRIBUTION: Texas to California, south to Sonora and Baja California; Oregon (on ballast); South America. (*Abrams 3281*, *Heller 1493*, *7435*.)

ILLUSTRATIONS: R. & P. Fl. Per. 3: pl. 268; Spreng. Sp. Umbell. pl. 5, f. 10; Mart. Fl. Bras. 11: pl. 78, f. 2; Contr. U. S. Nat. Herb. 7: 31; E. & P. Nat. Pl. 3: 125; Munz, Man. S. Calif. Bot. 349; Jepson, Fl. Calif. 2: 616.

7. *ASTERISCIUM* Cham. & Schlecht. Linnaea 1: 354. pl. 5, f. 1. 1826.

Erect, herbaceous or subfrutescent, caulescent, flexuously branched, glabrous perennials, from ligneous, more or less fleshy roots. Leaves petiolate or amplexicaul, membranaceous, simple, entire or 3-lobed, mucronate-dentate, palmately veined. Petioles sheathing at the base. Inflorescence of simple, few-flowered umbels. Peduncles terminal and in the upper axils. Involucre of several lanceolate to ovate, entire or 3-dentate bracts, equaling or shorter than the pedicels. Pedicels slender. Flowers white; petals ovate to obovate-cordate with a narrower inflexed apex; calyx-teeth prominent, ovate, acute or acuminate; styles slender, the stylopodium depressed-conic. Carpophore entire. Fruit ovoid, constricted at the commissure and flattened dorsally, glabrous, the dorsal and lateral ribs filiform, the intermediate somewhat winged; oil-tubes obsolete; seed-face convex.

Type species, *Asteriscium chilense* Cham. & Schlecht.

1. *Asteriscium flexuosum* Hemsl. Diag. Pl. Nov. 16. 1878.

Dipterygia Hemsleyana Kuntze, Rev. Gen. 1: 267. 1891.

Loosely branched, 4.5 dm. or more high; basal leaves unknown; lower cauline leaves cuneate-rounded in general outline, excluding the petioles 1.5–2 cm. long, about 2 cm. broad, 3-lobed with shallow rounded sinuses, the lobes oblong, dentate, palmately 3-nerved, the nerves pinnately branched; petioles 3.5–5 cm. long, obscurely sheathing at the base; upper cauline leaves 3-dentate, much reduced, short-petiolate to subsessile and amplexicaul; peduncles 3.5–8 cm. long; involucre of several lanceolate to ovate, entire or 3-dentate bracts, shorter

than or about equaling the pedicels; pedicels about 10, slender, subequal, 3-4 mm. long; immature fruit ovoid, about 2 mm. long, the dorsal and lateral ribs filiform, the intermediate ribs slightly winged.

TYPE LOCALITY: South Mexico, *Bates*.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Hemsl. Biol. Centr. Am. Bot. 5: pl. 32.

8. *NEOGOEZIA* Hemsl. Kew Bull. 1894: 354. 1894.

Erect, herbaceous, acaulescent, slender biennials or perennial from fascicled tuberous roots. Leaves petiolate, membranaceous, 2- or 3-pinnatisect, the divisions often confluent and appearing as serrate lobes of a simply pinnate leaf, pinnately veined. Petioles sheathing. Inflorescence of simple, loose, terminal umbels. Peduncles slender, much longer than the leaves. Involucre of numerous, entire or lobed, reflexed bracts, shorter than the pedicels. Pedicels slender, filiform, ascending to reflexed. Flowers yellow or yellowish-white; petals obovate with a narrower inflexed apex; calyx-teeth prominent, purplish; styles short, the stylopodium depressed-conic. Carpophore entire. Fruit ovoid to ellipsoid, cordate, constricted at the commissure and flattened laterally, glabrous; ribs filiform or obsolete; oil-tubes small, several in the intervals and on the commissure; seed subterete in cross section, the face deeply sulcate.

Type species, *Neogoezia minor* Hemsl.

Involucral bracts entire; pedicels 2.5-8.5 cm. long.

Involucral bracts 3-lobed; pedicels 0.5-1.5 cm. long.

Petioles entirely sheathing; leaves 5-7 cm. long; bracts acute; Oaxaca. 1. *N. gracilipes*.

Petioles sheathing to the middle; leaves 18-24 cm. long; bracts subobtusate; Jalisco. 2. *N. minor*.

Petioles sheathing to the middle; leaves 18-24 cm. long; bracts subobtusate; Jalisco. 3. *N. planipetala*.

1. *Neogoezia gracilipes* Hemsl. Kew Bull. 1894: 355. 1894.

Oreomyrrhis ? *gracilipes* Hemsl. Diag. Pl. Nov. 16. 1878.

Plants 10-11.5 dm. high; leaves narrowly oblong in general outline, excluding the petioles 10-23 cm. long, 5-6 cm. broad, the leaflets 10-12, the lower remote, the upper crowded, 1.5-3 cm. long, 0.5-2 cm. broad; petioles sheathing nearly throughout, 5-16 cm. long; peduncles few, 3.8-11.5 dm. long; involucre of several linear, 3-lobed bracts, 1-1.5 cm. long, with the middle lobe exceeding the lateral, reflexed; fertile pedicels about 70, spreading, 2.5-8.5 cm. long, the sterile filiform, reflexed; fruit 5-6 mm. long, 4-5 mm. broad.

TYPE LOCALITY: "In montibus Oaxacae latere occidentali," *Galeotti* 2753.

DISTRIBUTION: Mountains of Oaxaca (*Pringle* 4997, *Smith* 890).

ILLUSTRATIONS: Hemsl. Biol. Centr. Am. Bot. 5: pl. 33; 34, f. 6-8; Hook. Ic. pl. 2424.

2. *Neogoezia minor* Hemsl. Kew Bull. 1894: 355. 1894.

Plants 1.5-2 dm. high; leaves narrowly oblong in general outline, excluding the petioles 5-7 cm. long, 1-2 cm. broad, the leaflets 12-14, crowded, 5-11 mm. long, 3-6 mm. broad; petioles sheathing throughout, 3-5 cm. long; peduncles several, 1.2-2 dm. long; involucre of several linear, entire, acute bracts, about one-fourth as long as the pedicels, reflexed; fertile pedicels 25-50, filiform, spreading and reflexed, 5-15 mm. long; immature fruit about 2 mm. long, 1 mm. broad.

TYPE LOCALITY: Mountains above Oaxaca, *Pringle*.

DISTRIBUTION: Mountains of Oaxaca (*Pringle* 4725, *Smith* 893).

ILLUSTRATION: Hook. Ic. pl. 2425.

3. *Neogoezia planipetala* Hemsl. Kew Bull. 1894: 355. 1894.

Oreomyrrhis ? *planipetala* Hemsl. Diagn. Pl. Nov. 1: 16. 1878.

Much like *N. minor*, but the leaves 18-24 cm. long, the leaflets 0.6-4 cm. long and broad; petioles sheathing to the middle; peduncles 3-4 dm. long; involucre of several linear-lanceolate, entire, subobtusate bracts 5-7 mm. long, reflexed; pedicels spreading-ascending to reflexed, up to 1 or 1.5 cm. long.

TYPE LOCALITY: South Mexico, Bolanos, Jalisco, *Hartweg* 6.

DISTRIBUTION: Jalisco to Michoacán (*Hinton* 12,340).

ILLUSTRATIONS: Hemsl. Biol. Centr. Am. Bot. 5: pl. 34, f. 1-5.

9. SANICULA L. Sp. Pl. 235. 1753.

Triclinium Raf. Fl. Ludov. 79. 1817.

Hesperogeton K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 156. 1916.

Aulosolena K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 156. 1916.

Low or slender, erect, spreading or decumbent, herbaceous, caulescent or acaulescent, branching, glabrous or pubescent biennials or perennials, from taproots, rootstocks, tubers, or fascicled fibrous roots. Leaves petiolate to sessile, membranaceous, palmately or pinnately divided to pinnately or ternately-pinnately compound, or rarely entire, the divisions variously toothed, lobed or entire, the rachis naked or winged. Petioles sheathing. Inflorescence of irregular, spreading, compound umbels; peduncles terminal or terminal and lateral. Involucre foliaceous. Involucel of small or occasionally large, entire or lobed bractlets, longer or shorter than the capitule umbellets. Rays few, unequal, spreading to divaricate. Pedicels spreading to obsolete. Flowers white, greenish-white, greenish-yellow, yellow, or purple, perfect or staminate, the staminate often prominently pedicellate; petals spatulate to ovate, with a narrower inflexed apex; sepals prominent, connate, persistent; styles short or elongate, spreading, recurved, or coiled, the stylopodium lacking. Fruit oblong-ovoid to subglobose or ellipsoid, somewhat flattened laterally, densely covered with uncinat bristles or tubercles; ribs obsolete; oil-tubes large or small, irregularly arranged, several to numerous on the dorsal and lateral surfaces, usually 2 on the commissure; seed subterete or flattened dorsally in cross section, often sulcate on the dorsal surface under the tubes, the commissural face plane, concave or sulcate; strengthening cells absent.

Type species, *Sanicula europaea* L.

Basal leaves ternately or palmately divided, or rarely entire.

Fruit pedicellate or stipitate.

Involucel conspicuous, exceeding the heads.

Involucel inconspicuous, not exceeding the heads.

Primary leaf-divisions pinnatifid.

Petiole and midrib somewhat glandular; leaves deltoid.

Petiole and midrib glabrous; leaves oblong-ovate.

Primary leaf-divisions lobed or merely serrate, not deeply pinnatifid.

Primary divisions of the basal leaves confluent below.

Primary divisions of the basal leaves distinct, sometimes shortly petiolulate.

Styles exerted in fruit.

Calyx of the staminate flowers cleft to the middle, the lobes ovate, obtuse; United States and Canada.

Calyx of the staminate flowers cleft to the base, the lobes linear, acute; Mexico and northern South America.

Styles included in fruit.

Fruit sessile.

Styles shorter than the bristles of the fruit; calyx-lobes equaling to exceeding the petals of the fertile flowers.

Calyx-lobes conspicuous, forming a beak on the mature fruit; oil-tubes numerous; roots fibrous; northeastern United States.

Calyx-lobes inconspicuous in the mature fruit; oil-tubes 5; roots tuberous, fascicled; southern United States.

Styles longer than the bristles of the fruit; calyx-lobes shorter than the petals of the fertile flowers.

Primary divisions of the basal leaves lobed or merely serrate, not deeply pinnatifid.

Primary leaf-divisions distinct at the base to shortly petiolulate.

Primary leaf-divisions confluent at the base.

Involucel equaling to slightly exceeding the heads; basal leaves deeply lobed; Oregon coast.

Involucel shorter than the heads; basal leaves entire or 3-lobed; San Francisco Bay region.

Primary divisions of the basal leaves deeply pinnatifid.

Primary divisions distinct at the base; fruit ovoid, 3-5 mm. long.

Primary divisions confluent at the base; fruit subglobose to ellipsoid, about 2 mm. long.

Basal leaves pinnately divided to pinnately or ternate-pinnately compound.

Stem from a fusiform taproot.

Leaves with a winged toothed rachis.

1. *S. arctopoides*.

2. *S. arguta*.

3. *S. nevadensis*.

4. *S. crassicaulis*.

5. *S. gregaria*.

6. *S. liberta*.

7. *S. canadensis*.

8. *S. trifoliata*.

9. *S. Smallii*.

10. *S. marilandica*.

4a. *S. crassicaulis* var. *Howellii*.

11. *S. maritima*.

3. *S. nevadensis*.

12. *S. laciniata*.

- Fruits several in each umbellet, bristly; pedicels of the sterile flowers inconspicuous in fruit.
 Fruit solitary, or rarely 2-3 in each umbellet, bristly only above; pedicels of the sterile flowers conspicuous in fruit.
 Leaves without a winged rachis; leaves 2-3-pinnate.
 Stem from a globose or somewhat irregular tuber.
 Flowers salmon; fruit 2.5-3 mm. long, the upper tubercles armed with short subulate bristles.
 Flowers yellow; fruit 1.5-2 mm. long, the tubercles unarmed.
13. *S. bipinnatifida*.
 14. *S. Peckiana*.
 15. *S. bipinnata*.
 16. *S. saxatilis*.
 17. *S. tuberosa*.

1. *Sanicula arctopoides* H. & A. Bot. Beech. Voy. 141. 1832.

Plants prostrate or decumbent, 1-3 dm. broad, perennial from a long, slender taproot, glabrous or the nodes and foliage puberulent, the main stem short, 5-30 cm. long, bearing a cluster of leaves and several divergent naked branches, usually longer than the leaves; leaves deltoid in general outline, excluding the petioles 2-6.5 cm. long, 2.5-9 cm. broad, palmately 3-parted, yellowish, the primary divisions cleft, lacinate-dentate with slender, unequal, fringed teeth, or rarely the lanceolate, spreading segments subentire, doubly dentate; petioles flattened, shortly sheathing below, 2.5-7 cm. long; involucre of bracts like the leaves; involucre of 8-17 entire, acute, unequal bractlets, 5-18 mm. long, conspicuously exceeding the heads; fertile rays 1-4, 4-21 cm. long, the umbellets capitate, 6-17 mm. broad, sterile and fertile flowers in the same umbellet; flowers yellow; calyx cleft to the middle, the lobes deltoid, acute, shorter than the petals; anthers yellow, exserted; styles exceeding the bristles; fruit obovoid or subglobose, 2-5 mm. long, 2-3 mm. broad, shortly pedicellate, the bristles prominent above, wanting below, bulbous at the base; oil-tubes numerous, irregularly distributed; seed slightly flattened dorsally in cross section, sulcate on the dorsal surface, the commissural face concave.

TYPE LOCALITY: "Northwest coast of America," *Menzies*.

DISTRIBUTION: Coastal, northern Oregon to central California (*Elmer 4885, Heller 8444*).

ILLUSTRATIONS: Hook. Fl. Bor. Am. 1: pl. 91; Engler, Pflanzenreich 61 (4²²⁸): 72; Madroño 1: 109; Jepson, Man. Fl. Pl. Calif. 697; Jepson, Fl. Calif. 2: 663.

2. *Sanicula arguta* Greene; Coult. & Rose, Contr. U. S. Nat. Herb. 7: 36. 1900.

Plants erect, 1.5-5 dm. high, perennial from a thickened, elongated, woody taproot, glabrous except for the glandular-roughened foliage, the stems several, slender, sparingly branched; leaves deltoid in general outline, excluding the petioles 3-11 cm. long, 3-15 cm. broad, palmately 3-5-parted, the primary divisions narrow, pinnately lobed, the middle one elongate, the lobes serrate to sublaciniate, spinose, glandular-roughened above on the nerves, decurrent and forming a winged, toothed rachis; petioles flattened, shortly sheathing below, 2.5-30 cm. long, glandular-roughened above; cauline leaves few, reduced upward; involucre of reduced, leaflike bracts; involucre of linear to linear-lanceolate, spinose, entire to 3-lobed bractlets, about equaling the pedicels; fertile rays 3-5, 2.5-14 cm. long, the umbellets globose; sterile and fertile flowers in the same umbellet; fertile pedicels 2.5-4 mm. long; flowers yellow; calyx cleft to below the middle, the lobes linear, acute, shorter than the petals; anthers yellow, exserted; styles exceeding the bristles; fruit obovoid, 4-6 mm. long, 2.5-3 mm. broad, narrowed into a stipitate base, the bristles prominent above, few or wanting below, slightly bulbous at the base; oil-tubes obscure; seed subterete in cross section, the commissural face deeply concave to sulcate.

TYPE LOCALITY: Hills near San Diego, California, *Pringle*.

DISTRIBUTION: Coastal southern California and the adjacent islands (*Eastwood 2529, Elmer 3930*).

ILLUSTRATIONS: Engler, Pflanzenreich 61 (4²²⁸): 73; Munz, Man. S. Calif. Bot. 350; Jepson, Fl. Calif. 2: 664.

3. *Sanicula nevadensis* S. Wats. Proc. Am. Acad. 11: 139. 1876.

Sanicula septentrionalis Greene, Erythea 1: 6. 1893.

Sanicula divaricata Greene, Erythea 3: 64. 1895.

Sanicula apiifolia Greene, Leallets 2: 46. 1910.

Sanicula nevadensis var. *glauca* Jepson, Madroño 1: 113. 1923.

Sanicula nevadensis var. *septentrionalis* Mathias, Brittonia 2: 241. 1936.

Sanicula septentrionalis var. *nemoralis* Jepson, Fl. Calif. 2: 667. 1936.

Plants erect, 1-4.5 dm. high, perennial from a long, slender, sometimes tuber-like taproot, usually glabrous, the main stem obsolete, short or elongate, the several spreading peduncles thus arising basally or separately along the stem, purplish-tinged; leaves oblong-ovate in general outline, excluding the petioles 1.5-4 cm. long, 2-3.5 cm. broad, ternate, the primary divisions usually oblong-ovate, petiolulate, 3-5-lobed, the segments irregularly lobed or toothed; petioles sheathing below, 3-7 cm. long; involucre of leaflike, pinnatifid bracts; involucre of oblong, acute to short-acuminate, united bractlets, shorter than the heads; fertile rays 4-9, 0.5-8 cm. long; umbellets capitate, about 5 mm. broad; sterile and fertile flowers in the same umbellet, the sterile pedicellate, conspicuous in the mature umbellets; flowers yellow; calyx cleft shallowly or to the middle, the lobes acute to mucronate, shorter than the petals; anthers yellow, exserted; styles exceeding the bristles; fruit ovoid, 3-5 mm. long, 2-4 mm. broad, shortly pedicellate, tuberculate, the tubercles terminated by bristles; oil-tubes 3-5 on the dorsal and lateral surfaces, 2 on the commissure; seed subterete in cross section, the commissural face slightly concave.

TYPE LOCALITY: Plumas County, California, *Mrs. M. E. P. Ames*.

DISTRIBUTION: Western Montana and northwestern Wyoming to Vancouver Island, British Columbia, south to southern California (*Cusick 2841, Heller 11,482, Thompson 9550*).

ILLUSTRATION: Engler, *Pflanzenreich* 61 (4²²⁸): 75.

4. *Sanicula crassicaulis* Poepp.; DC. Prodr. 4: 84. 1830.

Sanicula Menziesii H. & A. Bot. Beech. Voy. 142. 1832.

Sanicula nudicaulis H. & A. Bot. Beech. Voy. 347. 1838.

Sanicula tripartita Suksd. Allg. Bot. Zeits. 12: 5. 1906.

Sanicula Menziesii var. *nudicaulis* Jepson, Fl. W. Mid. Calif. ed. 2. 290. 1911.

Sanicula crassicaulis var. *genuina* H. Wolff in Engler, *Pflanzenreich* 61 (4²²⁸): 69. 1913.

Sanicula crassicaulis var. *Menziesii* H. Wolff in Engler, *Pflanzenreich* 61 (4²²⁸): 70. 1913.

Sanicula crassicaulis var. *tripartita* H. Wolff in Engler, *Pflanzenreich* 61 (4²²⁸): 70. 1913.

Aulosolena Menziesii K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 156. 1916.

Sanicula Menziesii var. *foliacea* Jepson, *Madroño* 1: 111. 1923.

Sanicula Menziesii var. *pedata* Jepson, *Madroño* 1: 111. 1923.

Sanicula diversiloba Suksd. *Werdenda* 1: 29. 1927.

Plants erect, 2.4-12.5 dm. high, perennial from a stout taproot, glabrous, the solitary stem simple below, dichasially branched above, purplish; leaves round-cordate to subtriangular in general outline, excluding the petioles 3-12 cm. long, 4-14 cm. broad, deeply palmately 3-5-lobed, the primary divisions incised-lobed with mucronate or spinulose teeth; petioles shortly sheathing below, 3-21 cm. long; cauline leaves similar, but the segments narrower and more remote; involucre of small, leaflike bracts; involucre of linear-lanceolate acute bractlets, shorter than the heads; fertile rays 3-4, 0.7-8 cm. long, the umbellets capitate, 5-7 mm. broad; sterile and fertile flowers in the same umbellet, the sterile flowers shortly pedicellate to subsessile; flowers yellow; calyx deeply cleft, the lobes linear, mucronate, shorter than or equaling the petals; anthers yellow, exserted; styles shorter than the bristles; fruit subglobose, 2-5 mm. long, 2-4 mm. broad, distinctly stipitate, divergent in mature heads, conspicuously bristly throughout; oil-tubes large, conspicuous, 3-8 on the dorsal and lateral surfaces, 2 on the commissure; seed ovate to subterete in cross section, the commissural face deeply sulcate.

TYPE LOCALITY: Chile, *Poeppig* (diar. no. 227, pl. exs. 92).

DISTRIBUTION: Coastal foothills, Vancouver Island, B. C., to southern California; South America. (*Cusick 2867, Elmer 3840, Heller 6824*.)

ILLUSTRATIONS: Hook. Fl. Bor. Am. 1: pl. 90; *Madroño* 1: 110; Jepson, *Man. Fl. Pl. Calif.* 698.

4a. *Sanicula crassicaulis* var. *Howellii* (Coul. & Rose)

Mathias, Brittonia 2: 242. 1936.

Sanicula Howellii Coul. & Rose, *Bot. Gaz.* 13: 81. 1888.

Similar to the species, but usually lower; bractlets of the involucre more prominent, about equaling the heads; fruit subsessile.

TYPE LOCALITY: Sandy shores, Tillamook Bay and Ocean Beach, Oregon, *Howell 16*.

DISTRIBUTION: Coastal Oregon.

5. *Sanicula gregaria* Bickn. Bull. Torrey Club 22: 354. 1895.? *Triclinium odoratum* Raf. Fl. Ludov. 80. 1817.? *Sanicula odorata* Bickn. Bull. Torrey Club 24: 581. 1897.

Plants erect, 2-7.6 dm. high, perennial from slender, fascicled, fibrous roots, glabrous, the stems solitary or several from the base, dichasially branched above; leaves broadly triangular to ovate in general outline, excluding the petioles 3-12 cm. long, 5-20 cm. broad, palmately 3-5-parted, the primary divisions cuneate-obovate to lanceolate, acute, petiolulate, distinct or the lateral somewhat united, sharply serrate to incised-lobed above with spinulose teeth; petioles 8-30 cm. long; cauline leaves few, similar; involucre of conspicuous, foliaceous, palmately 3-5-lobed, leaflike bracts; involucre of inconspicuous, subscarious bractlets; fertile rays 3-7, 1-6 cm. long, the umbels regular, few-flowered; sterile and fertile flowers in the same umbellet, or the sterile in separate, peduncled heads in the axils of the stem or main branches; fertile pedicels about 2 mm. long; flowers greenish-yellow; calyx cleft to the middle, the lobes triangular-ovate, subobtusate with an inconspicuous central nerve, much shorter than the petals; anthers bright yellow, exerted; styles conspicuous, recurved, exceeding the bristles; fruits usually 3 in each umbellet, subglobose to obovoid, 3-5 mm. long, 2-3 mm. broad, distinctly pedicellate, minutely bristly or papillose, the bristles numerous, not crowded and arranged in rows, conspicuous above but rudimentary below; oil-tubes small, solitary in the intervals, 2-3 on the commissure; seed subterete in cross section, the commissural face plane, the scar linear.

TYPE LOCALITY: Van Cortlandt Park, New York, New York, *Bicknell*.DISTRIBUTION: Quebec to Florida, west to South Dakota and Louisiana (*Bitmore Herb. 4816, Demaree 10,672, Heller 998*).

ILLUSTRATIONS: Bull. Torrey Club 22: pl. 242; Britt. & Brown, Ill. Fl. 2: 524; ed. 2: 624.

6. *Sanicula liberta* Cham. & Schlecht. Linnaea 1: 353. 1826.*Sanicula mexicana* DC. Prodr. 4: 84. 1830.

Plants erect, 2-6 dm. high, perennial from a fleshy rhizome, glabrous, the stem usually solitary, dichasially branched above, the branches remote, divaricate, elongate; leaves broadly cordate-orbicular to suborbicular in general outline, excluding the petioles 2.5-8 cm. long, 3.5-10 cm. broad, palmately 5-parted, the primary divisions ovate-lanceolate to obovate-cuneate, acuminate, petiolulate, trilobulate and irregularly incised above, entire to doubly serrate-crenate with setose teeth; petioles shortly sheathing below, 5-23 cm. long; cauline leaves reduced upward; involucre of small, leaflike bracts; involucre of inconspicuous, reflexed, linear, acute bractlets; fertile rays 1-3, 5-45 mm. long; sterile and fertile flowers in the same umbellet, the sterile pedicellate; fertile pedicels shorter than the fruit; flowers pale green; calyx deeply cleft, the lobes narrowly lanceolate, acuminate, equaling or exceeding the petals; anthers exerted; styles longer than the bristles, not conspicuously recurved; fruit usually 2-3 in each umbellet, subglobose, 2-4 mm. long, 2-4 mm. broad, distinctly pedicellate, densely bristly; oil-tubes small, several on the dorsal and lateral surfaces, 2 on the commissure; seed flattened dorsally in cross section, the commissural face plane.

TYPE LOCALITY: "In America meridionali prope Caripe, Venezuela, alt. 500 hexap.," *Humboldt 275*.DISTRIBUTION: Nuevo León and Tamaulipas to Panama; Colombia and Venezuela to Ecuador and Peru. (*Heyde & Lux 3357, Pringle 13,003*.)7. *Sanicula canadensis* L. Sp. Pl. 235. 1753.*Caucalis canadensis* Crantz, Class. Umbell. 110. 1767.*Sanicula marilandica* var. *canadensis* Torr. Fl. U. S. 302. 1824.*Sanicula Triclinium* DC. Prodr. 4: 85. 1830.*Sanicula trichlinaria* St. Lag. Ann. Soc. Bot. Lyon 7: 134. 1880.*Sanicula floridana* Bickn. Bull. Torrey Club 24: 581. 1897.*Sanicula canadensis* var. *typica* H. Wolff in Engler, Pflanzenreich 61 (4228): 67. 1913.*Sanicula canadensis* var. *floridana* H. Wolff in Engler, Pflanzenreich 61 (4228): 67. 1913.*Sanicula canadensis* var. *genuina* Fernald, Rhodora 42: 467. 1940.*Sanicula canadensis* var. *grandis* Fernald, Rhodora 42: 467. 1940.

Plants erect, 1.5-10 dm. high, biennial from fibrous, woody roots, glabrous, the stem usually solitary, alternately dichotomously branched above, 3-4-furcate at the apex; leaves tri-

angular to suborbicular in general outline, excluding the petioles 1.5–14 cm. long, 1.5–16 cm. broad, palmately 3-parted (occasionally 5-parted or appearing so by division of the lateral primary divisions), the primary divisions ovate-lanceolate to cuneate-obovate, obtuse or acute, distinct, closely serrate and sometimes deeply incised above, the teeth mucronate to spinulose; petioles 5–20 cm. long; cauline leaves becoming subsessile above; involucre of a few leaflike bracts; bractlets of the involucre similar to the bracts but smaller; fertile rays 2–30 mm. long, the umbels irregular, few-flowered; sterile and fertile flowers in the same umbellet, the sterile shortly pedicellate; fertile pedicels 1–2 mm. long; flowers white; calyx deeply cleft, the lobes narrowly lanceolate, acute, exceeding the petals; anthers white, slightly exserted; styles shorter than the calyx, inconspicuous; fruits 3 in each umbellet, globose, 2–5 mm. long and broad, wrinkled, striate, the bristles numerous, dilated below, rather regularly in longitudinal rows, well developed throughout; oil-tubes large, solitary in the grooves of the dorsal surface, 2 on the commissure; seed subterete in cross section, sulcate on the dorsal surface, the commissural face convex, the commissural scar linear.

TYPE LOCALITY: "Habitat in Virginia." collector unknown.

DISTRIBUTION: Vermont to Florida, west to South Dakota and Texas (*Billmore Herb. 3408a*, *Harper 1042*, *Heller 982*, *1713*).

ILLUSTRATIONS: *Bot. Gaz. 12: pl. 1, f. 1, 2 (fr.)*; *Bull. Torrey Club 22: pl. 243*; *Britt. & Brown, Ill. Fl. ed. 2. 2: 624*.

8. *Sanicula trifoliata* Bickn. *Bull. Torrey Club 22: 359. 1895.*

Plants erect, 2.9–9.8 dm. high, biennial from fascicled, slender, fibrous roots, glabrous, the stem usually solitary, occasionally alternately branched, 2–3-furcate above; leaves broadly triangular to suborbicular in general outline, excluding the petioles 3.5–13 cm. long, 4.5–19 cm. broad, palmately 3-foliolate, the primary divisions ovate to obovate, acute, petiolulate, the lateral frequently deeply lobed, coarsely doubly spinulose-serrate to incised; petioles 13–18 cm. long; cauline leaves becoming short-petiolate above; involucre of a few foliaceous bracts, smaller than the leaves; involucre of inconspicuous, ovate-acuminate, subscarios bractlets; fertile rays 10–55 mm. long, the umbels regular, few-flowered; sterile and fertile flowers in the same umbellet, the sterile on pedicels 1 mm. long; fertile pedicels obsolete; flowers white; calyx cleft to below the middle, the lobes lanceolate, acuminate-cuspidate with slightly incurved points, exceeding the flowers to form a conspicuous beaklike projection in the mature fruit; anthers included; styles short, included; fruits usually 3 in each umbellet, ovoid to ovoid-oblong, 6–8 mm. long, 3–5 mm. broad, sessile or subsessile, the bristles short and reflexed below, longer and ascending above, not crowded and about equaling the calyx; oil-tubes small, numerous; 2 large latero-commissural tubes occasionally present; seed reniform in cross section, the commissural face concave, the scar large, oval.

TYPE LOCALITY: Dry, rich woods, Amherstburg, Ontario, *Macon*.

DISTRIBUTION: Vermont to Ontario and Ohio, south to Virginia and Tennessee (*Fernald 10,085*, *Pollard & Maxon 14*).

ILLUSTRATIONS: *Bull. Torrey Club 22: pl. 244*; *Contr. U. S. Nat. Herb. 7: 32 (fr.)*; *Britt. & Brown, Ill. Fl. ed. 2. 2: 624*.

9. *Sanicula Smallii* Bickn. *Bull. Torrey Club 24: 578. 1897.*

Plants erect, 3.3–6.4 dm. high, biennial or perennial from fascicled, tuberous roots, glabrous, the stem usually solitary, occasionally alternately branched, 2–3-furcate above; leaves ovate in general outline, excluding the petioles 2–8 cm. long, 3–14 cm. broad, palmately 3-parted (appearing 5-parted by division of the lateral primary divisions), the primary divisions ovate-lanceolate, acute, distinct, closely and regularly serrate, the teeth mucronate; petioles 4–20 cm. long; cauline leaves becoming subsessile above; involucre of a few leaflike bracts; involucre of small, triangular-ovate, subacuminate bractlets; fertile rays 5–11 mm. long, the umbels irregular, few-flowered; sterile and fertile flowers in the same umbellet, the sterile shortly pedicellate; fertile pedicels obsolete; flowers white; calyx deeply cleft, the lobes linear-subulate, rigid, with a conspicuous central nerve, about equaling the petals; anthers exserted; styles equaling or exceeding the calyx, shorter than the bristles; fruits usually 3 in each umbellet, subglobose to ovoid, 3–5 mm. long, about 3 mm. broad, sessile, the bristles numerous, short

below, exceeding the erect calyx-lobes above; oil-tubes large, solitary in the intervals, 2-3 on the commissure; seed subterete in cross section, the commissural face usually concave, the scar broadly linear.

TYPE LOCALITY: Base of Little Stone Mountain, Georgia, *Small*.

DISTRIBUTION: North Carolina to Florida, west to Missouri and Texas (*Bush 358, Earle 196, Palmer 7513*).

10. *Sanicula marilandica* L. Sp. Pl. 235. 1753.

Caucalis marilandica Crantz, Class. Umbell. 110. 1767.

Sanicula canadensis var. *marylandica* Hitchc. Trans. Acad. St. Louis 5: 497. 1889.

Triclinium marilandica Raf.; B. D. Jackson, Ind. Kew. 2: 1110. 1895.

Sanicula marilandica var. *bovealis* Fernald, Rhodora 28: 220. 1926.

Sanicula marilandica var. *petiolulata* Fernald, Rhodora 40: 448. 1938.

Plants erect, 2.5-10.5 dm. high, perennial from fibrous woody roots, glabrous, the stem usually solitary, umbellately branched above; leaves cuneate to suborbicular in general outline, excluding the petioles 2.5-12 cm. long, 5-21 cm. broad, palmately 5-parted (appearing 7-parted by division of the lateral primary divisions), the primary divisions oval to cuneate-obovate, obtuse to acute, petiolulate, doubly serrate to dentate-serrate with mucronate or spinulose teeth, deeply incised-lobed toward the apex; petioles 4-32 cm. long; cauline leaves becoming subsessile above; involucre of a few reduced, leaflike bracts; involucre of much reduced bractlets, like the bracts; fertile rays 10-70 mm. long, the umbels nearly regular; sterile and fertile flowers in the same umbellet, or the sterile numerous in separate, peduncled, capitate clusters; fertile pedicels obsolete; flowers greenish-white; calyx deeply cleft, the lobes narrowly lanceolate, attenuate, shorter than or equaling the petals; anthers greenish-white, conspicuously exerted; styles long, usually recurved, exceeding the bristles; fruits 3 in each umbellet, ovoid, narrowed toward the base, 4-6 mm. long, 3-5 mm. broad, sessile, the bristles numerous, crowded, conspicuously bulbous at the base, irregularly arranged, rudimentary below; oil-tubes large, solitary in the intervals, 2 on the commissure; seed ovate-oblong in cross section, sulcate on the dorsal surface, the commissural face plane, the scar broadly oval.

TYPE LOCALITY: "Habitat in Marilandia, Virginia," collector unknown.

DISTRIBUTION: Newfoundland to Florida, west to British Columbia and New Mexico (*Fernald & Wiegand 5950, Nelson 7525*).

ILLUSTRATIONS: Mem. Torrey Club 2: pl. 11, f. 72-74; Bull. Torrey Club 22: pl. 241; Engler, Pflanzenreich 61 (422*): 23; E. & P. Nat. Pfl. 3⁸: 144 (fr.); Rydb. Fl. Pr. & Pl. 589; Rhodora 40: pl. 527.

11. *Sanicula maritima* Kellogg; S. Wats. Bot. Calif. 2:

451. 1880.

Plants erect, 1.5-3.5 dm. high, perennial from a thickened, somewhat woody rootstock, glabrous, the stem stout, usually solitary; leaves orbicular to obovate in general outline, excluding the petioles 2-5 cm. long, 1.5-4.5 cm. broad, entire or 3-parted, the margins entire, repand, or slightly serrate; petioles 2.5-15 cm. long; cauline leaves smaller, 3-parted, the divisions ovate to cuneiform, subentire, dentate or deeply lobed, the lower long-petiolulate, the upper sessile; peduncles few, elongate; involucre of leaflike bracts; involucre of small, lanceolate bractlets; fertile rays 1-4, 15-95 mm. long, the flowering umbellets compact; sterile and fertile flowers in the same umbellet, the sterile short-pedicellate; flowers yellow; calyx deeply cleft, the lobes triangular-lanceolate, acute, shorter than the petals; anthers yellow, exerted; styles exceeding the calyx; fruits few in each umbellet, ovoid, about 5 mm. long, 3 mm. broad, subsessile, the bristles prominent above, more or less obsolete below; oil-tubes several, large, conspicuous; seed subterete in cross section, the commissural face concave with a prominent median longitudinal ridge.

TYPE LOCALITY: "Near the coast, about San Francisco or northward," *Kellogg*.

DISTRIBUTION: Coastal California in the vicinity of San Francisco Bay.

12. *Sanicula laciniata* H. & A. Bot. Beech. Voy. 347. 1838.

Sanicula serpentina Elmer, Bot. Gaz. 41: 312. 1906.

Aulosolena laciniata K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 156. 1916.

Sanicula laciniata var. *serpentina* Jepson, Madroño 1: 113. 1923.

Plants erect, 0.9–5 dm. high, perennial from a moderately thickened taproot, glabrous, the stems few, divergent, branching, mostly naked above; leaves ovate in general outline, excluding the petioles 1.5–4 cm. long, 1.5–4.5 cm. broad, palmately 3-lobed or deeply 3-parted or rarely entire, the primary divisions subentire and serrate to pinnately parted into lanceolate, entire or lacinate-dentate segments; petioles shortly sheathing below, 6–12 cm. long; cauline leaves reduced; involucre of leaflike bracts; involucre of oblong-ovate to lanceolate bractlets, shorter than the heads; fertile rays 3–6, 15–80 mm. long, the umbellets capitate, 4–7 mm. broad; sterile and fertile flowers in the same umbellet; fertile pedicels obsolete; flowers yellow; calyx cleft to near the middle, the lobes triangular, acute, shorter than the petals; anthers yellow, exerted; styles exceeding the bristles; fruit subglobose to ellipsoid, about 2 mm. long, 2–4 mm. broad, sessile, the bristles well-developed above, becoming obsolete below; oil-tubes several on the dorsal and lateral surfaces, 2 on the commissure; seed flattened dorsally in cross section, the commissural face sulcate.

TYPE LOCALITY: California, *Douglas*.

DISTRIBUTION: Coastal southwestern Oregon and California (*Baker 783, Elmer 3531, 4498*).

ILLUSTRATION: Jepson, *Fl. Calif.* 2: 666.

13. *Sanicula bipinnatifida* Dougl.; Hook. *Fl. Bor. Am.* 1:
258. 1832.

Sanicula nemoralis Greene, *Erythraea* 1: 6. 1893.

Sanicula bipinnatifida var. *flava* Jepson, *Madroño* 1: 112. 1923.

Sanicula bipinnatifida var. *nemoralis* Jepson, *Madroño* 1: 112. 1923.

Sanicula bipinnatifida var. *Hoffmannii* Munz; R. Hoffm. *Bull. S. Calif. Acad.* 31: 110. 1932.

Plants erect, 1.5–8 dm. high, perennial from a deep-seated taproot, the nodes scantily scaberulous, otherwise glabrous, the stems several, branched, usually naked above, purplish; leaves suborbicular to ovate-oblong in general outline, excluding the petioles 4–19 cm. long, 2–15 cm. broad, polymorphic; those of the seedlings suborbicular, entire or 5-lobed, crenulate, the older leaves oval to oblong-ovate, serrulate to deeply serrate, becoming broadly ovate and trilobate, the terminal primary division largest, coarsely crenate-serrate, the divisions becoming lobate or pinnately divided into 5–7 subovate divisions, deeply pinnatifid with narrow dentate segments, decurrent on the rachis as a toothed wing; petioles sheathing below, 4–20 cm. long; involucre of leaflike bracts; involucre of lanceolate, sometimes connate bractlets, shorter than the heads; fertile rays 3–5, 0.5–19 cm. long, the umbellets capitate, 5–12 mm. broad; sterile and fertile flowers in the same umbellet, the sterile pedicellate; flowers yellow or purple; calyx deeply cleft, the lobes lanceolate, mucronate, shorter than the petals; anthers yellow or purple, exerted; styles exceeding the bristles; fruit ovoid to subglobose, 3–6 mm. long, 2–4 mm. broad, the bristles conspicuous, bulbous at the base; oil-tubes 6–7 on the dorsal and lateral surfaces, 2 on the commissure; seed flattened dorsally in cross section, the commissural face sulcate.

TYPE LOCALITY: "Fort Vancouver, on the Columbia," Clark County, Washington, *Douglas*.

DISTRIBUTION: Vancouver Island, south to Baja California, at low elevations; California islands. (*Elmer 4817, Heller & Kennedy 8765, Thompson 8933*.)

ILLUSTRATIONS: Hook. *Fl. Bor. Am.* 1: *pl. 92*; *Flora* 83: 255; Armstrong, *Field Book W. Wild Fl.* 337; *Madroño* 1: 111; Jepson, *Man. Fl. Pl. Calif.* 699.

14. *Sanicula Peckiana* F. Macbr. *Contr. Gray Herb.* 59:
28. 1919.

Plants erect, 2.5–4 dm. high, glabrous, perennial from a fleshy, subligneous taproot, the stems solitary or few, alternately few-branched above, 3–4-furcate at the apex; leaves oblong-ovate to subtriangular in general outline, excluding the petioles 5–10 cm. long, 1.5–5.5 cm. broad, pinnate, the primary divisions ovate, incised to serrate-lobed, mucronate, conspicuously veined, decurrent to form a toothed, winged rachis; petioles shortly sheathing below, 1.5–10 cm. long; cauline leaves smaller, becoming sessile upward; involucre of small, linear-lanceolate, entire or leaflike and pinnatifid bracts; involucre of small, triangular-acute, sometimes united bractlets, shorter than the umbellet; fertile rays 3–4, unequal, 2–75 mm. long; sterile and fertile flowers in the same umbellet, the sterile on pedicels 3–5 mm. long; fertile pedicels 1–2 mm. long or obsolete; flowers yellow; calyx cleft to the middle, the lobes linear to deltoid, acute, shorter

than the petals; anthers yellow, exserted; styles recurved, conspicuously exceeding the bristles; fruit ovoid, 3-5 mm. long, 2.5-3 mm. broad, sessile or the central one pedicellate, the bristles well developed above, more or less obsolete below, somewhat bulbous at the base; oil-tubes large, 3-5 on the dorsal and lateral surfaces, 2 on the commissure; seed subterete in cross section, the commissural face plane.

TYPE LOCALITY: Siskiyou Mountains, 14 miles west of Waldo, Josephine County, Oregon, Peck 8403.

DISTRIBUTION: Southwestern Oregon and northwestern California (Abrams 8505, Cusick 2931, Thompson 4596).

15. *Sanicula bipinnata* H. & A. Bot. Beech. Voy. 347. 1838.

Sanicula pinnatifida Torr. U. S. Expl. Exp. 17: 314. 1874.

Plants erect, 1-6 dm. high, perennial from an elongate fusiform root, the stem slender, the herbage strongly aromatic; leaves linear-oblong to ovate in general outline, excluding the petioles 3.5-8.5 cm. long, 3-3.5 cm. broad, 2-3-pinnate, the ultimate divisions obovate to oblong, 4-10 mm. long, 2-11 mm. broad, distinct, entire to lobed, serrate; petioles wholly sheathing; cauline leaves with linear ultimate divisions; involucre of leaflike bracts; involucre of several, entire, linear, subscarios, distinct or connate bractlets shorter than the heads; fertile rays 3-5, 1.5-9 cm. long, the umbels axillary and terminal, the umbellets capitate, 3-7 mm. broad; sterile and fertile flowers in the same umbellet; flowers yellow; calyx cleft to below the middle, the lobes deltoid, acute, shorter than the petals; anthers yellow, exserted; styles exceeding the bristles; fruit subglobose to obovoid, 2-3 mm. long, 2-3 mm. broad, shortly pedicellate, tuberculate, the tubercles with short, stout bristles; oil-tubes large, 3-5 on the dorsal and lateral surfaces, 2 on the commissure; seed subterete in cross section, the commissural face deeply concave.

TYPE LOCALITY: California, Douglas.

DISTRIBUTION: Hills and valleys, cismontane California (Baker 4775, Heller 10,707).

ILLUSTRATIONS: Engler, Pflanzenreich 61 (4228): 77; Madroño 1: 114; Jepson, Man. Fl. Pl. Calif. 700.

16. *Sanicula saxatilis* Greene, Erythea 1: 6. 1893.

Plants usually spreading, 1-2 dm. high or long, perennial from large globose or somewhat irregular tubers 1-2.5 cm. in diameter, glabrous, the stems divided near the base into horizontal, divergent branches, each 2-3-dichotomously branched; leaves deltoid in general outline, excluding the petioles 3-10 cm. long and broad, ternate, then 1-2-pinnate, coarsely to finely dissected, the ultimate divisions acute; petioles sheathing at the base, 3-8 cm. long; cauline leaves similar, becoming subsessile upward; involucre similar to the upper leaves; involucre of small, ovate to lanceolate, entire or toothed, connate, scarious-margined bractlets, shorter than the heads; fertile rays usually 3, unequal, 5-40 mm. long; sterile and fertile flowers in the same umbellet, the sterile on pedicels 3-6 mm. long; fertile pedicels obsolete; flowers salmon; calyx cleft to the middle, the lobes triangular-ovate, acute, shorter than the petals; anthers yellow, exserted; styles conspicuously spirally coiled, much exceeding the calyx; fruit ovoid to subglobose, narrowed at the apex, 2.5-3 mm. long, 2-3 mm. broad, sessile, tuberculate with inflated tubercles, the upper armed with subulate, short bristles; seed subterete in cross section, sulcate on the dorsal surface, the commissural face plane.

TYPE LOCALITY: Summit of Mount Diablo, California, Greene.

DISTRIBUTION: Diablo and Hamilton ranges of central California (Hall 10,136).

17. *Sanicula tuberosa* Torr. Pacif. R. R. Rep. 4: 91. 1857.

Hesperogeton tuberosum K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 157. 1916.

Plants erect or spreading, 1-7.5 dm. high, perennial from small, globose tubers 5-15 mm. in diameter, the nodes and summit of the peduncles scaberulous, otherwise glabrous, the stem simple, or divided near the base into divergent branches, each dichotomously or trichotomously branched above; leaves ovate to deltoid in general outline, excluding the petioles 2-13 cm. long, 2.5-8 cm. broad, 1-2-ternate, then pinnate, usually finely dissected, the ultimate divisions

acute; petioles 2-8 cm. long; cauline leaves becoming subsessile upward; involucre similar to the upper cauline leaves; involucre of small, ovate to lanceolate, connate bractlets; fertile rays 3, unequal, 5-85 mm. long; sterile and fertile flowers in the same umbellet, the sterile on pedicels 2-7 mm. long; flowers yellow; calyx cleft to the middle, the lobes triangular-ovate, acute, shorter than the petals; anthers yellow, exserted; styles conspicuously spirally coiled, greatly exceeding the calyx; fruit ellipsoid, narrowed at the apex, 1.5-2 mm. long, 2-3 mm. broad, sessile or subsessile, tuberculate with inflated, unarmed tubercles; oil-tubes several on the dorsal and lateral surfaces, 2 on the commissure; seed subterete in cross section, the commissural face plane to slightly concave, the scar linear.

TYPE LOCALITY: Hillsides, Duffield's Ranch, Sierra Nevada, California, *Bigelow*.

DISTRIBUTION: Southwestern Oregon to southern California (*Elmer 3912, Heller 6928, 14,568*).

ILLUSTRATIONS: Engler, *Pflanzenreich* 61 (4²²⁹): 79; Madroño 1: 114; Jepson, *Man. Fl. Pl. Calif.* 701.

10. *APIASTRUM* Nutt.; T. & G. Fl. N. Am. 1: 643. 1840.

Low, slender, erect, herbaceous, caulescent, simple or dichotomously or trichotomously branched, glabrous annuals, from slender taproots. Leaves mostly opposite, petiolate, membranaceous, ternately decomposed, the ultimate divisions narrow, entire. Petioles sheathing. Inflorescence of irregular, loose, compound umbels, these sessile or short-pedunculate, terminal and lateral. Involucre wanting or the umbels subtended by foliage leaves. Involucel wanting. Rays few, unequal, ascending, or some umbellets sessile. Pedicels few, spreading, slender to obsolete. Flowers white; petals obovate or ovate, acute, the apex scarcely inflexed; calyx-teeth obsolete; styles very short, the stylopodium depressed. Carpophore 2-cleft to the base. Fruit ellipsoid-cordate, flattened laterally and strongly constricted at the commissure, papillate-roughened to glabrate; ribs filiform, undulate, inconspicuous; oil-tubes solitary in the intervals and under the ribs, 2 on the commissure; seed subterete in cross section, the face concave, or shallowly sulcate.

Type species, *Apiastrum angustifolium* Nutt.

1. *Apiastrum angustifolium* Nutt.; T. & G. Fl. N. Am. 1: 644. 1840.

? *Discopleura capillacea* sensu H. & A. Bot. Beech. Voy. 142. 1832. Not *D. capillacea* DC. 1829. *Helosciadium leptophyllum* var. ? *latifolium* H. & A. Bot. Beech. Voy. 347. 1838. *Apiastrum angustifolium* var. *tenellum* Nutt.; T. & G. Fl. N. Am. 1: 644. 1840. *Apiastrum latifolium* Nutt.; T. & G. Fl. N. Am. 1: 644. 1840.

Slender, erect, simple or dichotomously or trichotomously branched from the base, 0.5-5 dm. high; leaves orbicular in general outline, excluding the petioles 1-5 cm. long, some or all opposite, ternately dissected, the ultimate divisions linear-filiform to oblong, obtuse, 5-25 mm. long, 0.5-2 mm. broad; petioles 2-4 cm. long; cauline leaves like the basal; umbels sessile in the axils or opposite the upper leaves, the peduncles of the lower umbels up to 8 cm. long; rays 2-3, unequal, 1-5 cm. long or obsolete; pedicels 3-4, unequal, 15 mm. long to obsolete; fruit ellipsoid-cordate, 1-1.5 mm. long, 2 mm. broad, papillate-roughened, the ribs inconspicuous.

TYPE LOCALITY: San Diego, California, *Nuttall*.

DISTRIBUTION: Throughout California south to Arizona and Baja California (*Baker 4771, Elmer 4461, Jones 3089*).

ILLUSTRATIONS: Torr. Bot. Mex. Bound. Surv. pl. 28; Madroño 1: 122, f. 12; Jepson, *Man. Fl. Pl. Calif.* 704, f. 684; Munz, *Man. S. Calif. Bot.* 352.

11. *SPERMOLEPIS* Raf. Neog. 2. 1825.

Leptocaulis Nutt.; DC. Coll. Mém. 5: 39. 1829.

Slender, erect or spreading, herbaceous, caulescent, branching, glabrous annuals, from slender taproots. Leaves ternately or ternate-pinnately decomposed, the ultimate divisions linear to filiform. Petioles sheathing. Inflorescence of loose compound umbels; the peduncles terminal and axillary, exceeding the leaves. Involucre wanting. Involucre of a few linear bractlets usually shorter than the pedicels. Rays few, erect to divaricate. Pedicels few, spreading, or some of the flowers sessile. Flowers white; petals oblong to ovate, without an inflexed apex; calyx-teeth obsolete; styles very short, the stylopodium low-conic. Carpo-

phore 2-cleft at the apex. Fruit ovoid, flattened laterally and slightly constricted at the commissure, smooth, tuberculate, or echinate; ribs filiform, rounded; oil-tubes 1-3 in the intervals, 2 on the commissure; seed subterete in cross section, the face sulcate.

Type species, *Daucus divaricatus* Walt. (*Spermolepis divaricata* Britton).

Plants slender, erect; leaves oblong to oblong-ovate; fruit smooth or tuberculate.

Rays divaricate, subequal; ultimate leaf-divisions linear.

Rays erect, unequal; ultimate leaf-divisions filiform.

Plants low and somewhat spreading; leaves ovate; fruit covered with short echinate bristles.

1. *S. divaricata*.
2. *S. inermis*.
3. *S. echinata*.

1. *Spermolepis divaricata* (Walt.) Britton, Mem. Torrey

Club 5: 244. 1894.

Daucus divaricatus Walt. Fl. Car. 114. 1788.

Sison pusillum Michx. Fl. Bor. Am. 1: 168. 1803.

Ammi divaricatum Pers. Syn. Pl. 1: 308. 1805.

Ligusticum pusillum Pers. Syn. Pl. 1: 315. 1805.

Aethusa divaricata Spreng. Umbell. Prodr. 22. 1813.

Sison divaricatus Spreng. Sp. Umbell. 113. 1818.

Leptocaulis divaricatus DC. Coll. Mém. 5: 39. 1829.

Leptocaulis diffusus Nutt.; DC. Coll. Mém. 5: 39. 1829 (nomen nudum); Prodr. 4: 107. 1830.

Babiron divaricatum Raf. New Fl. 4: 24. 1838.

Babiron dichotomum Raf. New Fl. 4: 24. 1838.

Babiron pusillum Raf. New Fl. 4: 23. 1838.

Apium divaricatum Wood, Bot. & Fl. 140. 1870.

Slender, erect, 1-7 dm. high; leaves oblong to oblong-ovate in general outline, excluding the petioles 0.5-5 cm. long, 5-35 mm. broad, ternately or ternately-pinnately decompound, the ultimate divisions linear, acute, 3-15 mm. long, 0.2-1 mm. broad; petioles 0.5-3 cm. long, the sheaths with a winged scarious margin; peduncles 1-5 cm. long; involucre of a few linear, acute bractlets, the margins scarious and usually callous-toothed; rays 3-7, divaricate, subequal, 5-35 mm. long; pedicels 1-6, 2-15 mm. long, or the central flower of each umbellet sessile; fruit ovoid, 1.5-2 mm. long, about 1.5 mm. broad, tuberculate.

TYPE LOCALITY: "Carolinas," presumably *Walter*.

DISTRIBUTION: Virginia to Florida, west to Kansas and Texas (*Bush 325, Curtiss 4609, Hall 269*).

ILLUSTRATIONS: DC. Coll. Mém. 5: pl. 10, f. A; Britt. & Brown, III. Fl. 2: 537; ed. 2. 2: 651; Contr. U. S. Nat. Herb. 7: 87 (fr.).

2. *Spermolepis inermis* (Nutt.) Math. & Const. Bull. Torrey

Club 68: 124. 1941.

Leptocaulis inermis Nutt.; DC. Coll. Mém. 5: 39. 1829.

Leptocaulis patens Nutt.; DC. Coll. Mém. 5: 39. 1829 (nomen nudum); Prodr. 4: 107. 1830.

Apium patens S. Wats. Bibl. Ind. 413. 1878.

Apiastrum patens Coult. & Rose, Rev. N. Am. Umbell. 110. 1888.

Spermolepis patens B.L. Robinson, Rhodora 10: 34. 1908.

Spermolepis patens var. *inermis* Mathias, Brittonia 2: 243. 1936.

Slender, erect, 0.8-6 dm. high; leaves oblong-ovate in general outline, excluding the petioles 3-5 cm. long, 2-4 cm. broad, ternately decompound, the ultimate divisions filiform, mucronulate, 3-30 mm. long, 0.1-1 mm. broad; petioles 4-15 mm. long; peduncles 2-7 cm. long; involucre of a few narrow bractlets, callous-toothed to glabrous, shorter than the pedicels; rays 5-11, erect, unequal, 1-13 mm. long; pedicels 1-6, up to 6 mm. long, the central umbellets bearing 1-3 sessile or shortly pediceled flowers; fruit ovoid, 1.5-2 mm. long, about 1.5 mm. broad, tuberculate to smooth.

TYPE LOCALITY: "In Amer. bor. ad Red River," Arkansas, *Nuttall*.

DISTRIBUTION: Illinois to Mississippi, west to Nebraska, Texas, and Coahuila (*Bush 5864, 7602, Palmer 7713, 33,614*).

ILLUSTRATIONS: DC. Coll. Mém. 5: pl. 10, f. B; Britt. & Brown, III. Fl. ed. 2. 2: 652; Rydb. Fl. Pr. & Pl. 594.

3. *Spermolepis echinata* (Nutt.) A. Heller, Contr. Herb. Frankl. &

Marsh. 1: 73. 1895.

Leptocaulis echinatus Nutt.; DC. Coll. Mém. 5: 39. 1829 (nomen nudum); Prodr. 4: 107. 1830.

Apium echinatum Benth. & Hook.; S. Wats. Bibl. Ind. 412. 1878.

Low and often spreading, 0.5–4 dm. high; leaves ovate in general outline, excluding the petioles 7–25 mm. long, 7–20 mm. broad, ternately decomposed, the ultimate divisions filiform, mucronulate, 2–18 mm. long, 0.5–1 mm. broad; petioles 3–20 mm. long; peduncles 8–65 mm. long; involucre of a few filiform bractlets, callous-toothed to glabrous, shorter than the pedicels; rays 5–14, suberect, unequal, 1–15 mm. long; pedicels 1–6, up to 7 mm. long, the central umbellets 1-flowered, sessile; fruit ovoid, 1.5–2 mm. long, 1.5–2 mm. broad, covered with short echinate bristles.

TYPE LOCALITY: "In Amer. Bor. ad Red River," Arkansas, *Nuttall*.

DISTRIBUTION: Missouri to Louisiana, west to Arizona, Sonora, and Coahuila (*Heller 1561, Palmer 7702*).

ILLUSTRATIONS: Bot. Gaz. 12: *pl. 17, f. 109*; Britt. & Brown, Ill. Fl. 2: 537; ed. 2. 2: 652.

12. *PEDINOPETALUM* Urban & Wolff; Urban, Ark. Bot.

22A¹⁰: 43. 1929.

Herbaceous, glabrous, caespitose perennials, forming a semiglobose clump, the inner stems erect, the outer procumbent. Leaves petiolate, membranaceous, ternate-pinnately or ternately decomposed, the ultimate divisions linear to linear-oblong, obtuse. Petioles sheathing, much longer than the blades. Inflorescence of subcompact compound umbels, borne in a dichasium below and forming a monochasium above, the upper umbels sessile, the lower pedunculate. Involucre usually wanting. Involucre of 3–4 linear, obtuse bractlets shorter or longer than the flowers. Rays 1 or 2, or rarely 3, very short. Pedicels 3, rarely 1 or 2, slender. Flowers white; petals oval to oval-oblong, obtuse, without an inflexed apex; calyx-teeth obsolete; styles very short, the stylopodium conic. Carpophore shortly bifid at the apex. Fruit ovoid, narrowed at the apex, flattened laterally but not constricted at the commissure, roughened when young, glabrate at maturity; ribs filiform, conspicuous, obtuse; oil-tubes 2–3 in the intervals, 2 on the commissure; seed subterete in cross section, the face plane.

Type species, *Pedinopetalum domingense* Urban & Wolff.

1. *Pedinopetalum domingense* Urban & Wolff; Urban, Ark. Bot.

22A¹⁰: 43. 1929.

Stems leafy, with few branches, up to 20 cm. long; leaves ternately bipinnate to 3–4-ternate, the ultimate divisions up to 5 mm. long, about 0.5 mm. broad; petioles 6–8 cm. long, the broad sheath pellucid; peduncles of the lower umbels 2–4 cm. long, the upper umbels sessile; bractlets of the involucre 3–4; rays 1 or 2, or rarely 3, 5–16 mm. long; pedicels 3, rarely 1 or 2, up to 10 mm. long; petals about 0.75 mm. long; anthers small, broadly suborbicular; fruit, including the very short styles, about 3 mm. long, 2 mm. broad.

TYPE LOCALITY: "Santo Domingo, prov. Barabona in Sierra de los Comisarios in pratis pineti prope cacumen 2100 m. alt.," Dominican Republic, *Ekman H6818*.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Ark. Bot. 22A¹⁰: *pl. 1*.

13. *NEONELSONIA* Coult. & Rose, Contr. U. S. Nat. Herb.

3: 306. 1895.

Tall, erect, herbaceous but with woody roots, caulescent, branching, essentially glabrous perennials. Leaves petiolate, membranaceous, ternately or ternate-pinnately compound, the leaflets ovate or ovate-lanceolate, crenate, serrate, or lobed. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral, or some umbels sessile. Involucre wanting. Involucre of several filiform bractlets longer than the fruit. Fertile rays few, slender, spreading, the umbels often proliferating. Fertile pedicels few, filiform. Flowers greenish-yellow; petals obovate with a narrower inflexed apex; calyx-teeth inconspicuous; styles short, the stylopodium depressed-conic. Carpophore 2-cleft to the base. Fruit ellipsoid-cordate, strongly flattened laterally, glabrous but wrinkled and 5-ridged; ribs filiform; oil-tubes large, solitary in the intervals and with a small accessory tube on the slope of each adjacent ridge; seed subterete in cross section, the face involute.

Type species, *Neonelsonia ovata* Coult. & Rose.

1. *Neonelsonia ovata* Coult. & Rose, Contr. U. S. Nat. Herb.
3: 307. 1895.

Plants rather slender, 3-9 dm. high, glabrous throughout or the inflorescence somewhat scaberulous; leaves deltoid in general outline, excluding the petioles 2-4 dm. long, 2-3-ternate, the leaflets ovate or ovate-lanceolate, 3-9 cm. long, 25-45 mm. broad, acute or acuminate, rounded or cuneate at the base, crenate, serrate, or lobed toward the base; petioles 2-3 dm. long; peduncles 1-15 cm. long, or some umbels sessile; bractlets 1.5-5 cm. long; fertile rays 2-8, slender, 2-10 cm. long; fertile pedicels 5-18 mm. long; fruit 4-5 mm. long, 5-7 mm. broad.

TYPE LOCALITY: Eighteen miles southwest of the city of Oaxaca, Oaxaca, alt. 7500-9500 feet, *Nelson 1385*.

DISTRIBUTION: Oaxaca to Guatemala (*Nelson 3646, Pringle 6007*).

ILLUSTRATION: Contr. U. S. Nat. Herb. 3: *pl. 9*.

14. *ERIGENIA* Nutt. Gen. 1: 187. 1818.

Low, slender, erect, herbaceous, nearly acaulescent, glabrous perennials, from deep-seated globose tubers. Leaves petiolate, membranaceous, ternately decompound, the ultimate divisions linear or spatulate. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary, equaling or longer than the leaves. involucre replaced by a single reduced foliage leaf, shorter than the rays, or wanting. Involucel of oblong or spatulate, foliaceous, entire or toothed bractlets, longer than the flowers and fruit. Rays very few, spreading-ascending. Pedicels short, spreading. Flowers white; petals spatulate to obovate, without an inflexed apex; calyx-teeth obsolete; styles long and slender, recurving, the stylopodium lacking. Carpophore wanting. Fruit orbicular to ellipsoid, incurved at the apex and base, the mericarps nearly kidney-shaped, strongly flattened laterally, glabrous; ribs filiform, evident, a corky riblike projection running the length of the commissural surface in the middle of each mericarp; oil-tubes small, 1-3 in the intervals, 9-11 on the commissure; seed flattened laterally in cross section, the face deeply sulcate.

Type species, *Sison bulbosum* Michx. (*Erigenia bulbosa* Nutt.).

1. *Erigenia bulbosa* (Michx.) Nutt. Gen. 1: 188. 1818.

Sison bulbosum Michx. Fl. Bor. Am. 1: 169. 1803.

Ligusticum bulbosum Pers. Syn. Pl. 1: 315. 1805.

Sium pusillum Poir. in Lam. Encyc. Suppl. 1: 622. 1811. Not *S. pusillum* Nutt. 1840.

Hydrocotyle bipinnata Raf. Med. Repos. II. 5: 353. 1808 (nomen nudum); Muhl. Cat. 30. 1813.

Hydrocotyle dissecta Raf. Med. Repos. II. 5: 353. 1808. (Nomen nudum.)

Hydrocotyle ambigua Pursh, Fl. Am. Sept. 732. 1814.

Hydrocotyle composita Pursh, Fl. Am. Sept. 190. 1814.

Hydrocotyle bulbosa Eaton & Wright, N. Am. Bot. 277. 1840.

Plants 5-20 cm. high; leaves broadly ovate in general outline, excluding the petioles 6-11 cm. long, 1-12 cm. broad, the ultimate divisions linear to spatulate, 3-12 mm. long, 0.5-4 mm. broad, obtuse, minutely cuspidate, distinct; petioles 1.5-2 cm. long; peduncles 3-10 cm. long; bractlets of the involucre 6-10 mm. long; rays 1-4, 2-3.5 cm. long; pedicels 1-2 mm. long; fruit 3 mm. long, 5 mm. broad.

TYPE LOCALITY: "Propre Knoxville," Tennessee, *Michaux* ?

DISTRIBUTION: New York to the District of Columbia and Alabama, west to Minnesota, Kansas, and Arkansas (*Palmer 1598, 33,239, Ruth 2887*).

ILLUSTRATIONS: Bot. Gaz. 12: *pl. 1, f. 9, 10* (fr.); E. & P. Nat. Pf. 3^a: 165; Contr. U. S. Nat. Herb. 7: 73 (fr.); Britt. & Brown, Ill. Fl. ed. 2: 2: 653.

15. *OROGENIA* S. Wats. Bot. King's Expl. 120. 1871.

Low, delicate, erect, herbaceous, acaulescent or very short-caulescent, glabrous perennials, from a tuberous root crowned with scarious, bladeless sheaths. Leaves petiolate, membranaceous, 1-3-ternate, or rarely simple, the leaflets narrow, elongate, and usually entire. Petioles partially sheathing. Inflorescence of loose compound umbels; peduncles terminal. Involucre wanting. Involucel of a few minute, narrow, entire bractlets, or wanting. Rays few, spreading, unequal. Pedicels short or obsolete. Flowers white; petals obovate with a narrower inflexed apex; calyx-teeth obsolete; styles rather short, spreading, the stylopodium

lacking. Carpophore wanting. Fruit oblong to oval, slightly flattened laterally, glabrous; dorsal ribs filiform, prominent to obscure, the lateral broadly and involutely corky-winged, a corky rib-like projection running the length of the commissural face in the middle of each mericarp; oil-tubes several in the intervals and on the commissure; seed flattened dorsally in cross section, the face slightly concave; distinct groups of strengthening cells evident in the ribs and commissural projection.

Type species, *Orogenia linearifolia* S. Wats.

Tuber fusiform; fruit obviously flattened, oval; dorsal ribs obscure.
Tuber ovoid or globose; fruit subterete, oblong-oval; dorsal ribs prominent.

1. *O. fusiformis*.
2. *O. linearifolia*.

1. *Orogenia fusiformis* S. Wats. Proc. Am. Acad. 22: 474. 1887.

Plants 5-14 cm. high from a fusiform tuber 3-10 mm. in diameter, the basal sheaths slender, oblong, scarious, 2-7 cm. long; leaves ovate to deltoid in general outline, excluding the petioles 2-6 cm. long, 1-3-ternate, the leaflets linear to linear-lanceolate, 0.5-6 cm. long, 1-3 mm. broad, acute or obtuse; petioles 3-5 cm. long; peduncles 1-3, 2-10 cm. long; involucre of a few minute linear bractlets 1-2 mm. long, or wanting; fertile rays 1-8, 5-30 mm. long; fertile pedicels 2-15, 1 mm. long to obsolete; fruit oval, 3-4 mm. long, 2-3 mm. broad, compressed laterally, the dorsal ribs filiform or obsolete, obscure.

TYPE LOCALITY: Plumas County, California, Mrs. R. M. Austin.

DISTRIBUTION: Southern Oregon to the mountains of northern California (Austin 416, Cusick 2892).

2. *Orogenia linearifolia* S. Wats. Bot. King's Expl. 120. 1871.

Orogenia linearifolia var. *lata* Payson, Bot. Gaz. 60: 379. 1915.

Plants 5-15 cm. high from a globose or ovoid tuber 5-12 mm. in diameter, the basal sheaths slender, oblong, scarious, 1-6.5 cm. long; leaves ovate in general outline, excluding the petioles 2-8 cm. long, 1-2-ternate, the leaflets linear to lanceolate, 1.5-7 cm. long, 1-7 mm. broad, acute, or the first leaves occasionally simple, lanceolate to ovate-lanceolate, 2-6 cm. long, 2-25 mm. broad; petioles 2-8 cm. long; peduncles 1-2, 2-10 cm. long; involucre of 1 or more linear bractlets 1-3 mm. long, or wanting; fertile rays 1-4, 2-25 mm. long, occasionally sparingly scaberulous, glabrate; fertile pedicels 2-8, about 1 mm. long; fruit oblong-oval, 3-4 mm. long, 2-2.5 mm. broad, scarcely compressed, the dorsal ribs filiform, prominent.

TYPE LOCALITY: "Damp shaded ridge of the Wahsatch, north of Parleys Park, 7,500 feet altitude," Utah, Watson 440.

DISTRIBUTION: Montana to Washington, south to Colorado and Utah, 2,000 to 8,000 feet (Cusick 1833, Jones 6325).

ILLUSTRATIONS: Bot. King's Expl. pl. 14, f. 1-3; E. & P. Nat. Pfl. 3^e: 165; Contr. U. S. Nat. Herb. 7: 74 (fr.); Clements & Clements, Rocky Mt. Fl. pl. 35, f. 30 (fr.); Armstrong, Field Book W. Wild Fl. 333.

16. *DONNELLSMITHIA* Coult. & Rose, Bot. Gaz. 15: 15. 1890.

Musenopsis Coult. & Rose, Rev. N. Am. Umbell. 122, as to Mexican species, not as to type. 1888. *Schiedeophytum* H. Wolff, Repert. Sp. Nov. 9: 419. 1911.

Slender, erect, herbaceous, caulescent, branching, glabrous to scaberulous or puberulent annuals, biennials, or perennials, from a taproot or globose tuber. Leaves petiolate, membranaceous, 1-4-ternate or ternately or ternate-pinnately decomposed with ovate to filiform divisions. Petioles sheathing. Inflorescence of loose compound umbels; peduncles paniculate, terminal and axillary or verticillate; some umbels frequently sessile. Involucre usually wanting. Involucre usually wanting. Fertile rays few, spreading-ascending. Fertile pedicels few, spreading-ascending. Flowers yellow or purple; petals oblanceolate to obovate with a narrower inflexed apex; calyx-teeth obsolete; styles short, the stylopodium lacking or depressed. Carpophore 2-cleft to the base, the halves approximate. Fruit oval to ellipsoid or orbiculate, flattened laterally, glabrous to puberulent; ribs narrow or filiform, prominent to obscure; oil-tubes small, solitary to several in the intervals, 2-several on the commissure; seed nearly terete in cross section, not sulcate beneath the tubes, the face plane or sulcate.

Type species, *Donnellsmithia guatemalensis* Coult. & Rose.

Plants annual or biennial from tuberous to slender or fusiform taproots.

Leaflets lanceolate to ovate, usually broader than 5 mm.; fruit orbicular to slightly broader than long, rounded to tapering at the apex.

Stylopodium depressed but evident; oil-tubes several in the intervals; fruit tapering at the apex; ribs indistinct.

Fertile pedicels 1 mm. long or less, shorter than the sterile; leaves ternate-pinnately dissected; seed-face plane.

Fertile pedicels 2-6 mm. long, longer than the sterile; leaves 1-2-ternate or 1-2-pinnate; seed-face shallowly sulcate.

Stylopodium lacking; oil-tubes solitary in the dorsal intervals; fruit rounded at the apex; ribs evident.

Leaflets filiform to linear-lanceolate, usually less than 5 mm. broad; fruit oval to oblong, occasionally orbicular, longer than broad, obtuse at the apex.

Pedicels 1-3 mm. long; ribs of the fruit evident.

Pedicels 5-8 mm. long; ribs of the fruit indistinct.

Involute usually present; ultimate divisions of the leaves 5-20 mm. long; petioles 6-12 cm. long.

Involute wanting; ultimate divisions of the leaves 20-40 mm. long; petioles 2-5 cm. long.

Plants perennial from slender to stout taproots.

Flowers purple.

Leaflets oblong-lanceolate, 6-10 mm. broad, serrate, callous-margined.

Leaflets linear-lanceolate to filiform, 0.5-4 mm. broad, entire, not callous-margined except at the apex.

Flowers yellow.

Leaflets filiform to lanceolate, usually entire.

Fruit oval to ovoid, longer than broad.

Leaflets 0.5-4 mm. broad, not venose.

Leaflets 5-15 mm. broad, strongly venose beneath.

Fruit obovoid or ellipsoid, broader than long.

Leaflets ovate-lanceolate to orbicular, toothed to pinnately incised or lobed.

Involute of 1 or 2 linear bractlets 1-3 mm. long; fertile pedicels 1-2 mm. long; leaves ternate-pinnately decompound.

Involute wanting; fertile pedicels 2-6 mm. long; leaves 2-3-ternate.

Ovary glabrous; leaflets acute.

Ovary puberulent; leaflets obtuse.

1. *D. mexicana*.

2. *D. Hintonii*.

3. *D. biennis*.

4. *D. tuberosa*.

5. *D. madrensis*.

6. *D. submontana*.

7. *D. reticulata*.

8a. *D. peucedanoides*
var. *purpurea*.

8. *D. peucedanoides*.

9. *D. guatemalensis*.

10. *D. cordata*.

11. *D. dissecta*.

12. *D. serrata*.

13. *D. ovata*.

1. *Donnellsmithia mexicana* (B. L. Robinson) Math. & Const.

Bull. Torrey Club 68: 122. 1941.

Pimpinella mexicana B. L. Robinson, Proc. Am. Acad. 26: 164. 1891.

Schiedeophytum fallax H. Wolff, Repert. Sp. Nov. 9: 420. 1911.

Schiedeophytum H. Wolff in Engler, Pflanzenreich 90 (4228): 326. 1927.

Annual or biennial from a slender taproot, 6-16 dm. high, the foliage minutely scaberulous; leaves deltoid in general outline, excluding the petioles 6-12 cm. long, 2-ternate or 2-pinnate, the leaflets lanceolate, 20-50 mm. long, 4-12 mm. broad, mostly distinct, petiolulate to sessile, finely serrate, minutely scaberulous on the veins and the reflexed margins; petioles 5-10 cm. long; uppermost cauline leaves greatly reduced, alternate or opposite, with short, filiform divisions; peduncles alternate, 1-2 cm. long; involucre wanting; involucre wanting; rays 1-5, unequal, 0.5-1.5 cm. long; fertile pedicels 1-3, up to 1 mm. long, shorter than the sterile pedicels; flowers yellow; stylopodium low but evident; fruit orbicular, 1.5-2 mm. long, 2-2.5 mm. broad, cordate at the base, rounded but tapering toward the apex, glabrous, the ribs filiform, indistinct; oil-tubes several in the intervals and on the commissure; seed-face plane.

TYPE LOCALITY: "Hills of Patzeuaro," Michoacán, Pringle 3331.

DISTRIBUTION: Mexico to Michoacán and Morelos (*Hinton* 4649, *Pringle* 6157).

2. *Donnellsmithia Hintonii* Math. & Const. Bull. Torrey

Club 68: 255. 1941.

Annual or biennial from a slender taproot, 6-12 dm. high, the foliage and nodes slightly scaberulous; leaves deltoid in general outline, excluding the petioles 6-12 cm. long, ternate-pinnately dissected, the leaflets lanceolate to ovate, 1-3 cm. long, 5-15 mm. broad, mostly distinct, attenuate at the apex, cuneate at the base, pinnatifid and toothed with entire, apiculate lobes or teeth, minutely scaberulous on the veins and the rachis or glabrate; petioles 5-15 cm. long; uppermost cauline leaves alternate or opposite; peduncles alternate, 0.5-3 cm. long, or

frequently some umbels sessile; involucre wanting, or of a single bract; involucre wanting; rays 3-6, subequal, 6-12 mm. long; pedicels 1-4, 2-6 mm. long, longer than the sterile pedicels; flowers yellow; stylopodium low but evident; fruit orbicular to obovate, 1.5 mm. long, 1.5-2 mm. broad, cordate at the base, rounded but tapering toward the apex, glabrous, the ribs filiform, indistinct; oil-tubes 2-4 in the intervals and on the commissure; seed-face shallowly sulcate.

TYPE LOCALITY: Oak woods, Salitre, Temascaltepec, Mexico, *Hinton 8463*.
DISTRIBUTION: Mexico (state) (*Hinton 2329, 4851*).

3. *Donnellsmithia biennis* (Coul. & Rose) Math. & Const.

Bull. Torrey Club 68: 122. 1941.

Musenioopsis aegopodioides Coul. & Rose, Contr. U. S. Nat. Herb. 3: 302, as to specimens cited, not as to synonymy, incl. name-bearing synonym. 1895.

Musenioopsis biennis Coul. & Rose, Proc. Wash. Acad. 1: 130. 1900.

Tauschia biennis F. Macbr. Contr. Gray Herb. 56: 32. 1918.

Biennial from a slender taproot, 2-12 dm. high, the foliage and nodes slightly scaberulous; leaves deltoid in general outline, excluding the petioles 2-8 cm. long, 1-3-ternate, the leaflets ovate-lanceolate to ovate, 2-4 cm. long, 15-20 mm. broad, mostly distinct and sessile, acute or obtuse at the apex, cuneate at the base, coarsely incised or toothed, scaberulous on the veins, margins, and rachis; petioles 5-15 cm. long; cauline leaves with narrower, deeply cleft divisions, the uppermost with few linear divisions; peduncles alternate, 1-5 cm. long, or frequently some umbels sessile; involucre wanting, or of a single bract; involucre of 1 or 2 short linear bractlets, or wanting; rays 2-4, 8-15 mm. long; fertile pedicels 1-3, 3-6 mm. long, longer than the sterile pedicels; flowers yellow; stylopodium depressed, not evident; fruit orbicular to obovate, 2-3 mm. long, 3-4 mm. broad, cordate at the base, rounded at the apex, glabrous, the ribs filiform, evident; oil-tubes 1-several in the intervals, several on the commissure; seed-face sulcate.

TYPE LOCALITY: "Pine woods, hills of Patzcuaro," Michoacán, *Pringle 4620*.
DISTRIBUTION: Mexico to Michoacán and Morelos (*Hinton 7967, Pringle 6156*).

4. *Donnellsmithia tuberosa* (Coul. & Rose) Math. & Const.

Bull. Torrey Club 68: 123. 1941.

Musenioopsis tuberosa Coul. & Rose, Contr. U. S. Nat. Herb. 3: 303. 1895.

Velaea tuberosa Drude in E. & P. Nat. Pfl. 3: 169. 1898.

Musenioopsis tenuissima Coul. & Rose, Proc. Wash. Acad. 1: 131. 1900.

Musenioopsis glauca Coul. & Rose, Proc. Wash. Acad. 1: 131. 1900.

Musenioopsis fusiformis Rose, Contr. U. S. Nat. Herb. 8: 337. 1905.

Tauschia fusiformis F. Macbr. Contr. Gray Herb. 56: 32. 1918.

Biennial from a globose or fusiform taproot, 3-8 dm. high, the foliage and nodes scaberulous and puberulent, or glabrous throughout; leaves deltoid in general outline, excluding the petioles 3-9 cm. long, 3-4-ternately or ternate-pinnately decomposed, the ultimate divisions linear to filiform, 5-30 (or 40) mm. long, 1-2 mm. broad, acute and mucronate at the apex, entire, glabrous, or slightly scaberulous on the veins and the rachis; petioles 3-12 cm. long; uppermost cauline leaves mostly opposite with short, filiform divisions; peduncles alternate or verticillate, 1-5 cm. long, or frequently some umbels sessile; involucre wanting, or rarely of a single bract; involucre wanting; rays 2-5 (or 8), subequal, 1-3 (or 5) cm. long; fertile pedicels 1-4, 1-3 mm. long; flowers pale yellow; stylopodium depressed, not evident; fruit oval to orbicular, 2.5-3.5 mm. long, 2-3 mm. broad, cordate at the base, obtuse at the apex, glabrous, the ribs filiform, evident; oil-tubes several in the intervals and on the commissure; seed-face sulcate.

TYPE LOCALITY: Cerro de San Felipe, Oaxaca, *Pringle 4868*.
DISTRIBUTION: Southern Jalisco to Oaxaca (*Pringle 9815, Purpus 4111*).

5. *Donnellsmithia madrensis* (Coul. & Rose) Math. & Const.

Bull. Torrey Club 68: 122. 1941.

Musenioopsis madrensis Coul. & Rose, Proc. Wash. Acad. 1: 130. 1900.

Biennial from a globose or branched taproot, 5-8 dm. high, glabrous throughout; leaves deltoid in general outline, excluding the petioles 4-10 cm. long, 2-3-ternate or ternate-pinnately

decompound, the ultimate divisions linear, 5–20 mm. long, 1–2 mm. broad, acute and mucronate at the apex, entire; cauline leaves little reduced upwards; petioles 6–12 cm. long; peduncles alternate or verticillate, 2–12 cm. long, or the terminal umbel sessile and often sterile; involucre of 1 or 2 bracts, or rarely wanting; involucre wanting; rays 2–5, unequal, 2–5 cm. long; fertile pedicels 1–3, 5–8 mm. long, longer than the sterile pedicels; flowers pale yellow; stylopodium depressed, not evident; fruit oval, 2–3 mm. long, cordate at the base, glabrous, the ribs filiform, indistinct; oil-tubes several in the intervals, several on the commissure; seed-face sulcate.

TYPE LOCALITY: "On top of mountains west of Bolanos," Jalisco, *Rose 2966*.

DISTRIBUTION: Known only from the type locality.

6. *Donnellsmithia submontana* (Coul. & Rose) Math. & Const.

Bull. Torrey Club 68: 123. 1941.

Musenioipsis submontana Coul. & Rose, Proc. Wash. Acad. 1: 131. 1900.

Biennial from a fusiform taproot, 3–5 dm. high, glabrous throughout; leaves deltoid in general outline, excluding the petioles 3–9 cm. long, 2–4-ternately decompound, the ultimate divisions linear-lanceolate to linear, 2–4 cm. long, 1–5 mm. broad, acute and mucronate at the apex, entire; cauline leaves little reduced, with linear, elongate lobes; petioles 2–5 cm. long; peduncles alternate, 2–5 cm. long, or frequently some umbels sessile; involucre wanting; involucre wanting; rays 4–6, 25–45 mm. long at anthesis; pedicels 5–8 mm. long at anthesis; flowers pale yellow; stylopodium depressed, not evident; mature fruit unknown, but the ovary glabrous and the ribs apparently indistinct.

TYPE LOCALITY: "In the foothills between Dolores and Santa Gertrudis, Tepic" (Nayarit), *Rose 2064*.

DISTRIBUTION: Known only from the type locality.

7. *Donnellsmithia reticulata* (Coul. & Rose) Math. & Const.

Bull. Torrey Club 68: 123. 1941.

Musenioipsis reticulata Coul. & Rose, Proc. Wash. Acad. 1: 133. 1900.

Perennial from a stout, vertical taproot, the stem fibrous at the base, about 9 dm. high, glabrous and often glaucous throughout; leaves deltoid in general outline, excluding the petioles 6–10 cm. long, 1–2-ternate, the leaflets oblong-lanceolate, 3–10 cm. long, 6–10 mm. broad, abruptly acute at the apex, tapering at the base, distinct or confluent at the base, sessile, thick and callous-margined, remotely serrate with mucronate teeth, the venation coarsely reticulate, prominent; petioles 5–15 cm. long; upper cauline leaves usually ternate with short, narrow divisions; peduncles alternate, 1–3 cm. long in flower; involucre wanting; involucre of several linear, callous-tipped bractlets, 2–4 mm. long, shorter or longer than the flowers; rays 3–6, 4–6 mm. long at anthesis; pedicels 1–2 mm. long at anthesis; flowers purple; stylopodium depressed, not evident; mature fruit unknown, but the ovary glabrous.

TYPE LOCALITY: Southern Durango, *Rose 2257*.

DISTRIBUTION: Southern Durango (*Rose 3512*).

8. *Donnellsmithia peucedanoides* (H.B.K.) Math. & Const.

Bull. Torrey Club 68: 122. 1941.

? *Peucedanum junceum* Humb. & Bonpl.; Spreng. in R. & S. Syst. Veg. 6: 572. 1820.

Cnidium peucedanoides H.B.K. Nov. Gen. & Sp. 5: 15. 1821.

Eulophus ternatus S. Wats. Proc. Am. Acad. 23: 276. 1888.

Musenioipsis peucedanoides Coul. & Rose, Contr. U. S. Nat. Herb. 3: 303. 1895.

Musenioipsis ternata Coul. & Rose, Contr. U. S. Nat. Herb. 3: 303. 1895.

Musenioipsis ternata var. *filifolia* Coul. & Rose, Contr. U. S. Nat. Herb. 3: 303. 1895.

Musenioipsis Schaffneri Coul. & Rose, Contr. U. S. Nat. Herb. 3: 303. 1895.

Velaea peucedanoides Drude in E. & P. Nat. Pfl. 3⁸: 169. 1898.

Velaea ternata Drude in E. & P. Nat. Pfl. 3⁸: 169. 1898.

Velaea Schaffneri Drude in E. & P. Nat. Pfl. 3⁸: 169. 1898.

Tauschia peucedanoides F. Macbr. Contr. Gray Herb. 56: 32. 1918.

Perennial from a simple or branched slender taproot, the stem fibrous at the base, 5–10 dm. high, the foliage scaberulous; leaves deltoid in general outline, excluding the petioles 5–12 (or

18) cm. long, 1-4-ternate, the leaflets linear-lanceolate to filiform, 1-10 cm. long, 0.5-4 mm. broad, acute and callous-tipped at the apex, tapering at the base, entire, glabrous or minutely scaberulous on the veins and on the rachis; petioles 5-25 cm. long; uppermost cauline leaves alternate or opposite, ternate with filiform divisions or entire; peduncles alternate or verticillate, 2-7 cm. long, or frequently some umbels sessile; involucre wanting, or of a single bract; involucre wanting, or of 1-several short, filiform bractlets, shorter than the fruit; rays 2-6, 1-4 cm. long; fertile pedicels 1-4, 2-6 (or 8) mm. long, longer than the sterile pedicels; flowers yellow; stylopodium depressed, not evident; fruit oval or ovoid, 3-4 mm. long, 3 mm. broad, rounded to slightly cordate at the base, obtuse or tapering slightly toward the apex, glabrous, the ribs filiform, evident to indistinct; oil-tubes several in the intervals and on the commissure; seed-face sulcate.

TYPE LOCALITY: "Crescit locis montosis temperatis Provinciae Popayanensis, inter La Sequia et fluvium Putes, alt. 700 hex.," Colombia, *Humboldt & Bonpland* (probably an error since the species is not known from South America).

DISTRIBUTION: Sonora to Tamaulipas, south throughout Mexico to Guatemala and Honduras (*Hinton 4690, Pringle 1252*).

8a. *Donnellsmithia peucedanoides* var. *purpurea* (Coulter & Rose)

Math. & Const. Bull. Torrey Club 68: 123. 1941.

Museniopsis purpurea Coulter & Rose, Proc. Wash. Acad. 1: 132. 1900.

Similar to the species, but the flowers purple.

TYPE LOCALITY: "In the Sierra Madre, west of Bolanos," Jalisco, *Rose 2974*.

DISTRIBUTION: Chihuahua, south to Jalisco (*Gentry 2627, Rose 2403*).

9. *Donnellsmithia guatemalensis* Coulter & Rose, Bot. Gaz.

15: 15. 1890.

Perennial from a slender taproot, 4-9 dm. high, the foliage scaberulous; leaves deltoid in general outline, excluding the petioles 5-10 cm. long, 2-ternate or ternate-pinnate, the leaflets lanceolate, 25-65 mm. long, 5-15 mm. broad, acute or acuminate and callous-tipped at the apex, sessile, entire or occasionally toothed or even incised, the venation coarsely reticulate, scaberulous on the surfaces, reflexed margins, veins, and rachis; petioles 5-20 cm. long; uppermost cauline leaves ternate to entire with linear to filiform divisions; peduncles alternate or verticillate, 3-10 cm. long, or frequently some umbels sessile; involucre wanting, or of 1 or 2 bracts; involucre wanting; rays 3-5, 1.5-5 cm. long; pedicels 1-3, 3-6 mm. long, longer than the sterile pedicels; flowers pale yellow; stylopodium depressed, not evident; immature fruit oval, 2-3 mm. long, 2 mm. broad, cordate at the base, truncate at the apex, glabrous, the ribs filiform, evident; oil-tubes several in the intervals and on the commissure; seed-face sulcate.

TYPE LOCALITY: Santa Rosa, Department of Verapaz, Guatemala. *H. von Tüeckheim 1311*.

DISTRIBUTION: Guatemala (*Skutch 588, Steyermark 29,663, 30,901*).

ILLUSTRATION: Bot. Gaz. 15: pl. 2.

10. *Donnellsmithia cordata* (Coulter & Rose) Math. & Const.

Bull. Torrey Club 68: 122. 1941.

Museniopsis cordata Coulter & Rose, Contr. U. S. Nat. Herb. 3: 304. 1895.

Museniopsis scabrella Coulter & Rose, Contr. U. S. Nat. Herb. 3: 304. 1895.

Velaea cordata Drude in E. & P. Nat. Pfl. 3^o: 169. 1898.

Velaea scabrella Drude in E. & P. Nat. Pfl. 3^o: 169. 1898.

Tauschia scabrella F. Macbr. Contr. Gray Herb. 56: 33. 1918.

Perennial from a slender horizontal root, 5-10 dm. high, the foliage scaberulous and the inflorescence puberulent to glabrate; leaves deltoid in general outline, excluding the petioles 4-10 cm. long, ternately or ternate-pinnately decomposed, the ultimate divisions lanceolate to linear, 5-35 mm. long, 1-6 mm. broad, acute and mucronate at the apex, entire or toothed, scaberulous on the veins and the margins, or glabrate; petioles 10-15 cm. long; lower cauline leaves large, with elongate divisions, the uppermost alternate or opposite, with elongate linear to filiform divisions; peduncles alternate or verticillate, 5-10 cm. long, or frequently some um-

bels sessile; involucre wanting; involucl wanting; rays 4-6, 25-45 mm. long; fertile pedicels 1-6, 3-6 mm. long, exceeding the sterile pedicels; flowers yellow; stylopodium depressed, not evident; fruit orbicular to obcordate, 2-3 mm. long, 3-4 mm. broad, cordate at the base, rounded at the apex, glabrous, the ribs filiform, indistinct; oil-tubes several in the intervals and on the commissure; seed-face sulcate.

TYPE LOCALITY: In dry pine woods, Cerro de San Felipe, Oaxaca, *Pringle 5548*.
DISTRIBUTION: Puebla to Oaxaca (*Pringle 5549, Purpus 7455*).

11. *Donnellsmithia dissecta* (Coul. & Rose) Math. & Const.

Bull. Torrey Club 68: 122. 1941.

Musenopsis dissecta Coul. & Rose, Contr. U. S. Nat. Herb. 3: 304. 1895.
Velaea dissecta Drude in E. & P. Nat. Pfl. 3^a: 169. 1898.
Tauschia pinetorum Brand. Univ. Calif. Publ. Bot. 10: 413. 1924.

Perennial from a tuberous root, 3-8 dm. high, the foliage scaberulous and the inflorescence puberulent to glabrate; leaves deltoid-ovate in general outline, excluding the petioles 3-12 cm. long, ternate-pinnately decompound, the leaflets oval to orbicular, 1-2 cm. long, 1-3 cm. broad, pinnately incised or lobed with linear, acute, and callous-tipped lobes, 2-7 mm. long, minutely scaberulous to glabrate; petioles 5-15 cm. long; cauline leaves greatly reduced; peduncles alternate or verticillate, 4-6 cm. long; involucre wanting; involucl of 1 or 2 linear bractlets, 1-3 mm. long; rays 2-5, subequal, 1.5-3 cm. long; fertile pedicels 1 or 2, 1-2 mm. long, shorter than the sterile pedicels; flowers yellow; stylopodium depressed, not evident; fruit oval, 3-4 mm. long, 3 mm. broad, rounded at the base and the apex, glabrous, the ribs very narrow, acute, prominent; oil-tubes 3 or 4 in the intervals, 6-8 on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: "From the mountains near Tlapancingo," Oaxaca, *Nelson 2062*.
DISTRIBUTION: Guerrero to Chiapas (*Nelson 2242, Purpus 9293*).

12. *Donnellsmithia serrata* (Coul. & Rose) Math. & Const.

Bull. Torrey Club 68: 123. 1941.

Musenopsis serrata Coul. & Rose, Contr. U. S. Nat. Herb. 3: 304. 1895.
Velaea serrata Drude in E. & P. Nat. Pfl. 3^a: 170. 1898.

Perennial from a taproot, 4-10 dm. high, the foliage scaberulous; leaves ovate-deltoid in general outline, excluding the petioles 5-15 cm. long, 2-3-ternate, the leaflets ovate-lanceolate to ovate, 1-4 cm. long, 1-3 cm. broad, distinct or the terminal confluent, petiolulate to sessile, acute at the apex, cuneate at the base, coarsely serrate and pinnately incised or lobed, the lobes acute and callous-tipped, scaberulous on both surfaces, the veins, the margins, and the rachis; petioles 5-15 cm. long; uppermost cauline leaves with linear to filiform, often elongate divisions; peduncles alternate or verticillate, 2.5-8 (or 12) cm. long; involucre wanting; involucl wanting; rays 4 or 5, 25-45 (or 60) mm. long; fertile pedicels 2-8, 3-6 mm. long, longer than the sterile pedicels, slightly webbed at the base; flowers yellow; stylopodium depressed, not evident; fruit nearly orbicular, 2-3 mm. long, cordate at the base, truncate at the apex, glabrous, the ribs low, filiform, evident; oil-tubes 3 or 4 in the intervals, 6-8 on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: "From the Cuesta de San Juan del Estado and from the continental divide near Las Sedas," Oaxaca, *Pringle 5542*.
DISTRIBUTION: Puebla to Oaxaca; Guerrero (*Purpus 6514*).

13. *Donnellsmithia ovata* (Coul. & Rose) Math. & Const.

Bull. Torrey Club 68: 122. 1941.

Musenopsis ovata Coul. & Rose, Proc. Wash. Acad. 1: 133. 1900.
? *Musenopsis biennis* var. *pinnatisecta* Riley, Kew Bull. 1924: 222. 1924.

Perennial from a stout taproot, 3-6 dm. high, scaberulous to puberulent throughout; leaves deltoid in general outline, excluding the petioles 3-6 cm. long, 2-3-ternate, the leaflets broadly ovate, 1-2 cm. long, 1-2 cm. broad, obtuse at the apex, cuneate at the base, sessile, toothed to incised with mucronate teeth, densely scabrous; petioles 3-6 cm. long, scabrous; uppermost

cauline leaves ternate or entire with oblong to linear divisions; peduncles alternate, 2-9 cm. long at anthesis, or frequently some umbels sessile; involucre of 1 or 2 filiform to linear bracts, 3-10 mm. long, or wanting; involucre wanting; rays 3-6, 1-2 cm. long at anthesis; pedicels 2-3 mm. long at anthesis; flowers yellow; stylopodium depressed, not evident; mature fruit unknown, but the ovary orbicular to obovate, cordate at the base, puberulent.

TYPE LOCALITY: "East range of the Sierra Madre," Zacatecas, *Rose 2361*.

DISTRIBUTION: Zacatecas (*Rose 2394*).

17. *TAUSCHIA* Schlecht. *Linnaea* 9: 607. 1834; nomen conservandum. Not *Tauschia* Preissler, 1828.

Deweya T. & G. Fl. N. Am. 1: 641. 1840.

Museniopsis Coult. & Rose, Rev. N. Am. Umbell. 122, as to type species. 1888.

Hesperogenia Coult. & Rose, Contr. U. S. Nat. Herb. 5: 203. 1899.

Drudeophytum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 80. 1900.

Velaea of authors, in part. Not *Velaea* DC. 1829.

Low or slender, acaulescent to short-caulescent, herbaceous, glabrous to pubescent perennials, from taproots or tubers. Leaves petiolate, membranaceous, entire, pinnate, ternate to ternately decomposed, the divisions various. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal, rarely some also axillary, longer than the leaves. Involucre usually wanting, occasionally of one or more scarious or foliaceous bracts. Involucel dimidiate, of several prominent, linear to ovate, free or connate bractlets, entire, toothed, or divided, longer or shorter than the flowers and fruit. Fertile rays few to numerous, spreading-ascending or spreading. Fertile pedicels rather short, spreading. Flowers yellow, white, or purplish; petals oblanceolate to obovate with a narrower inflexed apex; calyx-teeth prominent to obsolete; styles short, terete or flattened, spreading to reflexed, the stylopodium lacking, at least at maturity. Carpophore 2-cleft to the middle or to the base, the halves approximate or variously divergent. Fruit oblong to orbicular or ellipsoid, slightly flattened laterally, glabrous; ribs prominent to filiform, unwinged, obtuse or acute; oil-tubes large to small, solitary to several in the intervals, 2-several on the commissure, or small and numerous about the seed; seed nearly terete in cross section, the face deeply concave or sulcate.

Type species, *Tauschia nudicaulis* Schlecht.

Leaves linear, entire, the venation parallel.

Leaves variously compound, the venation reticulate.

Leaves simply pinnate or ternate.

Leaflets all entire, crenate or serrate, never lobed nor divided.

Leaflets entire, linear, lanceolate or oblong-lanceolate.

Plants low, 2-4 cm. high, puberulent; styles broad and tape-like;

Mexico.

Plants taller, 10-25 cm. high, glabrous to scabrous; styles terete.

Flowers yellow; involucre present; fruit oval to suborbicular.

Plants glabrous; leaflets lanceolate; fruit suborbicular,

2-2.5 mm. long.

Plants scabrous or scaberulous; leaflets linear; fruit oval,

about 5 mm. long.

Flowers white; involucre wanting; fruit linear-oblong.

Leaflets crenate to serrate, ovate to oblong.

Plants 3-7 dm. high, glabrous; leaflets 3-8 cm. long, serrate;

fruit oblong, 6-9 mm. long; oil-tubes 3-5 in the intervals;

California & Baja California.

Plants 0.7-2.7 dm. high, puberulent; leaflets 0.5-2 cm. long,

crenate; fruit ovoid, 4-6 mm. long; oil-tubes solitary in the

intervals; montane southern Mexico.

Leaflets, or some of them, variously incised and lobed.

Plants more or less pubescent, at least in the inflorescence.

Flowers white; ribs of the fruit filiform; mericarps purplish at

the tip.

Foliage pubescent; leaflets 3-6 mm. long; rays 3-5 mm. long;

styles flat and tape-like; oil-tubes 2 or 3 in the intervals.

Foliage glabrous; leaflets 10-25 mm. long; rays 15-50 mm.

long; styles terete; oil-tubes solitary in the intervals.

Flowers yellow or purplish; ribs of the fruit prominent; meri-

carps not purplish at the tip.

Leaflets, or some of them, incised or lobed; oil-tubes solitary

in the intervals.

1. *T. linearifolia*.

2. *T. Ehrenbergii*.

7. *T. Stricklandii*.

19. *T. Johnstoniana*.

20. *T. Hooveri*.

9. *T. arguta*.

4. *T. nudicaulis*.

3. *T. alpina*.

15. *T. Seatonii*.

4. *T. nudicaulis*.

- Leaflets all 1-2-pinnately or ternately lobed; oil-tubes several in the intervals.
- Plants from a stout taproot; leaflets many, crowded; peduncles 10-20 cm. long; fruit with a V-shaped depression at the commissure. 5. *T. madrensis*.
- Plants from a short tuberous root; leaflets few, distant; peduncles 2-8 cm. long; fruit without a V-shaped depression at the commissure. 17. *T. humilis*.
- Plants glabrous to scabrous, but not pubescent.
- Plants acaulescent, 10-40 cm. high; peduncles 7-40 cm. long, equaling to exceeding the leaves.
- Rays 12-18, 3-6 cm. long; calyx-teeth evident; California. 13. *T. Parishii*.
- Rays 3-8, 0.5-2.5 cm. long; calyx-teeth minute or obsolete; Texas or Mexico.
- Plants glabrous; leaflets ovate. 6. *T. texana*.
- Plants scabrous or scaberulous; leaflets linear. 19. *T. Johnstoniana*.
- Plants caulescent, 5-8 cm. high; peduncles up to 2 cm. long, shorter than the leaves; Oregon. 12. *T. Howellii*.
- Leaves ternate-pinnate to ternately or pinnately decomposed.
- Plants glabrous throughout.
- Ultimate leaf-divisions filiform to linear-filiform.
- Plants 1-2 dm. high, acaulescent; bractlets of the involucre greatly exceeding the fruit; fruit with a V-shaped depression at the commissure; ribs about equaling the intervals; oil-tubes solitary in the intervals; Oaxaca. 14. *T. filiformis*.
- Plants 3-4 dm. high, short-caulescent; bractlets of the involucre a little shorter than the mature fruit; fruit without a V-shaped depression at the commissure; ribs much narrower than the intervals; oil-tubes numerous; Chihuahua. 16. *T. tenuifolia*.
- Ultimate leaf-divisions lanceolate to orbicular.
- Leaves 2-5 cm. long; leaflets entire; Washington. 7. *T. Stricklandii*.
- Leaves 6-15 cm. long; leaflets mucronate-serrate to pinnately lobed.
- Calyx-teeth minute; fruit suborbicular or ellipsoid, 2-3 mm. long; southern Oregon and northern California. 8. *T. glauca*.
- Calyx-teeth evident; fruit oval to oblong, 5-8 mm. long; southern California. 13. *T. Parishii*.
- Plants variously pubescent, at least in the inflorescence.
- Plants acaulescent or nearly so, 2-10 dm. high, scabrous throughout; peduncles 2.5-8 dm. long; California.
- Bractlets of the involucre several, conspicuous, lanceolate or linear-lanceolate, 5-12 mm. long, longer than the flowers; leaflets 2.5-6 cm. long. 10. *T. Hartwegii*.
- Bractlets of the involucre few, less conspicuous, linear, 3-8 mm. long, shorter than the flowers; leaflets 1.5-3.5 cm. long. 11. *T. Kelloggii*.
- Plants caulescent, 1.5-4 dm. high, glabrous except for the puberulent inflorescence; peduncles 0.8-2.5 cm. long; Mexico and Michoacán. 18. *T. mariana*.

1. *Tauschia linearifolia* Coult. & Rose, Proc. Wash. Acad.

1: 138. 1900.

Acaulescent or short-caulescent from a thickened taproot, 15-30 cm. high, glabrous throughout; leaves broadly linear in general outline, excluding the petioles 5-20 cm. long, 3-7 mm. broad, simple and entire, acute at the apex, cuneate at the base, the margins revolute, the venation parallel; petioles 3-7 cm. long; peduncles 15-25 cm. long; involucre wanting, or of a single foliaceous bract; involucre of several ovate to orbicular, acuminate, purplish, reticulate bractlets, 3-4 mm. long, shorter than the flowers and fruit; fertile rays 3-6, stout, subequal, 4-7 mm. long; fertile pedicels stout, subequal, 1-2 mm. long, shorter than the sterile; calyx-teeth minute; flowers unknown; styles short, spreading; carpophore 2-cleft to the base, the halves divergent for their upper third, to form a Y, the tips slightly incurved; fruit ovoid, tapering at the apex, 5-6 mm. long, 4 mm. broad, with a V-shaped depression at the commissure, the ribs evident but very narrow, acute; oil-tubes very small, several in the intervals and on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: "In a swamp on top of the west range of the Sierra Madre near the little Indian hamlet of Santa Gertrudis," Nayarit, *Rose 2104*.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Proc. Wash. Acad. 1: pl. 6.

2. *Tauschia Ehrenbergii* (H. Wolff) Mathias, Ann. Mo. Bot.
Gard. 17: 269. 1930.

Musineum Ehrenbergii H. Wolff, Repert. Sp. Nov. 8: 524. 1910.

Acaulescent or short-caulescent from a taproot, 2-4 cm. high, the foliage and inflorescence puberulent; leaves oblong in general outline, excluding the petioles 1-2 cm. long, 1 cm. broad, pinnate, the leaflets oblong-lanceolate, obtuse, opposite, distinct, 5-10 mm. long, 1-3 mm. broad, entire, the margin reflexed; petioles 1-3 cm. long; peduncles 2-3 cm. long; involucre wanting; involucre of several lanceolate, entire bractlets, 3-5 mm. long, exceeding the flowers but shorter than the fruit; fertile rays 3-5, unequal, 5-10 mm. long, puberulent; pedicels 1-3 mm. long, puberulent; flowers white, the anthers purple; styles broad and tape-like, slender, recurved; fruit unknown.

TYPE LOCALITY: "Cerro folado," Mexico, *Ehrenberg 851*.

DISTRIBUTION: Known only from the type locality.

3. *Tauschia alpina* (Coulter & Rose) Mathias, Ann. Mo. Bot.
Gard. 17: 269. 1930.

Musineon alpinum Coulter & Rose, Bot. Gaz. 20: 260. 1895.

Acaulescent, decumbent or ascending from a woody caudex, 5-10 cm. high, the foliage pubescent and the inflorescence puberulent; leaves oblong-oval in general outline, excluding the petioles 1.5-3 cm. long, 5-15 mm. broad, pinnate, the leaflets ovate, obtuse to acute, 3-6 mm. long, 3-5 mm. broad, deeply incised or lobed, the divisions short, linear-oblong, callous-tipped, the margins reflexed, the rachis pilose at the nodes; petioles 1.5-3 cm. long; peduncles stout, 4-7 cm. long, pilose at the apex; involucre wanting; involucre of several linear, entire bractlets, 3-4 mm. long, exceeding the flowers but shorter than the fruit; fertile rays 3-6, stout, unequal, 3-5 mm. long; pedicels 1-4 mm. long; calyx-teeth minute; flowers white, the anthers purple; styles long, flat and tape-like, recurved; carpophore 2-cleft to the base, the halves approximate to the tip; fruit oblong-oval, tapering slightly at the apex, 3-4 mm. long, 2-5 mm. broad, the mericarps purplish at the apex, the ribs filiform but evident; oil-tubes small, 2 or 3 in the intervals, 4-6 on the commissure; seed channeled under the intervals, the face deeply concave.

TYPE LOCALITY: "Cold summit slopes," Nevada de Toluca, Mexico, *Pringle 4247*.

DISTRIBUTION: High mountains of Vera Cruz, Mexico, and Tlaxcala (*Purpus 252*).

4. *Tauschia nudicaulis* Schlecht. *Linnaea* 9: 608. 1834.

Velaea decumbens Benth. Pl. Hartw. 38. 1840.

Arracacia decumbens Benth. & Hook.; Hemsl. Biol. Centr. Am. Bot. 1: 564. 1880.

Arracacia trifida Coulter & Rose; Urbina, Cat. Pl. Mex. 105. 1897.

Tauschia decumbens Coulter & Rose; Drude in E. & P. Nat. Pfl. 3^e: 170. 1898.

Arracacia tapalpa M. E. Jones, Contr. W. Bot. 18: 62. 1933.

Acaulescent or short-caulescent, decumbent or ascending from a stout taproot, 7-27 cm. high, puberulent throughout; leaves oblong in general outline, excluding the petioles 2-10 cm. long, 1-4 cm. broad, pinnate, the leaflets ovate, distinct or confluent, sessile to petiolulate, 5-20 mm. long, 5-15 mm. broad, crenate to incised or lobed, the margins cartilaginous; petioles 2-10 cm. long; peduncles 5-20 cm. long; involucre wanting; involucre of 3-6 ovate to linear, entire to lobed bractlets, usually exceeding the flowers; fertile rays 3-8, stout, unequal, 5-15 cm. long, puberulent and usually with a glandular ring at the summit; pedicels 1-3 mm. long, puberulent; calyx-teeth minute; flowers yellow; styles slender, spreading; carpophore 2-cleft to the base; fruit ovoid, tapering at the apex, 4-6 mm. long, 2-4 mm. broad, the ribs prominent, broad and obtuse with very narrow intervals; oil-tubes small, solitary in the intervals, 2 on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: "In locis tenui gramine vestitis inter la Joya et San Salvador," Mexico, *Schiede 288*.

DISTRIBUTION: Jalisco south to Vera Cruz, Mexico, and Puebla (*Pringle 4744, 8880, Purpus 300*).

ILLUSTRATION: Proc. Wash. Acad. 1: 135, 136.

5. *Tauschia madrensis* Coult. & Rose, Proc. Wash. Acad.

1: 138. 1900.

Tauschia Nelsoni Coult. & Rose, Proc. Wash. Acad. 1: 138. 1900.

Acaulescent or short-caulescent, ascending or erect from a stout taproot, 8–30 cm. high, the foliage and inflorescence puberulent; leaves oblong in general outline, excluding the petioles 2–9 cm. long, 1.5–3 cm. broad, pinnate, the leaflets ovate, many, mostly opposite, 5–15 mm. long, 1–2-pinnately lobed, the divisions oblong or linear, callous-tipped, 2–5 mm. long; petioles 2–6 cm. long; peduncles 0.8–2 dm. long, puberulent at the summit; involucre wanting, or of a solitary scarious bract; involucre of several linear to ovate, entire or lobed bractlets, 2–5 mm. long, about equaling the flowers but shorter than the fruit; fertile rays 3–8, stout, unequal, 8–15 mm. long, puberulent; pedicels about 3 mm. long; calyx-teeth minute; flowers yellow; styles short, spreading; carpophore 2-cleft about one-third of its length, the halves divergent at the very tip, forming a short Y; fruit ovoid, tapering slightly at the apex, 5–7 mm. long, 4–5 mm. broad, with a V-shaped depression at the commissure; the ribs prominent, acute; oil-tubes small, 2–5 in the intervals, about 6 on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: "Swampy meadows on the top of the west range of the Sierra Madre near Santa Gertrudis," Nayarit, *Rose 2103*.

DISTRIBUTION: Coahuila and Nuevo León to Durango and Nayarit (*Palmer 386, Pennell 17, 124*).

ILLUSTRATION: Proc. Wash. Acad. 1: pl. 5.

6. *Tauschia texana* A. Gray, Bost. Jour. Nat. Hist. 6: 211. 1850.*Musenopsis texana* Coult. & Rose, Rev. N. Am. Umbell. 123. 1888.*Velaea texana* Drude in E. & P. Nat. Pil. 3^o: 169. 1898.

Acaulescent, decumbent or erect, 1–4 dm. high, glabrous throughout; leaves oblong in general outline, excluding the petioles 10–15 cm. long, 2–4 cm. broad, pinnate, the leaflets ovate, distinct, sessile to petiolulate, 7–15 mm. long, 5 mm. broad, the larger pinnately parted or lobed, the divisions cuneate; petioles 5–10 cm. long; peduncles 1–4 dm. long; involucre wanting, or of a single foliaceous bract; involucre of several linear to lanceolate, connate bractlets, shorter than the flowers and fruit; fertile rays 5–8, unequal, 5–25 mm. long; pedicels 1–2 mm. long; calyx-teeth minute; flowers yellow; styles slender, spreading; carpophore 2-cleft about one-half of its length; fruit oval, 3–4 mm. long, 2–3 mm. broad, the ribs filiform; oil-tubes 3 or 4 in the intervals, 4 on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: "Western Texas, near Austin," *Wright*.

DISTRIBUTION: Texas (*Bush 465, Palmer 4842*).

ILLUSTRATION: Contr. U. S. Nat. Herb. 7: 84 (fr.).

7. *Tauschia Stricklandi* (Coult. & Rose) Math. & Const.

Bull. Torrey Club 68: 121. 1941.

Hesperogenia Stricklandi Coult. & Rose, Contr. U. S. Nat. Herb. 5: 203. 1899.*Zizia Stricklandi* K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 200. 1916.

Acaulescent or short-caulescent, 10–25 cm. high, glabrous throughout; leaves ovate in general outline, excluding the petioles 2–5 cm. long, 2–3 cm. broad, pinnate to ternate or bi-ternate, the leaflets lanceolate, distinct, mostly sessile, 10–30 mm. long, 5–8 mm. broad, entire; petioles 2–10 cm. long; peduncles 5–20 cm. long; involucre wanting, or of 1 or 2 narrow bracts; involucre of several linear to lanceolate, acute, scarious, sometimes connate bractlets, 1–3 mm. long, shorter than the flowers and fruit; rays 3–7, slender, very unequal, up to 15 mm. long; pedicels up to 3 mm. long; calyx-teeth minute; flowers yellow; styles slender, spreading; carpophore 2-cleft nearly to the base; fruit suborbicular, 2–2.5 mm. long, 2–3 mm. broad, the ribs filiform; oil-tubes 2 or 3 in the intervals, 4–6 on the commissure, visible on the outside of the fruit; seed-face slightly concave.

TYPE LOCALITY: Mount Rainier, Washington, *O. D. Allen 278*.

DISTRIBUTION: Mount Rainier, Cascade Mountains, Washington (*Thompson 5433, 9987*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 5: pl. 27; 7: pl. 1.

8. *Tauschia glauca* (Coul. & Rose) Math. & Const.

Bull. Torrey Club 68: 121. 1941.

Velaea glauca Coul. & Rose; Rose, Contr. U. S. Nat. Herb. 3: 321. 1895.
Drudeophytum glaucum Coul. & Rose, Contr. U. S. Nat. Herb. 7: 82. 1900.
Velaea glauca var. *purpurascens* J. T. Howell, Leaf. W. Bot. 2: 185. 1939.

Short-caulescent to caulescent, 2-4 dm. high, glabrous throughout; leaves ovate to orbicular in general outline, excluding the petioles 6-13 cm. long, 5-10 cm. broad, ternate-pinnate or biternate, the leaflets ovate to orbicular, cuneate at the base, distinct, sessile or petiolulate, 10-17 mm. long, 8-12 mm. broad, coarsely mucronate-serrate or lobed toward the base, glaucous beneath; petioles 2-11 cm. long; peduncles 2-4 dm. long; involucre wanting, or of several minute, linear bracts; involucre of several lanceolate bractlets, 1-7 mm. long, about equaling the flowers and fruit; rays 5-12, slender, very unequal, 10-60 mm. long; pedicels 1-3 mm. long; calyx-teeth minute; flowers yellow or purplish; styles slender, spreading; carpophore 2-cleft nearly to the base; fruit suborbicular, 2-3 mm. long, 2.5-3.5 mm. broad, the ribs filiform; oil-tubes 2 or 3 in the intervals, 4 or 5 on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: Glendale, Josephine County, Oregon, *Thomas Howell*.

DISTRIBUTION: Southwestern Oregon and adjacent California (*Cusick 2921, Thompson 4516*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 3: pl. 14; 7: pl. 2.

9. *Tauschia arguta* (Nutt.) F. Macbr. Contr. Gray

Herb. 56: 32. 1918.

Deweya arguta T. & G. Fl. N. Am. 1: 641. 1840.
Ligusticum argutum Nutt.; T. & G. Fl. N. Am. 1: 641, as syn. 1840.
Arracacia arguta Benth. & Hook.; S. Wats. Bibl. Ind. 419. 1878.
Velaea arguta Coul. & Rose, Rev. N. Am. Umbell. 120. 1888.
Velaea arguta var. *ternata* Coul. & Rose, Bot. Gaz. 14: 282. 1889.

Short-caulescent from a long, inflated taproot, 3-7 dm. high, glabrous throughout; leaves oblong to ovate in general outline, excluding the petioles 8-16 cm. long, 5-10 cm. broad, pinnate or trifoliate by reduction, the leaflets oblong to oval, distinct, usually petiolulate, 3-8 cm. long, 2-5 cm. broad, finely to coarsely mucronate- or spinulose-serrate and often with 1 or 2 lobes at the base; petioles 6-20 cm. long; peduncles 17-46 cm. long; involucre wanting; involucre of several linear to lanceolate, entire or lobed bractlets, 2-10 mm. long, shorter or longer than the flowers but shorter than the fruit; rays 12-25, unequal, 2-12 cm. long; pedicels 3-9 mm. long; calyx-teeth evident; flowers yellow; styles slender, spreading; carpophore 2-cleft to the base; fruit oblong, 6-9 mm. long, 3-5 mm. broad, the ribs very prominent, acute; oil-tubes 3-5 in the intervals, 4-6 on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: "Woods of San Diego," California, *Nuttall*.

DISTRIBUTION: Coastal southern California to Baja California (*Elmer 3938, Jones 3027*).

ILLUSTRATIONS: Torr. Bot. Mex. Bound. Surv. pl. 26; Contr. U. S. Nat. Herb. 7: 79; Armstrong, Field Book W. Wild Fl. 337; Madroño 1: 141; Munz, Man. S. Calif. Bot. 353.

10. *Tauschia Hartwegi* (A. Gray) F. Macbr. Contr. Gray

Herb. 56: 32. 1918.

Deweya Hartwegi A. Gray, Proc. Amer. Acad. 7: 342. 1868.
Velaea Hartwegi Coul. & Rose, Rev. N. Am. Umbell. 121. 1888.
Drudeophytum Hartwegi Coul. & Rose, Contr. U. S. Nat. Herb. 7: 81. 1900.

Caulescent from a taproot, 3-10 dm. high, minutely scabrous throughout; leaves oblong to broadly ovate in general outline, excluding the petioles 12-24 cm. long, 10-20 cm. broad, 1-2-ternate-pinnate, the leaflets oblong to ovate, confluent, sessile, narrowed at the base, 25-60 mm. long, 10-35 mm. broad, coarsely mucronate-serrate and often lobed at the base; petioles 5-25 cm. long; peduncles stout, 25-80 cm. long; involucre wanting, or of 1 or more narrow, foliaceous bracts; involucre of several lanceolate to linear-lanceolate, entire, reflexed bractlets, 5-12 mm. long, exceeding the flowers and fruit; rays 10-30, unequal, 2-13 cm. long; pedicels 2-7 mm. long; calyx-teeth minute; flowers yellow; styles slender, spreading; carpophore 2-cleft to the base; fruit suborbicular, 4-7 mm. long, 4-5 mm. broad, the ribs filiform; oil-tubes 3-5 in the intervals, 6-8 on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: "On the Sacramento, northern Sierra Nevada foothills." California, *Hartweg*.
 DISTRIBUTION: Coast Ranges and Sierra Nevada foothills of central California (*Elmer 4441*,
Heller 8913).

ILLUSTRATIONS: *Contr. U. S. Nat. Herb.* 7: 80; *Madroño* 1: 142.

11. *Tauschia Kelloggii* (A. Gray) F. Macbr. *Contr. Gray*

Herb. 59: 29. 1919.

Deweya Kelloggii A. Gray, *Proc. Am. Acad.* 7: 343. 1868.

Velaea Kelloggii Coult. & Rose, *Rev. N. Am. Umbell.* 121. 1888.

Drudeophytum Kelloggii Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 81. 1900.

Acaulescent, or nearly so, from a taproot, 2-7 dm. high, minutely scabrous throughout; leaves ovate to orbicular in general outline, excluding the petioles 8-20 cm. long, 10-22 cm. broad, 1-3-ternate or -ternate-pinnate, the leaflets oblong to ovate, confluent, cuneate at the base, 15-35 mm. long, 10-20 mm. broad, coarsely mucronate-serrate and often incised or lobed; petioles 5-15 cm. long; peduncles 20-50 cm. long; involucre wanting; involucre of a few linear, entire bractlets, 3-8 mm. long, shorter than the flowers and fruit; rays 10-20, unequal, 2-12 cm. long; pedicels 3-15 mm. long; calyx-teeth minute; flowers yellow; styles slender, spreading; carpophore 2-cleft nearly to the base; fruit suborbicular, 3-5 mm. long, 4-6 mm. broad, the ribs filiform; oil-tubes 2 or 3 in the intervals, about 6 on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: Bolinas Bay near San Francisco, Marin County, California, *Kellogg*.

DISTRIBUTION: Coastal southern Oregon, south to central California (*Elmer 4928*, *Heller 10,811*).

ILLUSTRATION: *Jepson, Fl. Calif.* 2: 627.

12. *Tauschia Howellii* (Coult. & Rose) F. Macbr. *Contr.*

Gray Herb. 56: 32. 1918.

Velaea Howellii Coult. & Rose, *Rev. N. Am. Umbell.* 122. 1888.

Drudeophytum Howellii Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 82. 1900.

Short-caulescent, 5-8 cm. high, glabrous throughout; leaves ovate in general outline, excluding the petioles 1.5-3 cm. long, 1.5-3 cm. broad, pinnate or ternate, the leaflets oblong to ovate, confluent, sessile, 5-15 mm. long, 10-15 mm. broad, irregularly pungent-dentate and lobed, thick, the margins revolute; petioles 2-3 cm. long; peduncles up to 2 cm. long; involucre wanting; involucre of several bractlets like the foliage leaves, 1-2 cm. long, greatly exceeding the flowers and fruit; rays 3-5, 8-16 mm. long, or some umbellets sessile; pedicels up to 5 mm. long; calyx-teeth prominent; flowers yellow; styles slender, spreading; carpophore unknown; fruit oblong, 2-4 mm. long, 1-2 mm. broad, the ribs filiform; oil-tubes several in the intervals and on the commissure; seed-face unknown, but presumably concave to sulcate.

TYPE LOCALITY: "Top of Siskiyou Mountains," Jackson County, Oregon, *Thomas Howell 711*.

DISTRIBUTION: Known only from the vicinity of the type locality (*Howell 1360*).

13. *Tauschia Parishii* (Coult. & Rose) F. Macbr. *Contr.*

Gray Herb. 56: 32. 1918.

Velaea Parishii Coult. & Rose, *Rev. N. Am. Umbell.* 121. 1888.

Arracacia Parishii Greene, *Fl. Fran.* 318. 1892.

Drudeophytum Parishii Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 82. 1900.

Cymopterus oregonensis M. E. Jones, *Contr. W. Bot.* 12: 26. 1908.

Acaulescent, 1-4 dm. high, glabrous and more or less glaucous throughout; leaves oblong to ovate in general outline, excluding the petioles 8-15 cm. long, 5-10 cm. broad, ternate-pinnate or pinnate, the leaflets oblong to ovate, distinct, narrowed or petiolulate at the base, 15-40 mm. long, 10-25 mm. broad, pinnately lobed and coarsely mucronate-serrate; petioles 5-15 cm. long; peduncles 10-30 cm. long; involucre wanting; involucre of a few linear, entire bractlets, 5-12 mm. long, usually shorter than the flowers and fruit; rays 12-18, subequal, 3-6 cm. long; pedicels 2-7 mm. long; calyx-teeth evident; flowers yellow; styles slender, spreading; carpophore 2-parted two-thirds of the way to the base; fruit oblong to oval, 5-8 mm. long, 3-4 mm. broad, the ribs filiform; oil-tubes 4 or 5 in the intervals, 8-10 on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: San Bernardino Mountains, California, *S. B. & W. F. Parish 1827*.
 DISTRIBUTION: Mountains of southern California (*Hall & Babcock 5082, Parish 2379*).
 ILLUSTRATION: Jepson, Fl. Calif. 2: 628.

14. *Tauschia filiformis* Coult. & Rose, Proc. Wash.

Acad. 1: 137. 1900.

Arracacia filiformis Coult. & Rose, Contr. U. S. Nat. Herb. 3: 296. 1895 (nomen subnudum); Coult. & Rose in Hook. Ic. pl. 2429. 1896.

Slender, caulescent, erect from a stout taproot, 1-2 dm. high, glabrous throughout; leaves ovate-deltoid in general outline, excluding the petioles 3-7 cm. long, ternate-pinnately decomposed, the ultimate divisions linear to filiform, 5-25 mm. long, entire or few-toothed; petioles 5-12 cm. long; peduncles slender, 7-15 cm. long; involucre wanting; involucre of several linear-spatulate, entire or triid bractlets, 1-2 cm. long, exceeding the flowers and fruit; fertile rays 4-8, slender, very unequal, 20-80 mm. long; pedicels 2-5 mm. long; calyx-teeth minute; flowers white or purplish; styles short, reflexed; carpophore 2-cleft to the base, the halves divergent for their apical third, forming a Y; fruit oblong-oval, truncate, 3-4 mm. long, 2-3 mm. broad, with a V-shaped depression at the commissure, the ribs low and obtuse, about equaling the intervals; oil-tubes rather large, flattened, solitary in the intervals, 2 on the commissure; seed-face concave to slightly sulcate.

TYPE LOCALITY: Cerro de San Felipe, Oaxaca, *Pringle 4714*.
 DISTRIBUTION: High mountains of Oaxaca (*Nelson 621, 1088*).
 ILLUSTRATIONS: Proc. Wash. Acad. 1: pl. 4, b; Hook. Ic. pl. 2429.

15. *Tauschia Seatonii* Coult. & Rose, Proc. Wash.

Acad. 1: 136. 1900.

Arracacia nudicaulis Coult. & Rose; Seaton, Proc. Am. Acad. 28: 119. 1893. Not *Tauschia nudicaulis* Schlecht. 1834.

Slender, acaulescent, erect, 1-4 dm. high, glabrous except for the puberulent inflorescence; leaves oblong to ovate in general outline, excluding the petioles 3-7 cm. long, 1.5-4 cm. broad, pinnate, the leaflets ovate-deltoid at the base of the leaf, linear near the apex, distinct, sessile to petiolulate, 10-25 mm. long, 2-20 mm. broad, the basal deeply pinnatifid, the upper entire, all glaucous beneath; petioles slender, 2-8 cm. long; peduncles 7-30 cm. long; involucre wanting, or of an occasional filiform bract; involucre of a few filiform, entire bractlets, exceeding the flowers but mostly shorter than the fruit; fertile rays 3-6, slender, unequal, 15-50 mm. long, puberulent; pedicels 3-6 mm. long, puberulent; calyx-teeth minute; flowers white; styles slender, purplish, reflexed; carpophore 2-cleft to the base, the halves divergent for their apical third, forming a Y; fruit oblong-oval, tapering slightly at the apex, 3-3.5 mm. long, 1.5-2.5 mm. broad, the tips of the mericarps purplish, the ribs filiform; oil-tubes small, solitary in the intervals, usually 2 on the commissure; seed channeled under the tubes, the face concave or slightly sulcate.

TYPE LOCALITY: Pine woods, Mount Orizaba, Vera Cruz, *Seaton 199*.
 DISTRIBUTION: Known only from Mount Orizaba (*Pringle 8547, Purpus 7454*).
 ILLUSTRATION: Proc. Wash. Acad. 1: 136.

16. *Tauschia tenuifolia* (S. Wats.) Math. & Const. Bull.

Torrey Club 68: 122. 1941.

Eulophus tenuifolius S. Wats. Proc. Am. Acad. 23: 276. 1888.
Velaea tenuifolia Drude in E. & P. Nat. Pfl. 3^o: 169. 1898.
Musenopsis tenuifolia Coult. & Rose, Contr. U. S. Nat. Herb. 3: 302. 1895.

Slender, short-caulescent, erect from a stout taproot, the base of the stem densely fibrous, 3-4 dm. high, glabrous throughout; leaves oblong to oval in general outline, 8-12 cm. long, 4-7 cm. broad, ternately or ternate-pinnately decomposed, the ultimate divisions filiform, entire, callous-tipped, 4-10 mm. long; petioles slender, 6-12 cm. long; peduncles slender, 15-25 cm. long; involucre wanting, or of a single foliaceous bract; involucre of several obovate, palmately divided bractlets, exceeding the flowers but a little shorter than the fruit; fertile

rays 3-6, slender, 15-30 mm. long; pedicels stout, 2-3 mm. long; calyx-teeth minute; flowers unknown; styles short, spreading; carpophore 2-cleft about one-half of its length, the halves divergent for their apical sixth and then incurved, forming an "eye"; fruit ovoid, tapering slightly at the apex, 4-6 mm. long, 3-4 mm. broad, the ribs low and filiform, much narrower than the intervals; oil-tubes very small and numerous all around the seed; seed crescent-shaped in cross section, the face deeply concave.

TYPE LOCALITY: "In cañons of the Sierra Madre," Chihuahua, *Pringle 1518*.

DISTRIBUTION: Known only from the type locality.

17. *Tauschia humilis* Coult. & Rose, Proc. Wash. Acad. 1: 138. 1900.

Caulescent, decumbent to ascending from a short tuberous root, 1-3 dm. high, glabrous except for the puberulent inflorescence; leaves oblong to oval in general outline, excluding the petioles 2-6 cm. long, 1-3 cm. broad, pinnate, the leaflets few, distinct, 4-12 mm. long, pinnately or ternately divided, the ultimate divisions linear, acute, callous-tipped, entire, 2-20 mm. long; petioles 1-5 cm. long; peduncles slender, 2-8 cm. long; involucre wanting; involucre of a few linear, entire bractlets, 2-3 mm. long, about equaling the flowers, or occasionally wanting; fertile rays 4-6, slender, unequal, 1-3 cm. long; pedicels slender, 1-2 mm. long, puberulent; calyx-teeth minute; flowers greenish-yellow or purplish; styles short, recurved, from a conspicuous crenulated disk; carpophore 2-cleft to the base, the halves approximate throughout; fruit ovoid, tapering at the apex, 3 mm. long, 2 mm. broad, the ribs prominent, obtuse; oil-tubes small, several in the intervals and on the commissure; seed-face deeply concave.

TYPE LOCALITY: Sierra de Pachuca, Hidalgo, *Pringle 6954*.

DISTRIBUTION: High mountains, Hidalgo to Michoacán (*Lyonnét 501, Pringle 7896, 9818*).

18. *Tauschia mariana* (S. Wats.) Coult. & Rose; Drude in E. & P. Nat. Pfl. 3⁸: 170. 1898.

Arracacia mariana S. Wats. Proc. Am. Acad. 26: 136. 1891.

Tauschia Roseana H. Wolff, Repert. Sp. Nov. 9: 418, ex descr. 1911.

Slender, short-caulescent, decumbent to ascending from a woody root, 15-40 cm. high, glabrous except for the puberulent inflorescence; leaves oblong in general outline, excluding the petioles 5-10 cm. long, 3-5 cm. broad, pinnately decomposed, the ultimate divisions linear-lanceolate to linear-oblong, 10-25 mm. long, saliently toothed; petioles 3-5 cm. long; peduncles slender, 8-25 cm. long; involucre wanting, or of an occasional linear bract; involucre of several linear bractlets, 4-6 mm. long, often exceeding the flowers and occasionally the fruit; fertile rays 3-7, unequal, 5-13 mm. long, puberulent; pedicels 1-3 mm. long, puberulent; calyx-teeth minute; flowers yellow or purplish; styles slender, recurved; carpophore 2-cleft about one-fourth of its length, the halves approximate throughout; fruit oval, tapering at the apex, 6-8 mm. long, 4-5 mm. broad, the ribs prominent, acute; oil-tubes small, 2 or 3 in the intervals, 2-4 on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: "On hillsides at Flore de Maria," Mexico, *Pringle 3480*.

DISTRIBUTION: High mountains, Mexico (state) to Michoacán (*Arsène 3382, Hinton 583, Pringle 4198*).

ILLUSTRATION: Proc. Wash. Acad. 1: pl. 4, a.

19. *Tauschia Johnstoniana* Math. & Const. Bull. Torrey Club 70: 58. 1943.

Acaulescent, cespitose, 10-15 cm. high, the foliage and inflorescence scabrous or scaberulous; leaves oblong to ovate in general outline, excluding the petioles 2-6.5 cm. long, 2-4 cm. broad, pinnate to partially bipinnate, the leaflets linear, opposite, distinct, 5-40 mm. long, 1-1.5 mm. broad, entire, mucronate; petioles 3-5 cm. long, narrowly scarious-margined below; peduncles 7-9 cm. long, equaling to exceeding the leaves; involucre of 1 or 2 linear bracts; involucre of several linear bractlets, 1-5 mm. long, about equaling the flowers but shorter than the fruit; fertile rays 3-5, subequal, 10-15 mm. long, scaberulous; pedicels about 1 mm. long; flowers yellow; styles terete, slender, recurved; fruit oval, about 4 mm. long, 2-3 mm. broad, with a

V-shaped depression at the commissure, the ribs filiform; oil-tubes small, several in the intervals and on the commissure; seed-face sulcate.

TYPE LOCALITY: "On mountain top 7 kilometers southwest of Miquihauana, Tamaulipas," Stanford, Retherford & Northcraft 682.

DISTRIBUTION: Known only from the type locality.

20. *Tauschia Hooveri* Math. & Const. Madroño 7: 65. 1943.

Acaulescent with a pseudostem from a globose tuber, 10-14 cm. high, glabrous and glaucous throughout; leaves ovate-deltoid in general outline, excluding the petioles 3-5 cm. long, 4-6 cm. broad, pinnate to partially bipinnate, the leaflets linear, acuminate, 15-35 mm. long, 1-2 mm. broad, entire, callous-tipped, the margins reflexed; petioles 2-3 cm. long; peduncles slender, 2-4 cm. long; involucre and involucel wanting; fertile rays 3-7, stout, unequal, 2-10 mm. long; pedicels 1-3 mm. long; calyx-teeth obsolete; flowers white, the anthers purple; styles short, filiform, recurved; carpophore 2-cleft about half-way to the base, the halves approximate to the tip; fruit linear-oblong, tapering slightly at the apex, 5-7 mm. long, about 2 mm. broad, glaucous, the ribs filiform but evident; oil-tubes small, usually 1 in the intervals, 2 on the commissure; seed-face nearly plane.

TYPE LOCALITY: "Near Cowiche," Yakima County, Washington, Hoover 5639.

DISTRIBUTION: Yakima County, Washington (Hoover 5616).

ILLUSTRATION: Madroño 7: 66.

18. *OREONANA* Jepson, Madroño 1: 140. 1923.

Low, caespitose, herbaceous, acaulescent, tomentose to rarely glabrate perennials, from a stout taproot. Leaves petiolate, pinnately or ternately decompound, the ultimate divisions somewhat rigid, small, oblong, crowded, callous-margined and cuspidate. Petioles sheathing. Inflorescence of subcapitate compound umbels; peduncles terminal, equaling or exceeding the leaves. Involucre wanting. Involucel dimidiate, the linear or lanceolate lobes acute, conspicuous, shorter than the flowers and fruit. Rays few to numerous, short and stout, spreading, winged or wingless. Pedicels of the sterile flowers filiform, elongate, longer than the fruit and rays, those of the fertile flowers obsolete. Flowers white or purplish; petals spatulate or ob lanceolate with a narrower inflexed apex; calyx-teeth ovate or lanceolate, acute, conspicuous or inconspicuous; styles short or slender, flattened and tape-like, the stylopodium lacking. Carpophore 2-cleft one-half of its length or to the base. Fruit ovoid, slightly flattened laterally, tomentose or rarely glabrate; ribs filiform, rounded, evident; oil-tubes several in the intervals and on the commissure; seed subterete in cross section, the face sulcate.

Type species, *Drudeophytum Clementis* M. E. Jones (*Oreonana Clementis* Jepson).

Rays membranously winged; sterile pedicels 2-5 mm. long, slightly longer than the fruit; calyx-teeth of sterile flowers conspicuous; carpophore 2-cleft one-half of its length; styles slender.

1. *O. Clementis*.

Rays not winged; sterile pedicels 10-15 mm. long, much longer than the fruit and rays; calyx-teeth of sterile flowers inconspicuous; carpophore 2-cleft to the base; styles rather short.

2. *O. vestita*.

1. *Oreonana Clementis* (M. E. Jones) Jepson, Man. Fl. Pl. Calif. 715. 1925.

? *Drudeophytum stellatum* Eastw.; C. F. Baker, W. Am. Pl. 3: 5. 1904. (Nomen nudum.)

Drudeophytum Clementis M. E. Jones, Contr. W. Bot. 14: 33. 1912.

Pycnothyx Clementis Jones, Contr. W. Bot. 14: 33. 1912. (Nomen provisorium.)

Oreonana californica Jepson, Madroño 1: 140. 1923.

Plants 3-8 cm. high, tomentose to rarely glabrate; leaves ovate in general outline, excluding the petioles 15-35 mm. long, 15-40 mm. broad, the ultimate divisions 1-3 mm. long; petioles 2-4 cm. long; peduncles 2-7 cm. long; rays 5-15, 2-8 mm. long, membranously winged; sterile pedicels 2-5 mm. long, slightly longer than the fruit; flowers white, the styles slender; carpophore 2-cleft one-half of its length; fruit 3-4 mm. long, 3 mm. broad, tomentose to glabrate.

TYPE LOCALITY: Alpine, Mount Whitney and Kearsage Pass, California, Mrs. Joseph Clemens.

DISTRIBUTION: Southern Sierra Nevada, California, at 6,000-12,000 feet (Hall & Babcock 5469, Purpus 1479).

ILLUSTRATIONS: Madroño 1: 140; Jepson, Man. Fl. Pl. Calif. 714, f. 698.

2. *Oreonana vestita* (S. Wats.) Jepson, *Madroño* 1: 141. 1923.

Deweya vestita S. Wats. Proc. Am. Acad. 17: 374. 1882.
Velaea vestita Coult. & Rose, Rev. N. Am. Umbell. 122. 1888.
Drudeophytum vestitum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 83. 1900.
Tauschia vestita F. Maehr. Contr. Gray Herb. 56: 32. 1918.

Plants 4–15 cm. high, densely tomentose; leaves ovate to orbicular in general outline, excluding the petioles 1.5–5 cm. long, 2–4.5 cm. broad, the ultimate divisions 3–10 mm. long; petioles 2–10 cm. long; peduncles 4–12 cm. long; rays 10–25, 1–2 cm. long, not winged; sterile pedicels 10–15 mm. long, much longer than the fruit and rays; flowers white or purplish, the styles rather short; carpophore 2-cleft to the base; fruit 5–6 mm. long, 3–4 mm. broad, densely tomentose.

TYPE LOCALITY: Summit of Mount Baldy (Mt. San Antonio), near San Bernardino, California, S. B. & W. F. Parish.

DISTRIBUTION: Mountains of southern California, at 6,500 to 10,000 feet (*Ewan 9354*, *Johnston 1413*, *Mathias 934*).

19. *OTTOA* H.B.K. Nov. Gen. & Sp. 5: 20. 1821.

Slender, erect, herbaceous, caulescent, subscapose, glabrous to scaberulous perennials, from long fusiform roots. Leaves chiefly basal, reduced to fistulose, transversely septate, entire petioles or phyllodes. Petioles sheathing. Inflorescence a loose compound umbel; peduncle terminal, usually longer than the leaves. Involucre usually wanting. Involucel inconspicuous or wanting. Fertile rays few, spreading-ascending. Pedicels slender, the central flower of each umbellet sessile or subsessile. Flowers white; petals oval with a narrow inflexed apex; calyx-teeth obsolete; styles slender, recurved, the stylopodium depressed-conic. Carpophore 2-cleft to the base. Fruit oblong, flattened laterally, glabrous; ribs filiform, obtuse; oil-tubes solitary in the intervals, 2 on the commissure; seed subterete in cross section, the face deeply sulcate.

Type species, *Ottoa oenanthoides* H.B.K.

1. *Ottoa oenanthoides* H.B.K. Nov. Gen. & Sp. 5: 20. 1821.

Oenanthe quitensis Spreng. Syst. 1: 888. 1825.

Plants 25–55 cm. high, minutely scaberulous at the base of the umbel; phyllodes 10–55 cm. long, 1–5 mm. broad; cauline leaves similar, 3–8 cm. long; peduncles 2–4 dm. long; involucre usually wanting, rarely of 1 linear bract about 15 mm. long; involucel usually wanting, occasionally of 1 or 2 inconspicuous bractlets; rays 5–15, 1–4 fertile, spreading-ascending, unequal, 2–4.5 cm. long, the sterile 8–15 mm. long, often scaberulous at the base of the umbel; pedicels 4–8 mm. long, the central fruit sessile or subsessile; flowers white; fruit 6–7 mm. long, about 2 mm. broad.

TYPE LOCALITY: "In montosis umbrasis inter San Vincente et villa de Ybarra Quitensium," Ecuador, *Humboldt & Bonpland*.

DISTRIBUTION: Guerrero, Oaxaca, and Guatemala to Ecuador (*Hinton 14,267*, *Pringle 4644*, *Steyermark 34,215*).

ILLUSTRATION: H.B.K. Nov. Gen. & Sp. 5: pl. 423.

20. *ARRACACIA* Bancroft, Trans. Agr. Hort. Soc. Jamaica 1825: 3. 1825.

Pentacrypha Lehm. Ind. Sem. Hort. Hamburg 16. 1828.
Arracacha DC. Bibl. Univ. Sci. & Arts 40: 78. 1829.
Bancroftia Billb. Linn. Samf. Handl. 1: 39. 1833.
Velaea DC. Coll. Mém. 5: 61. 1829.
Vellea D. Dietr.; Steud. Nom. Bot. ed. 2: 746. 1841.
Nematosciadium H. Wolf, Repert. Sp. Nov. 9: 418. 1911.
Triphyllieion Susseng. Bot. Jahrb. 72: 278. 1942.

Stout or slender, erect, herbaceous or somewhat woody, caulescent, branching or simple, glabrous to pubescent perennials, from taproots or tubers. Leaves petiolate, membranaceous, once or several times ternate, pinnate, or ternate-pinnate, the leaflets or ultimate divisions various. Petioles sheathing. Inflorescence of loose to somewhat compact compound umbels; peduncles terminal and lateral, or rarely only terminal, occasionally some umbels sessile. In-

volucre wanting, or of a single foliaceous bract, or of several inconspicuous bracts. Involucel of few short to long, narrow bractlets, shorter to longer than the fruit or wanting. Fertile rays few to numerous, spreading-ascending to divaricate and reflexed. Fertile pedicels few, spreading-ascending to reflexed. Flowers white to purple, greenish-yellow or greenish; petals oblanceolate to obovate with a narrower inflexed apex; calyx-teeth obsolete; styles short to long, erect to spreading or reflexed, the stylopodium conic and conspicuous to depressed and indistinct. Carpophore 2-cleft to the base or only bifid at the apex, flat or terete. Fruit lanceolate to ovoid, usually narrowed at the apex, flattened laterally, glabrous or pubescent; ribs prominent, acute to obtuse, or filiform and indistinct; oil-tubes solitary to several in the intervals, 2-several on the commissure; seed subterete in cross section, often channeled under the tubes, the face sulcate or concave.

Type species, *Arracacia xanthorrhiza* Bancroft.

Stylopodium evident, conic.

Ovary and fruit glabrous.

Involucel wanting or of a few minute bractlets.

Plants slender, 1 m. or less high; leaflets acuminate or obtuse, sharply spinulose-serrate or crenate (or if entire, the leaves 3-foliolate).

Leaves 2-3-ternate, scaberulous; leaflets spinulose-serrate; fruit 7-10 mm. long.

Leaves 3-foliolate, glabrous; leaflets obtusely crenate; fruit 3-5 mm. long.

Leaflets 3-parted, 2-3 cm. broad; involucre and involucel wanting; oil-tubes several in the intervals.

Leaflets entire, 0.5 cm. broad; involucre and involucel present; oil-tubes solitary in the intervals.

Plants stout, 1-3 m. high; leaflets acute, sharply and remotely serrate to entire or deeply cleft.

Plants herbaceous; inflorescence bracteate above; rays spreading-ascending; flowers greenish-yellow.

Leaflets lanceolate; inflorescence with several verticils of peduncles.

Leaflets linear-oblong to filiform; inflorescence cymosely branched.

Plants woody; inflorescence bractless above; rays spreading to reflexed; flowers purple.

Involucel present, the bractlets about equaling or exceeding the flowers.

Plants glabrous throughout or variously pubescent only in the inflorescence.

Plants herbaceous; roots or basal portions never woody.

Plants stout, 1-3 m. high.

Inflorescence glabrous; bractlets exceeding the fruit; fertile rays 5-13, not webbed at the base; carpophore cleft one-third of its length.

Inflorescence puberulent; bractlets shorter than the fruit; fertile rays 15-30, webbed; carpophore cleft to the base.

Plants slender, 1 m. or less high.

Cauline leaves reduced above to bladeless sheaths; uppermost umbels mostly sterile; fruit lanceolate or narrowly ovoid, 6-10 mm. long.

Cauline leaves with blades; uppermost umbels fertile; fruit ovoid to oblong, 3-6 mm. long.

Bractlets of the involucre filiform, 3-7 mm. long; fertile pedicels slender, 4-12 mm. long; fruit 4-6 mm. long, the ribs filiform.

Leaves 10-15 cm. long; peduncles 5-10 cm. long; flowers white; fruit ovoid; oil-tubes several in the intervals.

Leaves 3-10 cm. long; peduncles 10-40 cm. long; flowers yellow; fruit oblong; oil-tubes solitary in the intervals.

Bractlets of the involucre linear, 2-4 mm. long; fertile pedicels stout, 1-3 mm. long; fruit 3-4 mm. long, the ribs prominent.

Plants woody below or from stout woody roots.

Bractlets of the involucre 1-6, conspicuous, lanceolate, ovate or cuneate, dentate, lacerate or rarely entire, often exceeding the mature fruit.

Bractlets of the involucre 1-several, filiform or linear, entire, never exceeding the mature fruit.

1. *A. Hemsleyana*.

2. *A. Schiedeii*.

3. *A. chirripoi*.

4. *A. toluensis*.

4a. *A. toluensis* var. *multifida*.

5. *A. fruticosa*.

6. *A. bracteata*.

7. *A. rigida*.

8. *A. Nelsonii*.

9. *A. longipedunculata*.

10. *A. aegopodioides*.

11. *A. arguta*.

12. *A. atropurpurea*.

- Cauline leaves reduced above to bladeless sheaths; uppermost umbels mostly sterile; carpophore cleft one-fourth to one-third of its length. 8. *A. Nelsoni*.
- Cauline leaves with blades; uppermost umbels fertile; carpophore cleft to the base.
- Rays 6-21 cm. long; fertile pedicels 10-30 mm. long; flowers greenish-yellow; Baja California.
- Plants 1-2.5 m. high; leaves 10-30 cm. long. 13. *A. Brandegei*.
- Plants 6-8 dm. high; leaves 6-10 cm. long. 13a. *A. Brandegei* var. *sylvatica*.
- Rays 1-4 cm. long; fertile pedicels 1-6 mm. long; flowers white, cream, or purple.
- Plants woody; inflorescence several times verticillate. 5. *A. fruticosa*.
- Plants herbaceous from stout woody roots; inflorescence alternately branched or once verticillate.
- Peduncles mostly alternate; bractlets of the involucre 6-12 mm. long; rays 8-20; pedicels 1-3 mm. long; flowers white or cream-colored; Oaxaca. 14. *A. Pringlei*.
- Peduncles verticillate above; bractlets of the involucre 3-5 mm. long; rays 5-6; pedicels 3-6 mm. long; flowers purple; Tamaulipas. 15. *A. ternata*.
- Plants with variously pubescent foliage.
- Plants woody below or from stout woody roots.
- Stems shrubby below; leaves 6-12 cm. in diameter; fruit 5-7 mm. long, 3-4 mm. broad. 12a. *A. atropurpurea* var. *brevipes*.
- Stems herbaceous from a woody base or root; leaves 10-30 cm. in diameter; fruit 7-12 mm. long, 2-4 mm. broad.
- Rays 6-21 cm. long; fertile pedicels 10-30 mm. long; leaflets sharply serrate or doubly serrate; flowers greenish-yellow; Baja California.
- Plants 1-2.5 m. high; leaves 10-30 cm. long. 13. *A. Brandegei*.
- Plants 6-8 dm. high; leaves 6-10 cm. long. 13a. *A. Brandegei* var. *sylvatica*.
- Rays 2-3.5 cm. long; fertile pedicels 3-6 mm. long; leaflets coarsely toothed and lobed; flowers purple; Tamaulipas. 15. *A. ternata*.
- Plants herbaceous; roots or basal portions never woody.
- Plants slender, 3-9 dm. high; fertile rays 3-8; fruit 3-5 mm. long, 2-3 mm. broad.
- Bractlets of the involucre linear, 2-4 mm. long; fertile pedicels stout, 1-3 mm. long; fruit 3-4 mm. long, the ribs prominent. 11. *A. arguta*.
- Bractlets of the involucre filiform, about 5 mm. long; fertile pedicels slender, 4-8 mm. long; fruit 4-5 mm. long, the ribs indistinct. 9. *A. longipedunculata*.
- Plants stout, 10-70 dm. high; fertile rays 9-20; fruit 6-8 mm. long, 3-6 mm. broad.
- Bractlets of the involucre not dimidiate; oil-tubes solitary in the intervals.
- Leaflets broadly ovate; bractlets of the involucre linear, 2-3 mm. long; Guerrero. 16. *A. ovata*.
- Leaflets lanceolate-acuminate; bractlets of the involucre lanceolate-acuminate, 5-10 mm. long; Guatemala. 17. *A. Donnell-Smithii*.
- Bractlets of the involucre dimidiate; oil-tubes several in the intervals. 18. *A. xanthorrhiza*.
- Ovary and fruit pubescent. 19. *A. pubescens*.
- Stylopodium indistinct, depressed. 20. *A. anomala*.
- Ovary and fruit pubescent.
- Ovary and fruit glabrous.
- Flowers purplish; umbels subcompact, globose; rays 1-1.5 cm. long; fruit 8-14 mm. long, 4-8 mm. broad. 21. *A. compacta*.
- Flowers yellow or white; umbels spreading; rays 1-4 cm. long; fruit 4-8 mm. long, 3-4 mm. broad.
- Leaves callous-margined; bractlets of the involucre conspicuous and exceeding the fruit, 5-20 mm. long; ribs of the fruit obtuse; seed not channeled beneath the tubes. 22. *A. edulis*.
- Leaves not callous-margined; bractlets of the involucre inconspicuous and usually shorter than the fruit, 2-10 mm. long; ribs of the fruit acute; seed channeled beneath the tubes.

- Leaves pinnate to partially 2-pinnate; leaflets obtuse; cauline sheaths narrow; fertile rays 4-8. 23. *A. vaginata*.
 Leaves ternate, then 1-2-pinnate; leaflets acute; cauline sheaths conspicuously inflated; fertile rays 12-20. 24. *A. Schneideri*.

1. *Arracacia Hemsleyana* Coult. & Rose, Proc. Wash.

Acad. 1: 141. 1900.

Arracacia acuminata sensu Hemsl. Biol. Centr. Am. Bot. 1: 564. 1880. Not *A. acuminata* Benth. 1845.

Slender, caulescent, branching, 6-10 dm. high, the foliage scaberulous; leaves ovate-deltoid in general outline, excluding the petioles 1-2.5 dm. long, 2-3-ternate, the leaflets ovate-lanceolate to lanceolate, acuminate, rounded or cuneate at the base, distinct and petiolulate or the ultimate leaflets confluent and sessile, 3-8 cm. long, 1-2.5 cm. broad, sharply spinulose-serrate and often lobed toward the base, scaberulous on the veins beneath; petioles 5-25 cm. long, sheathing at the base; cauline leaves like the basal, sessile with short sheaths; inflorescence divaricately and usually trichotomously branched, the terminal umbels sessile or short-pedunculate, the peduncles mostly less than 10 cm. long; involucre wanting; involucre wanting, or of a few minute bractlets; fertile rays 5-10 (or 14), slender, spreading, 1-3.5 cm. long, the umbellets frequently proliferating; fertile pedicels 2-5, spreading, 3-7 mm. long; flowers purplish, the petals obovate; stylopodium conic, the styles short, stiffly erect; carpophore 2-cleft to the base, rather lax; fruit oblong, 7-10 mm. long, 2-4 mm. broad, glabrous, tapering at the apex, the ribs very prominent, acute; oil-tubes medium-large, solitary or with 1 or 2 smaller accessories in the intervals, several on the commissure; seed slightly channeled under the larger tubes, the face deeply sulcate.

TYPE LOCALITY: Mt. Orizaba, Vera Cruz, *Seaton 97*.

DISTRIBUTION: San Luis Potosí to Vera Cruz (*Pringle 5016, Purpus 1420*).

ILLUSTRATION: Proc. Wash. Acad. 1: *pl. 9*.

2. *Arracacia Schiedeii* (H. Wolff) Math. & Const. Bull. Torrey

Club 68: 121. 1941.

Nematosciadium Schiedeii H. Wolff, Repert. Sp. Nov. 9: 419. 1911.

Slender, caulescent, simple or branching, 3-5 dm. high, glabrous throughout; leaves deltoid in general outline, excluding the petioles about 0.5 dm. long, trifoliate or 3-parted, the leaflets lanceolate to oblong-lanceolate, obtuse at the apex, cuneate at the base, distinct, petiolulate to subsessile, 2-4 cm. long, 2-3 cm. broad, 3-parted, obtusely crenate or obsolete lobed; petioles about 5 cm. long, broadly short-sheathing at the base; cauline leaves like the basal; inflorescence simple or branching, the peduncles long; involucre wanting; involucre wanting; rays 6-9, filiform, the outer spreading, the others divaricate, up to 5 cm. long; fertile pedicels 1-3, capillary, erect, up to 20 mm. long, those of the sterile flowers reflexed, up to 10 mm. long; flowers white, the petals obovate-rotund; stylopodium short-conic, the styles short, reflexed; carpophore 2-parted; fruit narrowly oblong-ovoid, about 5 mm. long, tapering at the apex and base, the ribs filiform; oil-tubes large, 3 or 4 in the intervals, 4 on the commissure; seed-face deeply and narrowly sulcate.

TYPE LOCALITY: "In sylvis prope Encarnacion," Mexico, *Schiede*.

DISTRIBUTION: Known only from the type locality.

3. *Arracacia chirripoi* (Süsseng.) Math. & Const. comb. nov.

Triphyllion chirripoi Süsseng. Bot. Jahrb. 72: 279. 1942.

Slender, caulescent, branching from a woody base borne on a rootstock (?), 3-5 dm. high, glabrous; leaves triangular-ovate in general outline, excluding the petioles 2-3 cm. long, trifoliate, the leaflets broadly oblanceolate, obtuse, mucronate at the apex, sessile, 2.5-3 cm. long, 5 mm. broad, entire; petioles slender, 3 cm. long, scarious-sheathing at the base; cauline leaves numerous, like the basal; inflorescence simple, the peduncles terminal, 2.5-5 cm. long; involucre of 2 or 3 foliaceous bracts (possibly aberrant leaves?), up to 1 cm. long; involucre of 2 or more (?) bractlets; fertile rays about 6, spreading-ascending, 8-15 mm. long; fertile pedicels few, spread-

ing-ascending; flowers unknown; stylopodium conic; carpophore 2-cleft to about the middle slender; fruit lanceolate, 3 mm. long, glabrous, tapering at the apex, the ribs filiform; oil-tubes solitary in the intervals, 1 or 2 on the commissure; seed unchanneled, the face concave.

TYPE LOCALITY: "Chirrijo grande," Costa Rica, *Kupper 1180*.

DISTRIBUTION: Known only from the type locality.

4. *Arracacia toluensis* (H.B.K.) Hemsl. Biol. Centr.

Bot. 1: 564. 1880.

Ligusticum toluense H.B.K. Nov. Gen. & Sp. 5: 19. 1821.

Cnidium toluense Spreng. Syst. 1: 888. 1825.

Velaea toluensis DC. Prodr. 4: 231. 1830.

Arracacia montana Coult. & Rose, Proc. Wash. Acad. 1: 142. 1900.

Stout, caulescent, branching, about 1 m. high, the foliage more or less scaberulous and the inflorescence puberulent; leaves deltoid in general outline, excluding the petioles 2-3.5 dm. long, 3-4 ternate or 3-4 ternate-pinnate, the leaflets lanceolate, acute with a prominent callous point, cuneate at the base, distinct or the terminal confluent, 3-8 cm. long, 0.5-1.5 cm. broad, sharply and remotely serrate, the teeth callous-pointed, usually lobed toward the base, scaberulous on the veins and margins beneath, or glabrate; petioles 10-20 cm. long, sheathing at the base; cauline leaves like the basal, the uppermost usually opposite, greatly reduced and often simple, with obsolete sheaths; inflorescence with several verticils of slender peduncles 3-12 cm. long; involucre wanting; involucre wanting or of a few small bractlets; rays 6-12, slender, spreading-ascending, subequal, 1.5-3 cm. long, slightly webbed at the base and often puberulent; pedicels short, spreading-ascending, 2-3 mm. long, webbed at the base and often puberulent; flowers greenish-yellow; stylopodium conic, the styles short, erect or spreading; carpophore 2-cleft to the base, lax; fruit ovoid-oblong, 6-8 mm. long, 3-4 mm. broad, glabrous, tapering at the apex, the ribs prominent, acute; oil-tubes large, solitary in the intervals, 2 on the commissure; seed channeled under the tubes, the face deeply sulcate.

TYPE LOCALITY: "Locis alpinis Novae Hispaniae, inter Toluam et Ishlahuacam," Mexico, *Humboldt & Bonpland*.

DISTRIBUTION: Nuevo León and Coahuila, south to Jalisco and Mexico (state) (*Rose 2884a*, 3585).

ILLUSTRATIONS: H.B.K. Nov. Gen. & Sp. 5: *pl. 422*; DC. Coll. Mém. 5: *pl. 2, f. H*.

4a. *Arracacia toluensis* var. *multifida* (S. Wats.) Math. & Const.

Bull. Torrey Club 68: 121. 1941.

Arracacia multifida S. Wats. Proc. Am. Acad. 26: 136. 1891.

Arracacia dissecta Coult. & Rose, Proc. Wash. Acad. 1: 141. 1900.

Arracacia Dugesii Coult. & Rose, Proc. Wash. Acad. 1: 141. 1900.

Arracacia tenuifolia Rose, Contr. U. S. Nat. Herb. 10: 127. 1906.

Stout, 1-3 m. high; leaves ternate-pinnately decomposed, the ultimate divisions linear-oblong to filiform, 1-6 cm. long, 0.5-4 (rarely 10) mm. broad, entire or somewhat saliently toothed or serrate; petioles 1-4 dm. long; rays mostly 10-25; pedicels usually 2-5 mm. long; fruit tapering at the apex and base.

TYPE LOCALITY: "On hills at Rio Hondo," Mexico, *Pringle 3620*.

DISTRIBUTION: Hidalgo to Durango, south to Mexico (state) and Oaxaca (*Pringle 11,995, 6650, Purpus 5861, 6513*).

ILLUSTRATION: Proc. Wash. Acad. 1: *pl. 8*.

5. *Arracacia fruticosa* Rose, Contr. U. S. Nat.

Herb. 10: 127. 1906.

Caulescent, woody, branching, 1 m. or more high, glabrous except for the usually puberulent inflorescence; leaves deltoid in general outline, excluding the petioles 2-4.5 dm. long, ternately or ternate-pinnately dissected, the leaflets ovate-lanceolate, 1.5-4 cm. long, 1.5-2.5 cm. broad, sharply toothed and deeply cleft, the ultimate divisions or lobes lanceolate, acute, 1-2 cm. long, glabrous; petioles 8-11 cm. long, broadly sheathing at the base; cauline leaves few,

sessile with broadly dilated sheaths; inflorescence several times verticillate, bractless or with a pair of bracts at the base of the earliest branches only, the peduncles numerous, slender, 8–20 cm. long, or the terminal umbel short-pedunculate; involucre wanting; involucl wanting, or of several filiform bractlets, 3–10 mm. long; rays 12–22, spreading or reflexed, subequal, 1.5–4 cm. long, webbed and often puberulent at the base; pedicels spreading to reflexed, 2–4 mm. long, webbed at the base and usually puberulent; flowers purple, the petals obovate; stylopodium low-conic, the styles short, spreading; carpophore 2-cleft to the base, lax; fruit oblong-oval, abundant, 7–10 mm. long, 2–4 mm. broad, glabrous, tapering slightly at the apex and base, the ribs prominent, rather broad and acute; oil-tubes large, solitary or with 1 or more accessories in the intervals, 2 on the commissure; seed channeled under the tubes, the face deeply sulcate.

TYPE LOCALITY: "Near the base of the red hills east of Tehuacan," Puebla, *Rose, Painter & Rose 10,125*.

DISTRIBUTION: Puebla (*Purpus 7449, 7512*).

6. *Arracacia bracteata* Coult. & Rose, Contr. U. S. Nat.

Herb. 3: 295. 1895.

Arracacia chiapensis Coult. & Rose, Proc. Wash. Acad. 1: 140. 1900.

Stout, caulescent, branching, 1–3 m. high, glabrous throughout; leaves ovate-deltoid in general outline, excluding the petioles 2–4 dm. long, 2–4-ternate or 2–4-ternate-pinnate, the leaflets ovate, acute at the apex, rounded or cuneate at the base, petiolulate or sessile, 5–12 cm. long, 1.5–6 cm. broad, simply and sharply mucronate-serrate; petioles 1–4 dm. long, sheathing at the base; cauline leaves reduced upwards with moderately dilated petioles; inflorescence of few alternate peduncles, these stout, 10–25 cm. long, or occasionally some umbels sessile; involucre wanting or of a single foliaceous bract; involucl of 2–5 linear to linear-lanceolate, acute, entire or dentate bractlets 1–2 cm. long, usually exceeding the fruit; fertile rays 5–13, slender, spreading-ascending, 3–10 cm. long; pedicels stout, spreading-ascending, 4–8 mm. long; flowers greenish-yellow or purplish, the petals obovate; stylopodium conic, the styles short, spreading or erect; carpophore 2-cleft about one-third of its length; fruit ovoid, abundant, 7–8 mm. long, 4–5 mm. broad, glabrous, tapering at the apex, the ribs prominent, acute; oil-tubes very large, solitary in the intervals, 2–4 on the commissure; seed channeled under the tubes, the face deeply sulcate.

TYPE LOCALITY: In wet canyons, Cerro de San Felipe, Oaxaca, *Pringle 4675*.

DISTRIBUTION: Oaxaca and Chiapas, south to Guatemala (*Nelson 3776, Seler 2287, Standley 65,152*).

ILLUSTRATION: Proc. Wash. Acad. 1: pl. 7.

7. *Arracacia rigida* Coult. & Rose, Proc. Wash. Acad. 1: 143. 1900.

Stout, caulescent, branching, 1–2 m. high, the inflorescence puberulent, otherwise glabrous; leaves ovate-deltoid in general outline, excluding the petioles 2–3.5 dm. long, 2–4-ternate or 2–4-ternate-pinnate, the leaflets broadly ovate to oblong-lanceolate, acute, cordate or rounded at the base, distinct, petiolulate to sessile, 5–12 cm. long, 3–6 cm. broad, sharply and coarsely mucronate-serrate; petioles stout, 15–25 cm. long, sheathing at the base; cauline leaves like the basal, reduced, sessile with dilated sheaths; inflorescence branched, the peduncles stout, fistulose, 5–30 cm. long; involucre wanting, or of a single linear or foliaceous bract; involucl of numerous filiform bractlets, broadest at the base, 5–10 mm. long, about equaling the flowers but shorter than the fruit; fertile rays 15–30, stout, spreading-ascending, unequal, 3–10 cm. long, puberulent to glabrate, slightly webbed at the base; pedicels stout, spreading-ascending, 5–8 mm. long, webbed at the base, puberulent; flowers purplish or greenish, the petals obovate; stylopodium conic, the styles short, spreading; carpophore 2-cleft to the base, rigid; fruit oblong-ovoid, abundant, 7–9 mm. long, 3–5 mm. broad, glabrous, the ribs prominent, obtuse; oil-tubes large, solitary in the intervals; seed channeled under the tubes, the face deeply sulcate.

TYPE LOCALITY: "By a tumbling brook in a rocky gorge of the Sierra de Pachuca," Hidalgo, *Pringle 6953*.

DISTRIBUTION: Hidalgo to Vera Cruz and the Federal District (*Pringle 11,282, Rose & Hay 5668*).

8. *Arracacia Nelsoni* Coult. & Rose, Contr. U. S. Nat.

Herb. 3: 296. 1895.

Arracacia Purpusii Rose, Contr. U. S. Nat. Herb. 12: 301. 1909.

Stout, caulescent, branching from an often woody base, 3-10 dm. high, glabrous throughout; leaves deltoid in general outline, excluding the petioles 4-22 cm. long, 2-3-ternate or 2-3-ternate-pinnate, the leaflets ovate to ovate-lanceolate, acute or acuminate, rounded or truncate at the base, distinct, petiolulate, 2-10 cm. long, 1-4.5 cm. broad, coarsely and sharply serrate, coriaceous and with a cartilaginous margin (evergreen?); petioles 5-20 cm. long, sheathing at the base; cauline leaves greatly reduced upwards with inflated sheaths, the uppermost sheaths mostly bladeless; inflorescence widely cymosely branched, the terminal and uppermost umbels mostly small and sterile; peduncles of the fertile umbels slender, 5-13 cm. long; involucre wanting, or of 1 or 2 small bracts; involucre of several linear or filiform bractlets, 5-10 mm. long, equaling or shorter than the pedicels, shorter than the fruit; fertile rays 5-25, slender, spreading-ascending, 2-5 cm. long; pedicels ascending, 3-7 (rarely 10) mm. long; flowers white or cream-colored, the petals oblanceolate to obovate; stylopodium conic, the styles slender, erect with spreading tips; carpophore 2-cleft one-fourth or one-third of its length, rigid; fruit lanceolate to narrowly ovoid, 6-10 mm. long, 3-4 mm. broad, glabrous, tapering at the apex, the ribs prominent, acute; oil-tubes large, solitary in the intervals, 2-4 on the commissure; seed channeled under the tubes, the face somewhat sulcate.

TYPE LOCALITY: "From the tops of the mountains 18 miles southwest of the city of Oaxaca," Oaxaca, 7500-9500 feet, *Nelson 1382*.

DISTRIBUTION: Vera Cruz, south to Puebla and Oaxaca (*Matuda 1232, Purpus 2509, 8660*).

9. *Arracacia longipedunculata* Coult. & Rose, Proc. Wash.

Acad. 1: 142. 1900.

Slender, caulescent, simple below the inflorescence, from a tuberous or fusiform root, 5-9 dm. high, glabrous or the foliage scaberulous; leaves deltoid in general outline, excluding the petioles 1-1.5 dm. long, 2-3-ternate, the leaflets ovate to ovate-lanceolate, acute, cuneate at the base, distinct and petiolulate or the terminal confluent and sessile, the terminal much the longest, 1.5-6 cm. long, 1-2.5 cm. broad, coarsely serrate to somewhat lobed, scaberulous on the veins and margins; petioles slender, 8-17 cm. long, sheathing at the base; lower cauline leaves like the basal, the upper ternate, sessile, the sheaths linear and inconspicuous, the terminal lobes elongate, linear-oblong to lanceolate, 25-65 mm. long; inflorescence with 1-4 umbels on usually verticillate, slender peduncles, 5-10 cm. long; involucre wanting, or of a single linear bract; involucre of several filiform bractlets about 5 mm. long, about equaling the flowers but shorter than the fruit; fertile rays 3-5, slender, spreading-ascending, unequal, 3.5-6 cm. long; fertile pedicels 2-4, slender, spreading-ascending, 4-8 mm. long; flowers white, the petals obovate; stylopodium low-conic but evident, the styles very short, spreading; carpophore 2-cleft to the base, flattened; fruit ovoid, 4-5 mm. long, 3 mm. broad, glabrous and slightly glaucous, rounded at the base, the ribs filiform and indistinct; oil-tubes small, about 3 in the intervals and on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: "In canyons above Cuernavaca," Morelos, *Pringle 6333*.

DISTRIBUTION: Mexico (state) and Morelos (*Hinton 2121, 7939*).

ILLUSTRATION: Proc. Wash. Acad. 1: *pl. 10*.

10. *Arracacia aegopodioides* (H.B.K.) Coult. & Rose, Proc. Wash.

Acad. 1: 139. 1900.

Smyrniun aegopodioides H.B.K. Nov. Gen. & Sp. 5: 16. 1821.

Tauschia Couleri A. Gray, Bost. Jour. Nat. Hist. 6: 211. 1850.

Musenopsis aegopodioides Coult. & Rose, Contr. U. S. Nat. Herb. 3: 302, as to reference, not as to plant. 1895.

Arracacia Couleri Rose; Coult. & Rose, Contr. U. S. Nat. Herb. 3: 296. 1895.

Low, slender, caulescent, from a long fusiform root, 1-4 (or 6) dm. high, glabrous or the inflorescence puberulent; leaves deltoid to oblong-ovate in general outline, excluding the petioles 3-10 cm. long, 1-2-ternate, the leaflets oblong-lanceolate to ovate, more or less acute at

the apex, rounded or cuneate at the base, 1-4 cm. long, 0.5-2 cm. broad, the terminal leaflet long-petiolulate, the lateral short-petiolulate to sessile, sharply serrate and often somewhat incised toward the base; petioles 2-12 cm. long, sheathing at the base; cauline leaves few, like the basal; inflorescence simple, the peduncles slender, 1-4 dm. long; involucre wanting, or of a single foliaceous bract; involucre of several filiform, entire bractlets, 3-7 mm. long; fertile rays 1-4 (or 10), slender, spreading-ascending, very unequal, 2-9 cm. long; fertile pedicels 1-9, slender, spreading, 5-12 mm. long; flowers yellow, the petals obovate; stylopodium low-conic, the styles short, recurved; carpophore 2-cleft to the base; fruit oblong-oval, 4-6 mm. long, 2-3 mm. broad, glabrous, tapering slightly at the apex, the ribs filiform but evident, acute; oil-tubes large, solitary in the intervals, 4 on the commissure; seed-face concave.

TYPE LOCALITY: "Crescit locis altis Regni Mexicani, prope Moran," Mexico, *Humboldt & Bonpland*.

DISTRIBUTION: Hidalgo (*Lyonnet 96, Pringle 693f*).

ILLUSTRATION: *Proc. Wash. Acad. 1: pl. 11*.

11. *Arracacia arguta* (Rose) Math. & Const. Bull. Torrey Club 68: 121. 1941.

Musenopsis arguta Rose, *Contr. U. S. Nat. Herb. 8: 336. 1905.*

Tauschia drudeophytoides F. Macbr. *Contr. Gray Herb. 56: 33. 1918.*

Slender, caulescent, branching, from a stout taproot, 3-6 dm. high, glabrous throughout; leaves ovate to deltoid in general outline, excluding the petioles 5-20 cm. long, ternately or ternate-pinnately dissected, the leaflets ovate-lanceolate, acute at the apex, cordate at the base or the terminal cuneate, petiolulate to sessile, 2-5 cm. long, 1.5-3 cm. broad, sharply mucronate-serrate to more or less incised or lobed, glabrous or very slightly roughened on the veins; petioles slender, 5-14 cm. long, narrowly sheathing at the base; cauline leaves greatly reduced upwards, the uppermost opposite, sessile, entire or ternate with lanceolate or linear, elongate divisions and narrow sheaths; inflorescence cymosely branched, the peduncles alternate or verticillate, slender, 5-12 cm. long; involucre wanting; involucre of several small, linear, entire bractlets 2-4 mm. long, about equaling the flowers but shorter than the fruit; fertile rays 3-8, slender, spreading-ascending or rather strict, unequal, 2-3 cm. long, or shorter in the smaller lateral umbels; pedicels short and stout, spreading-ascending, 1-3 mm. long; flowers yellow, the petals oval; stylopodium low-conic, the styles very short, spreading; carpophore 2-cleft about one-half of its length, rigid; fruit oblong-oval, 3-4 mm. long, 2-3 mm. broad, glabrous, tapering slightly at the apex, rounded at the base, the ribs prominent, narrow, acute; oil-tubes small, several in the intervals and on the commissure; seed-face slightly sulcate.

TYPE LOCALITY: "On a rocky hillside about the waterfall near El Oro," Michoacán, *Pringle 8612* (erroneously published as "6812" and given as the State of Mexico).

DISTRIBUTION: Known only from the type locality.

12. *Arracacia atropurpurea* (Lehm.) Benth. & Hook.; Hemsl. Biol. Centr. Am. Bot. 1: 564. 1880.

Pentacrypha atropurpurea Lehm. *Ind. Sem. Hort. Hamburg 17. 1828.*

Arracacia irazuensis Kuntze, *Rev. Gen. 1: 265. 1891.*

Arracacia Luxeana Coult. & Rose, *Bot. Gaz. 18: 55. 1893.*

Arracacia humilis Rose, *Contr. U. S. Nat. Herb. 8: 336. 1905.*

Slender, caulescent, branching from a shrubby base, 6-40 dm. high, glabrous or the inflorescence more or less puberulent; leaves oblong-ovate to ovate-deltoid in general outline, excluding the petioles 8-20 cm. long, 2-3-ternate, the leaflets oblong-ovate, obtuse to acute at the apex, rounded or cuneate at the base, distinct and petiolulate or the terminal confluent, 2-8 cm. long, 1-3.5 cm. broad, rather finely doubly serrate and often incised toward the base; petioles 8-16 cm. long, sheathing at the base; cauline leaves reduced upwards, with conspicuous sheaths; inflorescence branched, the peduncles slender, 1-3 dm. long; involucre wanting, or of a single foliaceous bract; involucre of 1-3 (or 6) conspicuous, lanceolate, ovate or cuneate, acute, dentate, lacerate, or rarely entire bractlets, 5-35 mm. long, 1-8 mm. broad, exceeding the sterile flowers and often the fruit; fertile rays 3-8 (or 18), slender, spreading, unequal, 3-9 cm. long; fertile pedicels 5-10, slender, spreading, unequal, 3-12 (or 22) mm. long; flowers purple or

greenish-yellow, the petals obovate; stylopodium low-conic, the styles short, recurved; carpophore 2-cleft to the base, stout; fruit oblong to oblong-oval, 4-7 mm. long, 2-4 mm. broad, glabrous or even glaucous, tapering at the apex, the ribs acute; oil-tubes large, solitary in the intervals, 4 on the commissure, or often with some small accessories; seed channeled under the tubes, the face sulcate.

TYPE LOCALITY: "In terris Mexicanis," collector unknown.

DISTRIBUTION: Nuevo León and San Luis Potosí, south to Guatemala, Costa Rica, and Panama (*Pittier 2952, Pringle 3947, Purpus 1678*).

ILLUSTRATION: *Linnaea* 5: pl. 5, f. 2.

12a. *Arracacia atropurpurea* var. *brevipes* (Coul. & Rose) Math.
& Const. Bull. Torrey Club 68: 121. 1941.

Arracacia brevipes Coul. & Rose, Contr. U. S. Nat. Herb. 3: 296. 1895.

Slender, 3-20 dm. high, the foliage scaberulous and the inflorescence puberulent; leaves ovate-deltoid in general outline, excluding the petioles 6-12 cm. long, 2-ternate; petioles 5-10 cm. long; fertile pedicels 2-6, 2-8 mm. long; flowers yellow; fruit oblong-oval, 5-7 mm. long, 3-4 mm. broad.

TYPE LOCALITY: Cerro de San Felipe, Oaxaca, *Pringle 5545*.

DISTRIBUTION: High mountains, Vera Cruz to Puebla and Oaxaca (*Pringle 6266, Purpus 4108*).

13. *Arracacia Brandegei* Coul. & Rose; Brand. Proc. Calif.
Acad. II. 2: 165. 1889.

Stout, caulescent, branching from a woody base, 1-2.5 m. high, glabrous throughout or the leaf-veins minutely scaberulous beneath; leaves ovate-deltoid in general outline, excluding the petioles 1-3 dm. long, ternate-pinnate, the leaflets ovate to lanceolate, acute or acuminate at the apex, rounded to cordate or cuneate at the base, mostly distinct and sessile, 3-9 cm. long, 1-4 cm. broad, sharply simply or doubly serrate with mucronate teeth and often lobed toward the base; petioles 1-2 dm. long, broadly sheathing at the base; cauline leaves reduced, sessile, with short dilated sheaths; inflorescence branching, the peduncles slender, 2-20 cm. long; involucre wanting, or of a single foliaceous bract; involucre of several linear to filiform bractlets, broadest at the base, 5-15 mm. long, shorter than the fruit; fertile rays 5-12, slender, spreading-ascending, usually 10-15 cm. long, webbed at the base; fertile pedicels 4-12, slender, spreading-ascending, 1-3 cm. long, webbed at the base; flowers greenish-yellow (occasionally purple?), the petals oval; stylopodium conic, with a prominent crenulated disk, the styles short, spreading; carpophore 2-cleft to the base; fruit ovoid-oblong, 7-12 mm. long, 3-4 mm. broad, glabrous, tapering at the apex, the ribs prominent, obtuse; oil-tubes large, solitary (or rarely several) in the intervals, 4 on the commissure; seed channeled under the tubes, the face deeply sulcate.

TYPE LOCALITY: Magdalena Island, Baja California, *Brandegee*.

DISTRIBUTION: Baja California (*Gentry 4122, Jones 24,152, Purpus 443*).

13a. *Arracacia Brandegei* var. *sylvatica* M. E. Jones,
Contr. W. Bot. 18: 61. 1933.

Very slender, 6-8 dm. high; leaves 2-3-ternate, only 6-10 cm. long, the leaflets 2-4 cm. long, 1-1.5 cm. broad, cuneate at the base, sharply serrate; peduncles slender, 10-16 cm. long, fertile rays 3-5, 6-10 cm. long; fertile pedicels 1-5, 10-22 mm. long.

TYPE LOCALITY: "In the shade of pines and live oaks on the top of the Laguna Mountains," Baja California, *M. E. Jones 27,071*.

DISTRIBUTION: Known only from the type locality.

14. *Arracacia Pringlei* Coul. & Rose, Contr. U. S. Nat.
Herb. 3: 297. 1895.

Stout, caulescent, branching from a large woody root, 3-12 dm. high, glabrous throughout or the inflorescence puberulent; leaves deltoid in general outline, excluding the petioles 12-24 cm. long, 3-4-ternate or 3-4-ternate-pinnate, the leaflets ovate, acute or obtuse at the apex,

2-3 cm. long, 1-2 cm. broad, toothed and incised or lobed; petioles 10-20 cm. long, sheathing at the base, cauline leaves reduced upwards, sessile, with narrow sheaths; inflorescence sparingly branched, the peduncles mostly alternate and subtended by a leaf or bract, 3-8 cm. long; involucre wanting; involucre of several linear bractlets, 6-12 mm. long, about equaling the flowers but shorter than the fruit; rays 8-20, slender, spreading-ascending, subequal, 1-3 cm. long, webbed at the base; pedicels spreading-ascending, 1-3 mm. long; flowers white or cream-colored, the petals oval; stylopodium conic, the styles short, spreading; carpophore 2-cleft to the base, lax; fruit oblong-oval, abundant, 6-7 mm. long, 2-3 mm. broad, glabrous, the ribs prominent, acute; oil-tubes large, solitary in the intervals, 2 on the commissure; seed channeled under the tubes, the face deeply sulcate.

TYPE LOCALITY: "On summit ledges," Cerro de San Felipe, Oaxaca, *Pringle 484*.
DISTRIBUTION: High mountains of Oaxaca (*C. L. Smith 391*).

15. *Arracacia ternata* Math. & Const. Bull. Torrey Club 68: 254. 1941.

Slender, caulescent, branching from a stout, horizontal woody root, 6-10 dm. high, glabrous throughout or the foliage minutely scaberulous; leaves deltoid in general outline, excluding the petioles 1.5-3 dm. long, 3-4-ternate, the leaflets ovate-lanceolate, acute at the apex, cuneate at the base, all but the terminal distinct, petiolulate or sessile, 2-5 cm. long, 1-2 cm. broad, coarsely toothed and lobed with triangular mucronate teeth; petioles very slender, 5-15 cm. long, sheathing at the base; cauline leaves few, like the basal, the uppermost greatly reduced and consisting of 1-several elongate, filiform lobes 1-2 cm. long, the sheaths obsolete; inflorescence freely branched, the lower peduncles alternate, the upper verticillate, slender, 3-6 cm. long, often with a small sterile lateral umbel; involucre wanting, or of a solitary foliaceous linear bract; involucre of 1-several linear bractlets, 3-5 mm. long, exceeding the flowers; fertile rays 5-6, slender, spreading-ascending, subequal, 2-3.5 cm. long; fertile pedicels 1-5, slender, spreading-ascending, 3-6 mm. long; flowers purple, the petals oval; stylopodium low-conic, with a conspicuous crenulated disk, the styles short, divergent or recurved; carpophore 2-cleft to the base; fruit oblong, 7-12 mm. long, 2-3 mm. broad, glabrous, tapering at each end, and with a V-shaped notch at the apex, the ribs filiform; oil-tubes small, 1 or 2 in the intervals, 4 on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: Cerro Parrera, vicinity of San José, Sierra de San Carlos, Tamaulipas, *Barlett 10,294*.
DISTRIBUTION: Known only from the type locality.

16. *Arracacia ovata* Coult. & Rose, Contr. U. S. Nat. Herb. 3: 296. 1895.

Stout, caulescent, branching, 1-2 m. high, the foliage and inflorescence more or less puberulent; leaves deltoid in general outline, excluding the petioles 1.5-2 dm. long, 2-ternate, the leaflets broadly ovate, acute at the apex, rounded or cordate at the base, distinct, long-petiolulate and remote, 5-8 cm. long, 3-5 cm. broad, finely serrate and often with a single lobe at the base, puberulent on the veins beneath; petioles 20-25 cm. long, broadly sheathing at the base; cauline leaves greatly reduced upwards, with dilated sheaths; inflorescence branched, the peduncles stout, 6-15 cm. long, the umbels all about equal in size and fertility; involucre wanting; involucre of several linear bractlets, 2-3 mm. long; rays 15-20, spreading-ascending, subequal, 3-5 cm. long, webbed at the base, puberulent; pedicels short, spreading-ascending, 2-5 mm. long, webbed at the base, puberulent; flowers not seen; stylopodium conic, the styles long, erect or spreading; carpophore 2-cleft to the base, rigid, the two halves filiform; fruit lanceolate, 6-8 mm. long, 3-4 mm. broad, glabrous, the ribs prominent, acute; oil-tubes large, solitary or with 2 small accessories in the intervals, 4 on the commissure; seed channeled under the larger tubes, the face deeply sulcate.

TYPE LOCALITY: "On rocks near the top of the Sierra Madre near Chilpancingo," Guerrero, *Nelson 2223*.
DISTRIBUTION: Known only from the type locality.

17. *Arracacia Donnell-Smithii* Coult. & Rose, Bot.

Gaz. 5: 261. 1890.

Stout, caulescent, branching, 15-70 dm. high, densely puberulent in the foliage, inflorescence and juvenile parts, woody and glabrate below; leaves deltoid-ovate in general outline, excluding the petioles 2-3.5 dm. long, ternate-pinnate, the leaflets lanceolate, acuminate at the apex, distinct or the terminal confluent, sessile, 3-10 cm. long, 1-3 cm. broad, finely doubly serrate with mucronate teeth, and occasionally lobed toward the base, puberulent on the veins, and with a conspicuous puberulent ring at the apex of the petiole and each joint of the rachis; petioles 1-2 dm. long, sheathing at the base; cauline leaves with broadly inflated sheaths, the uppermost often bladeless; inflorescence branched, the peduncles 5-15 cm. long, puberulent; involucre wanting, or of a few scarious or foliaceous bracts; involucre of about 8 lanceolate-acuminate, scarious- and crisp-margined bractlets, 5-10 mm. long, exceeding the flowers but shorter than the fruit, glabrous or nearly so, reflexed in fruit; rays 9-16, stout, spreading, subequal, 3-6 cm. long, puberulent; pedicels short, stout, spreading-ascending, 2-3 mm. long, puberulent; flowers white or pinkish, the petals obovate; stylopodium conic, the styles long, recurved; carpophore 2-cleft to the base; fruit ovoid, abundant, 7-8 mm. long, 5-6 mm. broad, glabrous but roughened, tapering at the apex, the ribs prominent, obtuse; oil-tubes solitary in the intervals, 2-4 on the commissure; seed-face deeply sulcate.

TYPE LOCALITY: Top of Volcán de Agua, Depart. Zacatepequez, Guatemala, *Smith 2196*.

DISTRIBUTION: High mountains of Chiapas & Guatemala (*Matuda 2336, Nelson 3630*).

ILLUSTRATION: Bot. Gaz. 15: pl. 15.

18. *Arracacia xanthorrhiza* Bancroft, Trans. Agr. Hort. Soc.

Jamaica 1825: 5. 1825.

Conium Arracacha Hook. Exot. Fl. pl. 152. 1825.

Arracacha esculenta DC. Bibl. Univ. Sci. & Arts 40: 78. 1829

Bancroftia xanthorrhiza Willd. Linn. Samf. Handl. 1: 40. 1833.

Stout, caulescent, branching, 3-12 dm. high, glabrous throughout; leaves broadly ovate in general outline, excluding the petioles 15-25 cm. long, pinnate, the 5 leaflets ovate, acuminate at the apex, rounded or cordate at the base, pinnatifid and coarsely incised and serrate, the segments acuminate; petioles equaling or longer than the blades, membranous-sheathing at the base; cauline leaves like the basal, the lower alternate, petiolate, the uppermost 3-parted, opposite and sessile; inflorescence branched, the umbels mostly terminal, the peduncles alternate, slender; involucre wanting, or of a single foliaceous bract; involucre of 2-8 setaceous bractlets, shorter than the flowers and fruit; rays 8-12, spreading-ascending; pedicels slender, spreading-ascending; flowers greenish-white to purplish-brown, the petals oval to obovate; stylopodium conic, with a conspicuous crenulated disk, the styles slender, spreading to recurved; immature fruit oblong-oval, the ribs prominent, acute; oil-tubes inconspicuous or obsolete; seed-face sulcate.

TYPE LOCALITY: Described from Jamaica, where it was cultivated from northern South America, probably Colombia or Venezuela.

DISTRIBUTION: Escaped from cultivation in Jamaica.

ILLUSTRATIONS: Hook. Exot. Fl. pl. 152; Bot. Mag. pl. 3092; Mém. Soc. Phys. Hist. Nat. Genève 6: 217, pl. 1; U. S. Dep. Agr. Bur. Pl. Ind. Invent. Seed & Pl. Introd. 47: pl. 1.

19. *Arracacia pubescens* H. Wolff, Repert. Sp. Nov. 8: 525. 1910.

Caulescent, remotely long-branching, densely pubescent, villous at the nodes and hirsute on the rays and pedicels; leaves deltoid in general outline, excluding the petioles up to 1 m. long, ternate-pinnate or ternate-bipinnate, the leaflets lanceolate, acuminate at the apex, oblique to decurrent at the base, distinct and petiolulate or the terminal confluent and sessile, up to 10 cm. long, 3 cm. broad, but usually smaller, sharply and densely serrate; petioles slender; cauline leaves like the basal, amplexicaul-sheathing; inflorescence of few alternate peduncles, these fleshy, clavate above, up to 10 cm. long; involucre of a few, short, rigid bracts; involucre of a few, short bractlets; rays 10-25, the fertile strict, rigid, 4-5 cm. long, the sterile slender, subflexuous; fertile pedicels 1-3, 3-4 mm. long; stylopodium short-conic, the styles short, filiform, reflexed; carpophore more or less 2-cleft; fruit elongate-ovoid, 14-17 mm. long, tapering into

an elongate, hispidulous to furfuraceous-squamulose beak; oil-tubes large, solitary in the intervals; seed channeled under the tubes, the face deeply concave.

TYPE LOCALITY: "In sylvis prope la Encarnacion," Mexico, *Schiede*.

DISTRIBUTION: Known only from the type locality.

20. *Arracacia anomala* Math. & Const. Bull. Torrey

Club 68: 121. 1941.

Museniopsis pubescens Coult. & Rose, Proc. Wash. Acad. 1: 134. 1900. Not *Arracacia pubescens* H. Wolff, 1910.

Tauschia pubescens F. Macbr. Contr. Gray Herb. 56: 33. 1918.

Slender, caulescent, branching from a woody root, 6-10 dm. high, densely short-pubescent throughout; leaves deltoid in general outline, excluding the petioles 5-10 cm. long, 2-3-ternate, the leaflets ovate, acute and mucronate at the apex, cuneate at the base, petiolulate, 2-3.5 cm. long, 1-2 cm. broad, pinnately parted or toothed, densely pubescent on both surfaces; petioles slender, 6-10 cm. long, narrowly scarious-sheathing at the base; cauline leaves numerous but greatly reduced, sessile with very narrow sheaths, ternate, the divisions linear and elongate; inflorescence copiously branched, the peduncles alternate, slender, 8-12 cm. long, pubescent; involucre wanting; involucre of several filiform, entire, pubescent bractlets, 5-8 mm. long, exceeding the flowers but shorter than the fruit; fertile rays 3-8, slender, spreading-ascending, 2-3 cm. long, pubescent; fertile pedicels few, slender, spreading-ascending, 4-8 mm. long, pubescent; flowers white, the petals obovate, pubescent on the back; stylopodium depressed and indistinct, the styles slender, recurved; carpophore not seen; immature fruit oblong-oval, 4-5 mm. long, 2-3 mm. broad, densely and uniformly short-pubescent, scarcely tapering at the apex, the ribs apparently filiform.

TYPE LOCALITY: "In the Sierra Madre," Chihuahua, *Nelson 6087*.

DISTRIBUTION: Chihuahua (*LeSueur 1397*).

21. *Arracacia compacta* Rose, Contr. U. S. Nat. Herb. 13: 311. 1911.

Stout, caulescent, branching, woody below, 1-2 m. high, the foliage hispidulous and the inflorescence puberulent; leaves ovate-deltoid in general outline, excluding the petioles 2-3.5 dm. long, 3-ternate or 3-ternate-pinnate, the leaflets lanceolate, acute at the apex, rounded or cuneate at the base, sessile or short-petiolulate, 2-5 cm. long, 1-1.5 cm. broad, sharply doubly serrate and often lobed toward the base, hispidulous beneath and on the rachis, and at least puberulent on the veins above; petioles 20-25 cm. long, sheathing at the base; cauline leaves greatly reduced upwards, with short, dilated sheaths; inflorescence branching, the peduncles short and stout, 3-6 cm. long; involucre wanting; involucre of a few linear bractlets, 4-5 mm. long, shorter than the flowers and fruit; rays numerous, short, stout, spreading and forming large, compact, globose umbels, 1-1.5 cm. long; pedicels very short, spreading-ascending, 1-4 mm. long, puberulent; flowers purplish, the petals obovate; stylopodium indistinct and depressed, the styles slender, spreading; carpophore 2-cleft to the base, the halves lax and twisting; fruit oblong-oval, abundant, 8-14 mm. long, 4-6 mm. broad, glabrous, tapering slightly at the apex, the ribs very prominent, acute; oil-tubes large, solitary in the intervals, solitary under each rib, 2-4 on the commissure; seed channeled under the tubes, the face deeply sulcate.

TYPE LOCALITY: "On Cerro de Chicamole," Puebla, *Purpus 4110*.

DISTRIBUTION: High mountains of Puebla (*Pringle 6857*, *Purpus 4109*).

22. *Arracacia edulis* S. Wats. Proc. Am. Acad. 21: 430. 1886.

Tauschia edulis Coult. & Rose; Drude in E. & P. Nat. Pfl. 3^a: 170. 1898.

Rather stout, caulescent, branching, 3-6 dm. high, the foliage and inflorescence puberulent; leaves oblong to oval in general outline, excluding the petioles 4-12 cm. long, 3-6 (or 11) cm. broad, pinnate to partially 2-pinnate, the leaflets ovate to lanceolate, obtuse at the apex, cuneate at the base, distinct, sessile, 2-6 cm. long, 1-4 cm. broad, crenulate, coarsely toothed or pinnately lobed, callous-margined, puberulent on the rachis and leaflets; petioles slender, 5-20 cm. long, sheathing at the base; cauline leaves like the basal, sessile, 1-2-pinnatifid with narrow

sheaths; inflorescence sparingly branched, the peduncles stout, 8–28 cm. long, puberulent below the umbel; involucre wanting; involucl of several lanceolate to ovate, toothed or incised bractlets, 5–20 mm. long, exceeding the flowers and fruit; fertile rays stout, 3–9, spreading-ascending, unequal, 1.5–4 cm. long, webbed at the base, puberulent; pedicels spreading-ascending, 1–6 mm. long, puberulent; flowers golden-yellow, the petals obovate; stylopodium indistinct and depressed, the styles slender, spreading; carpophore 2-cleft to the base, rigid, the halves notched at the apex; fruit ovoid, 4–7 mm. long, 3–4 mm. broad, glabrous, tapering into a short beak at the apex, the ribs prominent, low and obtuse; oil-tubes large, flattened, solitary in the intervals, 2 on the commissure; seed unchanneled, the face deeply sulcate.

TYPE LOCALITY: Norogachi, 150 miles north of Batopilas, Sierra Madre, Chihuahua, *Palmer III*.
 DISTRIBUTION: Sonora and Chihuahua (*Gentry 2706, Nelson 4799*).
 ILLUSTRATION: Proc. Wash. Acad. 1: *pl. 4c*.

23. *Arracacia vaginata* Coult. & Rose, Contr. U. S. Nat.
 Herb. 3: 297. 1895.

Tauschia vaginata Coult. & Rose, Proc. Wash. Acad. 1: 137. 1900.

Stout, caulescent, branching, 3–9 dm. high, the foliage and inflorescence puberulent; leaves oblong to oval in general outline, excluding the petioles 1–2 dm. long, 5–6 (or 18) cm. broad, pinnate to partially 2-pinnate, the leaflets ovate, obtuse at the apex, cuneate at the base, mostly distinct, sessile or petiolulate, 1.5–4 cm. long, 1–2 cm. broad, shallowly lobed or incised, with short, mucronate lobes, scaberulous on the veins and margins beneath; petioles slender, 15–30 cm. long, short-sheathing at the base; cauline leaves like the basal, 1–2-ternate with narrow sheaths; inflorescence branched, the peduncles 5–25 cm. long, puberulent beneath the umbel; involucre wanting; involucl of several linear, entire bractlets, 2–6 mm. long, exceeding or equaling the flowers but shorter than the fruit; fertile rays 4–8, stout, spreading-ascending, unequal, 1–3 cm. long, puberulent; pedicels spreading-ascending, 1–5 mm. long, puberulent; flowers white to yellow, the petals oblanceolate; stylopodium indistinct and depressed, the styles slender, spreading; carpophore 2-cleft to the base, rigid, the halves notched at the apex; fruit ovoid, 6–7 mm. long, 3–4 mm. broad, glabrous, tapering into a short beak at the apex, the ribs prominent, acute; oil-tubes small, solitary in the intervals, 2 on the commissure; seed channeled under the tubes, the face deeply sulcate.

TYPE LOCALITY: "In borders of woodlands," Sierra de Clavellinas, Oaxaca, *Pringle 6008*.
 DISTRIBUTION: Michoacán to Oaxaca (*Leavenworth 268, 381*).
 ILLUSTRATION: Proc. Wash. Acad. 1: 137.

24. *Arracacia Schneideri* Math. & Const. Bull. Torrey
 Club 69: 151. 1942.

Stout, caulescent, branching, from a large fleshy root, 8–10 dm. high, the foliage and inflorescence puberulent; leaves ovate in general outline, excluding the petioles 1–2 dm. long, 1–1.5 dm. broad, ternate, then 1–2-pinnate, the leaflets lanceolate to ovate, acute at the apex, cuneate at the base, distinct to confluent and usually sessile, 1–4 cm. long, 0.5–1.5 cm. broad, sharply serrate, puberulent on the rachis and leaflets; petioles stout, 7–25 cm. long, broadly sheathing at the base; cauline leaves like the basal, with broadly dilated sheaths; inflorescence sparingly branched, the peduncles rather stout, 8–9 cm. long, densely puberulent; involucre wanting, or of a foliaceous bract; involucl of several inconspicuous, lanceolate to filiform, entire bractlets, 3–10 mm. long, longer or shorter than the flowers but only occasionally longer than the fruit; fertile rays stout, 12–20, spreading-ascending, subequal, 2–3 cm. long, densely puberulent; pedicels spreading-ascending, 4–6 mm. long, puberulent; flowers creamy-white or yellow, the petals obovate; stylopodium indistinct and depressed, the styles slender, spreading, the ovary glabrous; carpophore 2-cleft to the base; fruit ovoid-oblong, 7–10 mm. long, 3–5 mm. broad, glabrous, tapering at the base, the ribs very prominent, acute; oil-tubes large, solitary in the intervals, 2 on the commissure; seed deeply channeled under the tubes, the face sulcate.

TYPE LOCALITY: Rocky slope at timberline, alt. 12,100 feet, Cerro Potosí, Municipio de Galeana, Nuevo León, *Richard A. Schneider 1051*.
 DISTRIBUTION: Sierra Madre Oriental, Nuevo León (*C. H. & M. T. Mueller 841, 901*).

21. **AMMOSELINUM** T. & G. *Pacif. R. R. Rep.* 2⁴: 165. 1855.

Low, slender, erect or usually diffuse, herbaceous, caulescent, branching or occasionally simple, more or less roughened annuals, from slender taproots. Leaves petiolate, membranaceous, ternately or ternate-pinnately decompound, the ultimate divisions linear to spatulate. Petioles sheathing. Inflorescence of loose compound umbels; the peduncles axillary and terminal, or the umbels often sessile. Involucre usually wanting. Involucel of several narrow, entire or toothed bractlets. Rays few, spreading-ascending or spreading, unequal. Pedicels few, unequal, slender to obsolete. Flowers white; petals ovate, obtuse, without a narrower inflexed apex; calyx-teeth obsolete; styles short, the stylopodium low-conic. Carpophore 2-cleft at the apex. Fruit oblong-ovoid to ovoid, flattened laterally; ribs prominent, acute or rounded, coarsely scabrous to glabrous, the lateral ribs (with or without corky appendages or callous teeth) of the two mericarps closely contiguous and appearing to form a single broad rib and often covering the commissure with corky tissue; oil-tubes 1-3 in the intervals, 2-4 on the commissure; seed slightly flattened dorsally in cross section, the face plane to concave; pericarp composed almost exclusively of strengthening cells.

Type species, *Ammoselinum Popei* T. & G.

Umbels sessile; fruit glabrous to sparsely roughened; ribs acute, the lateral without corky appendages.

Umbels pedunculate; fruit roughened with callous teeth; ribs rounded, the lateral with corky appendages.

Petioles of basal leaves sheathing only at the base; fruit sparsely callous-toothed; oil-tubes solitary in the intervals; Texas and adjacent Arkansas and Oklahoma.

Petioles of basal leaves sheathing throughout; fruit densely callous-toothed; oil-tubes 3 in the intervals; Arizona and southern California, south to Coahuila.

1. *A. Butleri*.

2. *A. Popei*.

3. *A. giganteum*.

1. **Ammoselinum Butleri** (Engelm.) Coult. & Rose,
Bot. Gaz. 12: 294. 1887.

Apium Butleri Engelm.; S. Wats. *Proc. Am. Acad.* 21: 453. 1886.

Branching from the base, 4-5 cm. high; leaves oblong in general outline, excluding the petioles 1-2.5 cm. long, 1-1.5 cm. broad, biternate or ternate-pinnate, the ultimate divisions linear, obtuse, mucronulate, 1-8 mm. long, 1-2 mm. broad, glabrous; petioles 5-30 mm. long, sheathing at the base; cauline leaves like the basal but the petioles entirely sheathing; umbels sessile in the axils; involucre wanting; involucel of a few foliaceous bractlets, shorter than the pedicels; rays 2-6, unequal, 20 mm. long to obsolete; pedicels 1-10, unequal, 1-6 mm. long; fruit ovoid, 2.5-3 mm. long, 1-1.5 mm. broad, glabrous to sparsely roughened with callous teeth, the ribs subacute, prominent; oil-tubes solitary in the intervals, 2 on the commissure; seed oblong in cross section, the face plane or nearly so.

TYPE LOCALITY: "Wet grounds near Houston," Texas, *E. Hall 244*.

DISTRIBUTION: Arkansas and Oklahoma to Texas (*Bush 605, 1192, Reverchon 1035*).

ILLUSTRATION: *Bot. Gaz.* 12: *pl. 17, f. 115* (fr.).

2. **Ammoselinum Popei** T. & G. *Pacif. R. R. Rep.* 2⁴: 165. 1855.

Apium Popei A. Gray, *Proc. Am. Acad.* 7: 343. 1868.

Branching from the base, 1-3.5 dm. high; leaves oblong-ovate in general outline, excluding the petioles 1-4 cm. long, 1-4 cm. broad, ternate-pinnately dissected, the ultimate divisions linear, obtuse, mucronulate, 2-10 mm. long, about 1 mm. broad, glabrous or roughened with callous teeth; petioles 5-60 mm. long, sheathing at the base; cauline leaves like the basal, but the petioles entirely sheathing; peduncles axillary and terminal, 1.5-4 cm. long; involucre wanting, or of a solitary foliaceous bract; involucel of several linear bractlets, longer than the pedicels; rays 3-10, unequal, 0.5-2.5 mm. long; pedicels 3-12, 1-11 mm. long; fruit oblong-ovoid, 3-5 mm. long, about 3 mm. broad, more or less roughened with callous teeth, the ribs rounded, the lateral ribs with corky appendages; oil-tubes solitary in the intervals, 2 on the commissure; seed-face slightly concave.

TYPE LOCALITY: "Llano Estacado, and headwaters of the Colorado," Texas, *Pope Expedition*.
 DISTRIBUTION: Oklahoma to Texas and Nuevo León (*Bush 900, Earle & Tracy 402, Palmer 33,586, 33,564*).

ILLUSTRATION: Contr. U. S. Nat. Herb. 7: 89 (fr.).

3. *Ammoselinum giganteum* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 89. 1900.

Ammoselinum occidentale Munz & Johnston, Bull. Torrey Club 52: 224. 1925.

Branching from the base or simple, 1–2 dm. high; leaves obovate in general outline, excluding the petioles 15–25 mm. long, 2–3 cm. broad, ternate-pinnately dissected, the ultimate divisions linear, obtuse, mucronulate, 4–13 mm. long, about 1 mm. broad, glabrous to somewhat roughened; petioles 3–8 mm. long, auriculate-sheathing throughout; peduncles axillary and terminal, 4 cm. long to obsolete; involucre usually wanting; involucre of a few, linear bractlets, acute and somewhat callous-toothed, about equaling the pedicels; rays 4–8, unequal, 22 mm. long to obsolete; pedicels 1–10, unequal, 8 mm. long to obsolete; fruit oblong-ovoid, somewhat constricted toward the apex, 3–5 mm. long, about 3 mm. broad, covered with callous teeth, the ribs corky, the lateral ribs with corky appendages; oil-tubes 3 in the intervals, 2 on the commissure; seed sulcate under the tubes, the face concave.

TYPE LOCALITY: Mesas near Phoenix, Arizona, *Pringle 28*.

DISTRIBUTION: Southern Arizona and California, south to Coahuila (*Pringle 8314*).

ILLUSTRATION: E. Jaeger, Des. Wild Fl. 178.

22. CRYPTOTAENIA DC. Coll. Mém. 5: 42. 1829; nomen conservandum.

Deringa Adans. Fam. Pl. 2: 498. 1763.

Alacospermum Neck. Elem. 1: 167. 1790.

Cyrtospermum Raf.; DC. Coll. Mém. 5: 42, as syn. 1829.

Cryptotonia Tausch, Flora 17: 343. 1834. (Nomen nudum.)

Mesodiscus Raf. New Fl. 4: 19. 1838.

Cyrtospermum Pers.; Steud. Nom. Bot. ed. 2. 1: 450, as syn. 1840.

Deringia Steud. Nom. Bot. ed. 2. 1: 492. 1840.

Lereschia Boiss. Ann. Sci. Nat. III. 1: 127. 1844.

Deeringia Kuntze, Rev. Gen. 1: 266. 1891.

Pimpinella § *Deeringia* Kuntze in Post & Kuntze, Lex. Gen. Phan. 439. 1903.

Tall, slender, erect, herbaceous, caulescent, branching, glabrous perennials (our species), from slender fascicled roots. Leaves petiolate, membranaceous, ternate, the leaflets three, large, obovate to ovate-lanceolate, toothed or lobed. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral, usually paniculate. Involucre wanting, or of a short linear bract. Involucre wanting, or of a few minute bractlets. Rays few, unequal, ascending to divaricate. Pedicels few, unequal. Flowers white; petals obovate with a narrower inflexed apex; calyx-teeth obsolete or minute; styles erect or reflexed, the stylopodium slender-conic. Carpophore 2-cleft to the base. Fruit linear-oblong, flattened laterally, glabrous; ribs filiform, obtuse, subequal, conspicuous; oil-tubes 1–4 in the intervals, 2 on the commissure; seed subterete in cross section, the face plane.

Type species, *Sison canadense* L. (*Cryptotaenia canadensis* DC.).

1. *Cryptotaenia canadensis* (L.) DC. Prodr. 4: 119. 1830.

Sison canadense L. Sp. Pl. 252. 1753.

Chaerophyllum canadense Crantz, Class. Umbell. 79. 1767.

Sium canadense Lam. Encyc. 1: 407. 1785.

Myrrhis canadensis Gaertn. Fruct. 1: 109. 1788.

Cicula perennans Walt. Fl. Car. 116. 1788.

Scandix ternata Moench. Meth. 101. 1794.

Myrrhis ternata Moench. Meth. 101. 1794.

Conopodium canadense Koch, Nova Acta Acad. Leop.-Carol. 12: 119. 1825.

Petagnia saniculaefolia Guss. Fl. Sic. Prodr. 1: 311. 1827.

Cyrtospermum trifoliatum Raf.; DC. Prodr. 4: 119, as syn. 1830.

Mesodiscus simplex Raf. New Fl. 4: 20. 1838.

Mesodiscus proliiferus Raf. New Fl. 4: 20. 1838.

Deeringia canadensis Kuntze, Rev. Gen. 1: 266. 1891.

Plants 3-9 dm. high; leaves oblong-ovate in general outline, excluding the petioles 3-13 cm. long, 5-15 cm. broad, the leaflets oblong-lanceolate to obovate, 3-16 cm. long, 3-8 cm. broad, short-acuminate at the apex, cuneate at the base, closely and doubly serrate or occasionally deeply 2-3-lobed; petioles 7-14 cm. long; upper cauline leaves reduced to lanceolate, dentate bracts; rays 2-7, ascending, 1-6 cm. long; pedicels 2-10, ascending, 2-35 mm. long; fruit 3.5-8 mm. long, 1.5-3 mm. broad.

TYPE LOCALITY: "In America septentrionalis," collector unknown.

DISTRIBUTION: New Brunswick and Quebec to Georgia, west to Manitoba, Nebraska, and Texas (Deam 2189, Pennell 1960).

ILLUSTRATIONS: Gaertn. Fruct. pl. 23; Bot. Gaz. 12: pl. 1, f. 11-13 (fr.); Contr. U. S. Nat. Herb. 7: 101 (fr.); Britt. & Brown, Ill. Fl. 2: 536; ed. 2. 2: 630.

23. *OSMORHIZA* Raf. Jour. de Phys. 89: 257. 1819;
nomen conservandum propositum.

Washingtonia Raf. Am. Mo. Mag. 2: 176. 1818. (Nomen nudum.)

Uraspermum Nutt. Gen. 1: 192. 1818.

Spermatura Reichenb. Consp. 141. 1828.

Glycosma Nutt.; T. & G. Fl. N. Am. 1: 639. 1840.

Myrrhis § *Glycosma* A. Gray, Proc. Am. Acad. 7: 346. 1868.

Slender to rather stout, erect or decumbent at the base, herbaceous, caulescent, branching, pubescent to glabrate perennials, from thick fascicled roots. Leaves petiolate, membranaceous, ternate or ternate-pinnate, the leaflets lanceolate to orbicular, serrate to pinnately lobed, with mucronate teeth or lobes. Petioles sheathing. Inflorescence of loose compound umbels; the peduncles terminal and lateral, usually exceeding the leaves. Involucre wanting, of a single foliaceous bract, or of several, narrow, foliaceous bracts. Involucel of several narrow foliaceous reflexed bractlets, or wanting. Rays few, slender, ascending to divaricate and reflexed, unequal. Pedicels spreading to divaricate. Flowers white, purple, or greenish-yellow, the petals spatulate to obovate with a narrower inflexed apex; calyx-teeth obsolete; styles slender to obsolete, their tips spreading or divaricate, the stylopodium conic. Carpophore 2-cleft less than one-half of its length. Fruit linear-oblong, linear-fusiform or clavate, obtuse, tapering, beaked or constricted at the apex, rounded or caudate at the base, flattened laterally, bristly-hispid to glabrous; ribs filiform, acute, often bristly; oil-tubes obscure or wanting; seed subterete in cross section, the face deeply sulcate.

Type species, *Myrrhis Claytoni* Michx. (*Osmorhiza Claytoni* Clarke).

Fruit glabrous or sparsely bristly toward the base, obtuse at the base, not caudate; rays ascending to spreading-ascending.

Fruit bristly-hispid, caudate at the base with conspicuous tails; rays spreading-ascending to divaricate and reflexed.

Involucel wanting.

Rays and pedicels spreading-ascending; fruit linear-oblong, cylindrical.

Flowers purplish or greenish; styles 0.5-1 mm. long; fruit 10-13 mm. long, constricted at the apex.

Flowers greenish-white or white; styles 0.2-0.5 mm. long; fruit 12-20 mm. long, tapering at the apex.

Rays and pedicels divaricate; fruit clavate.

Involucel present.

Pedicels short, 1-3 mm. long; California and Arizona.

Pedicels slender, 4-12 mm. long; eastern United States, Mexico, and Central America.

Flowers greenish-yellow; styles less than 0.5 mm. long; Mexico and Central America.

Flowers white; styles 0.5-3 mm. long; eastern United States.

Plants without an anise odor; styles about 0.5 mm. long; fruit 20-24 mm. long, the tails nearly as long as the body.

Plants with a strong anise odor; styles 2-3 mm. long; fruit 18-20 mm. long, the tails about one-half as long as the body.

Stems glabrate.

Stems densely villous.

1. *O. occidentalis*.

2. *O. purpurea*.

3. *O. nuda*.

4. *O. obtusa*.

5. *O. brachypoda*.

6. *O. mexicana*.

7. *O. Claytoni*.

8. *O. longistylis*.

8a. *O. longistylis* var. *villicaulis*.

1. *Osmorhiza occidentalis* (Nutt.) Torr. Bot. Mex. Bound.
Surv. 71. 1859.

Glycosma occidentalis Nutt.; T. & G. Fl. N. Am. 1: 639. 1840.

Myrrhis Bolanderi A. Gray, Proc. Am. Acad. 7: 346. 1868.

- Glycosma Bolanderi* A. Gray, Proc. Am. Acad. 8: 386. 1872.
Glycosma ambiguum A. Gray, Proc. Am. Acad. 8: 386. 1872.
Osmorhiza occidentalis var. *Bolanderi*, Coult. & Rose, Rev. N. Am. Umbell. 119. 1888.
Osmorhiza ambigua Coult. & Rose, Rev. N. Am. Umbell. 119. 1888.
Myrrhis ambigua Greene, Fl. Fran. 332. 1892.
Washingtonia occidentalis Coult. & Rose, Contr. U. S. Nat. Herb. 7: 67. 1900.
Washingtonia Bolanderi Coult. & Rose, Contr. U. S. Nat. Herb. 7: 68. 1900.
Washingtonia ambigua Coult. & Rose, Contr. U. S. Nat. Herb. 7: 69. 1900.
Glycosma maxima Rydb. Bull. Torrey Club 40: 67. 1913.
Osmorhiza Bolanderi Jepson, Madroño 1: 120. 1923.

Plants rather stout, 3-12 dm. high, villous at the nodes and pilosulous to glabrate throughout; leaves oblong or ovate in general outline, excluding the petioles 1-2 dm. long, 6-15 cm. broad, 1-3-ternate or ternate-pinnate, the leaflets oblong-lanceolate to ovate, 2-10 cm. long, 0.5-5 cm. broad, acute or acutish, serrate and usually incised or lobed, the rachis and sheath finely pilosulous or glabrate; petioles 5-30 cm. long; peduncles 6-20 cm. long; involucre usually wanting; involucre usually wanting; rays 5-12, stiffly ascending to spreading-ascending, 2-13 cm. long; pedicels spreading to ascending, 3-8 mm. long; flowers yellow, the styles about 1 mm. long or less; carpophore cleft one-fourth to one-third of its length; fruit linear-fusiform, 12-20 mm. long, constricted below the apex, obtuse at the base, glabrous or rarely sparsely bristly toward the base.

TYPE LOCALITY: "Western side of the Blue Mountains of Oregon," Nuttall.

DISTRIBUTION: Alberta to Colorado, west to British Columbia and central California (Heller & Heller 3451, Sandberg & Leiberg 502).

2. *Osmorhiza purpurea* (Coult. & Rose) Suksd. Allg. Bot. Zeits. 12: 5. 1906.

- Washingtonia Leibergii* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 66. 1900.
Washingtonia purpurea Coult. & Rose, Contr. U. S. Nat. Herb. 7: 67. 1900.
Osmorhiza Leibergii Blankinship, Mont. Agr. Coll. Stud. 1: 93. 1905.

Plants slender, 2-6 dm. high, the foliage and younger portions sparingly hispidulous, or glabrous throughout; leaves deltoid or orbicular in general outline, excluding the petioles 3-10 cm. long, 1-3-ternate, the leaflets lanceolate to ovate, 1.5-7 cm. long, 0.5-4 cm. broad, acute or acuminate, coarsely serrate to incised or lobed, usually sparingly hispidulous on the veins and margins; petioles 5-12 cm. long; peduncles 3-10 cm. long; involucre wanting; involucre wanting; rays 2-6, spreading-ascending, 2-7.5 cm. long; pedicels spreading-ascending, 5-20 mm. long; flowers purplish or greenish, the styles 0.5-1 mm. long; carpophore 2-cleft about one-fourth of its length; fruit linear-fusiform, 10-13 mm. long, constricted below the short-beaked apex, hispid toward the base and caudate at the base.

TYPE LOCALITY: Sitka, Alaska, Coville & Kearney 796.

DISTRIBUTION: Alaska and British Columbia to Washington and Oregon (Heller 13,469, Sandberg & Leiberg 666).

3. *Osmorhiza nuda* Torr. Pacif. R.R. Rep. 4¹: 93. 1857.

? *Osmorhiza brevistylis* Bong. Mém. Acad. St.-Petersb. VI. 2: 142. 1832. Not *Osmorhiza brevistylis* DC. 1830.

- Osmorhiza divaricata* Nutt.; T. & G. Fl. N. Am. 1: 639. 1840. (Nomen nudum.)
Uraspermum nudum Kuntze, Rev. Gen. 1: 270. 1891.
Myrrhis nuda Greene, Fl. Fran. 333. 1892.
Washingtonia divaricata Britton & Brown, Ill. Fl. 2: 531. 1897.
Washingtonia nuda A. Heller, Cat. N. Am. Pl. 5. 1898.
Washingtonia intermedia Rydb. Mem. N. Y. Bot. Gard. 1: 289. 1900.
Washingtonia brevipes Coult. & Rose, Contr. U. S. Nat. Herb. 7: 66. 1900.
Osmorhiza brevipes Suksd. Allg. Bot. Zeits. 12: 5. 1906.
Osmorhiza divaricata var. *nuda* M. E. Jones, Bull. Univ. Mont. Biol. 15: 42. 1910.
Scandix nuda K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 143. 1916.
Scandix divaricata K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 143. 1916.
Osmorhiza nuda var. *brevipes* Jepson, Madroño 1: 119. 1923.
Osmorhiza nuda var. *divaricata* Jepson, Madroño 1: 119. 1923.
Uraspermum nudum Farwell, Am. Midl. Nat. 12: 70. 1930.
Uraspermum divaricata Farwell, Am. Midl. Nat. 12: 70. 1930.
Uraspermum barbatum Farwell, Am. Midl. Nat. 12: 70. 1930.

Plants slender, 3-10 dm. high, more or less hispid, the younger portions densely so; leaves orbicular in general outline, excluding the petioles 5-15 cm. long, biternate, the leaflets ovate-

lanceolate to orbicular, 2-6 cm. long, 1-4 cm. broad, obtuse or acute, coarsely serrate, incised or lobed, appressed-hispid or hispidulous especially on the veins and rachis; petioles 5-16 dm. long; peduncles 5-25 cm. long; involucre usually wanting; involucre wanting; rays 3-8, spreading-ascending, 2-12 cm. long; pedicels spreading-ascending, 5-30 mm. long; flowers greenish-white, the styles 0.2-0.5 mm. long; carpophore divided about one-fourth of its length; fruit linear-oblong, 12-20 mm. long, tapering toward the apex into a slender beak, caudate and densely hispid at the base.

TYPE LOCALITY: "Shady woods, Napa Valley," California, *Bigelow*.

DISTRIBUTION: Quebec; Michigan; Manitoba and Montana to British Columbia and Washington, south to South Dakota, Colorado, southeastern Arizona, and southern California. (*Hall & Chandler 331, Heller & Heller 3975.*)

ILLUSTRATIONS: E. & P. Nat. Pl. 3⁸: 148 (fl.); Britt. & Brown, Ill. Fl. 2: 531; ed. 2. 2: 628; Madroño 1: 119; Jepson, Man. Fl. Pl. Calif. 702.

4. *Osmorhiza obtusa* (Coul. & Rose) Fernald, *Rhodora* 4: 154. 1902.

Washingtonia obtusa Coul. & Rose, Contr. U. S. Nat. Herb. 7: 64. 1900.

Plants slender, 15-65 cm. high, the foliage and younger portions hispid or hispidulous or glabrate; leaves orbicular in general outline, excluding the petioles 4-11 cm. long, biternate or ternate-pinnate, the leaflets broadly lanceolate to ovate, 1.5-5 cm. long, 1-3 cm. broad, obtuse or acute, coarsely serrate, incised or lobed, the leaflets and rachis sparingly hispid or hispidulous; petioles 3-20 cm. long; peduncles 5-15 cm. long, often divergent; involucre wanting, or often of a foliaceous bract; involucre wanting; rays 2-5, widely divergent or some reflexed, 2-7 cm. long; pedicels 2-5, widely divergent, 10-30 mm. long; flowers greenish-white, the styles minute; fruit clavate, 10-15 mm. long, obtuse or abruptly acute at the apex, caudate and densely hispid at the base.

TYPE LOCALITY: Ishawood Creek, northwestern Wyoming, *Rose 476*.

DISTRIBUTION: Labrador; Quebec; Montana and British Columbia to eastern Washington, south to Colorado, Utah, Nevada, and Arizona. (*Baker 240, Leiber 555.*)

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. 2: 628; Clements & Clements, Rocky Mt. Fl. pl. 35, f. 10 (fr.).

5. *Osmorhiza brachypoda* Torr.; Durand, Jour. Acad. *Phila.* II. 3: 89. 1855.

Myrrhis brachypoda Greene, Fl. Fran. 332. 1892.

Washingtonia brachypoda A. Heller, Cat. N. Am. Pl. 5. 1898.

Osmorhiza brachypoda var. *fraterna* Jepson, Fl. Calif. 2: 670. 1936.

Plants rather stout, 3-8 dm. high, more or less short-pilose throughout; leaves ovate or deltoid in general outline, excluding the petioles 8-25 cm. long, 10-18 cm. broad, ternate-pinnate, the leaflets ovate, 2-6 cm. long, 1-4 cm. broad, acute or obtuse, coarsely serrate, incised and pinnately lobed toward the base, pilose or strigose especially beneath; petioles 5-20 cm. long; peduncles 9-20 cm. long; involucre wanting, or occasionally of a foliaceous bract; involucre of several linear or lanceolate, acute, ciliate bractlets, 2-10 mm. long, spreading or reflexed, exceeding the pedicels; rays 2-5, spreading-ascending, 2.5-10 cm. long; pedicels ascending, 1-3 mm. long; flowers greenish-yellow, the styles about 0.5 mm. long; carpophore divided about one-third of its length; fruit oblong-fusiform, 12-20 mm. long, tapering into a narrow beak at the apex, caudate at the base, short-hispid on the conspicuous ribs.

TYPE LOCALITY: "Near the banks of Deer Creek," Nevada City, Nevada County, California, *Henry Pratten*.

DISTRIBUTION: Central to southern California, and Arizona (*Abrams 3838, Parish 4165*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 7: 61 (fr.); Munz, Man. S. Calif. Bot. 351; Jepson, Fl. Calif. 2: 670.

6. *Osmorhiza mexicana* Griseb. Abh. Ges. Wiss. *Gött.* 24: 147. 1879.

Uraspermum aristatum var. *brevistyle* Kuntze, Rev. Gen. 1: 270, as to Costa Rican plants. 1891.

Washingtonia mexicana Rose, Contr. U. S. Nat. Herb. 8: 337. 1905.

Plants slender, 4-8 dm. high, somewhat pilose throughout; leaves ovate-deltoid in general outline, excluding the petioles 5-15 cm. long, ternate-pinnate, the leaflets ovate, 1.5-4 cm. long, 15-25 mm. broad, coarsely serrate, incised and pinnately lobed toward the base, pilose especially beneath; petioles 8-20 cm. long; peduncles 7-14 cm. long; involucre wanting; involucre of several linear, ciliate bractlets, 2-6 mm. long; rays 3-4, spreading-ascending, 25-75 mm. long; pedicels spreading-ascending, 4-6 mm. long; flowers greenish-yellow; the styles 0.3-0.5 mm. long; carpophore divided about one-fourth of its length; fruit oblong, 15-20 mm. long, tapering into a short beak at the apex, caudate at the base, hispid on the ribs.

TYPE LOCALITY: Mexico, *Schaffner*.

DISTRIBUTION: Nuevo León and Chihuahua, south to Puebla, Guatemala, and Costa Rica (*Pringle 6615, Purpus 7456*).

ILLUSTRATION: *Contr. U. S. Nat. Herb.* 3: *pl. 10*.

7. *Osmorhiza Claytoni* (Michx.) Clarke in Hook. f. Fl. Brit.

Ind. 2: 690, as to name only. 1879.

Myrrhis Claytoni Michx. Fl. Bor. Am. 1: 170. 1803.

Chaerophyllum Claytoni Pers. Syn. Pl. 1: 320. 1805.

Scandix dulcis Muhl. Cat. 31. 1813.

Uraspermum hirsutum Bigel. Fl. Bost. ed. 2. 112. 1824.

Osmorhiza brevistylis DC. Prodr. 4: 232. 1830.

Osmorhiza dulcis Raf. Med. Fl. 2: 249. 1830.

Myrrhis brevistylis D. Dietr. Syn. Pl. 2: 984. 1840.

Chaerophyllum dulce Fisch.; Steud. Nom. Bot. ed. 2. 1: 339. 1840.

Uraspermum aristatum var. *brevistyle* Kuntze, Rev. Gen. 1: 270, in part. 1891.

Osmorhiza aristata Rydb. Bot. Surv. Nebr. 3: 37. 1894. Not *Chaerophyllum aristatum* Thunb.

1784.

Washingtonia Claytoni Britton in Britt. & Brown, Ill. Fl. 2: 530. 1897.

Scandix Claytonii K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 143. 1916.

Uraspermum dulce Farwell, Am. Midl. Nat. 9: 273. 1925.

Uraspermum dulce var. *laevicaule* Farwell, Am. Midl. Nat. 9: 273. 1925.

Plants rather stout, 4-10 dm. high, densely pilose throughout to rarely glabrate; leaves orbicular in general outline, excluding the petioles 1-3 dm. long, ternate-pinnate, the leaflets ovate to lanceolate, 3-7 cm. long, 2-3 cm. broad, acute or acuminate, serrate to incised or pinnately lobed toward the base, more or less densely pilose; petioles 5-12 cm. long; peduncles 5-13 cm. long; involucre wanting or occasionally of 1 or 2 foliaceous bracts; involucre of several linear, attenuate, ciliate bractlets, 3-8 mm. long, sharply reflexed; rays 3-5, spreading-ascending, 1.5-8 cm. long; pedicels spreading-ascending, 5-12 mm. long; flowers white, the styles about 0.5 mm. long; carpophore divided about one-fourth of its length; fruit oblong, 20-24 mm. long, tapering into an attenuate beak at the apex, caudate at the base, the tails nearly equaling the body, sparsely hispid on the ribs, more densely so below.

TYPE LOCALITY: "In montibus Alleghanis," *Michaux*.

DISTRIBUTION: Nova Scotia and Quebec to North Carolina and Alabama, west to Manitoba, Missouri, and Nebraska (*Biltmore Herb. 1362B, Friesner 5578, Mathias 1394*).

ILLUSTRATIONS: Spreng. Sp. Umbell. pl. 3, f. 6; Hook. Fl. Bor. Am. 1: *pl. 97*; Britt. & Brown, Ill. Fl. 2: 530; ed. 2: 627.

8. *Osmorhiza longistylis* (Torr.) DC. Prodr. 4: 232. 1830.

Uraspermum Claytoni Nutt. Gen. 1: 193. 1818. Not *Myrrhis Claytoni* Michx. 1803.

Myrrhis longistylis Torr. Fl. U. S. 310. 1824.

Osmorhiza cordata Raf. Med. Fl. 2: 249. 1830.

Osmorhiza vilosa Raf. Med. Fl. 2: 249. 1830.

Myrrhis Claytoni D. Dietr. Syn. Pl. 2: 984. Not *Myrrhis Claytoni* Michx. 1803.

Uraspermum aristatum Kuntze, Rev. Gen. 1: 270, in part. 1891. Not *Chaerophyllum aristatum*

Thunb. 1784.

Uraspermum aristatum var. *longistyle* Kuntze, Rev. Gen. 1: 270. 1891.

Myrrhis aristata MacM. Metasp. Minn. Valley 398. 1892. Not *Chaerophyllum aristatum* Thunb.

1784.

Washingtonia longistylis Britton in Britt. & Brown, Ill. Fl. 2: 530. 1897.

Scandix longistylis K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 143. 1916.

Plants rather stout, 6-10 dm. high, the foliage pilose or hispidulous, the stems glabrate; leaves orbicular in general outline, excluding the petioles 8-25 cm. long, biternate or ternate-pinnate, the leaflets ovate or oblong-lanceolate, 3-10 cm. long, 1-5 cm. broad, acute, coarsely serrate, incised or pinnately lobed toward the base, sparingly short-pilose, especially on the

veins and margins; petioles 5-16 cm. long; peduncles 5-13 cm. long; involucre of 1-several, linear or lanceolate, foliaceous, ciliate bracts, 5-15 mm. long; involucre of several bractlets like the bracts, 5-10 mm. long, sharply reflexed; rays 3-6, spreading-ascending, 1.5-5 cm. long; pedicels spreading-ascending, 5-8 mm. long; flowers white, the styles 2-3 mm. long; carpophore divided about one-third of its length; fruit oblong, 18-20 mm. long, acute at the apex, caudate at the base, the tails about one-half the length of the body, sparingly hispid on the ribs.

TYPE LOCALITY: "In wet meadows near Albany," New York, *Tracy*.

DISTRIBUTION: Quebec to Georgia, west to Alberta, Colorado, and Texas (*Billmore Herb. 674b, Macoun 858, Mathias 1393*).

ILLUSTRATIONS: Hook. Fl. Bor. Am. 1: pl. 96; Bot. Gaz. 12: pl. 1, f. 4, 5 (fr.); Mem. Torrey Club 2: pl. 11, f. 70, 71; Britt. & Brown, Ill. Fl. 2: 530; ed. 2: 2: 628; Rydb. Fl. Fr. & Pl. 590.

8a. *Osmorhiza longistylis* var. *villicaulis* Fernald,

Rhodora 10: 52. 1908.

Washingtonia longistylis var. *villicaulis* Coult. & Rose, Contr. U. S. Nat. Herb. 12: 443. 1909.

Uraspermum aristatum var. *villicaulis* Farwell, Papers Mich. Acad. 1: 96. 1923.

Osmorhiza longistylis var. *brachycoma* Blake, *Rhodora* 25: 110. 1923.

Washingtonia longistylis var. *brachycoma* House, Bull. N. Y. State Mus. 254: 529. 1924.

Osmorhiza villicaulis Rydb. *Brittonia* 1: 93. 1931.

Like the species, but the petioles, the stems, and at least the lower part of the branches densely villous.

TYPE LOCALITY: "On limestone on the Conestoga near Binkley's Bridge," Lancaster County, Pennsylvania, *Heller*.

DISTRIBUTION: Southern Pennsylvania and Maryland to Virginia, west to North Dakota and Oklahoma (*Bush 1059, 7110, Mathias 1390*).

24. *SCANDIX* L. Sp. Pl. 256. 1753.

Pecten Lam. Fl. Fr. 3: 437. 1778.

Low, slender, erect, herbaceous, caulescent, branching, hispid annuals, from slender tap-roots. Leaves petiolate, membranaceous, pinnately decomposed, the ultimate divisions short, linear. Petioles sheathing. Inflorescence of loose compound or simple umbels; the peduncles terminal and lateral. Involucre wanting, or of a foliaceous bract. Involucre of several lobed or dissected bractlets. Rays few, rarely only 1, spreading-ascending. Pedicels slender to obsolete, unequal. Flowers white; petals oblong to obovate with a narrower inflexed apex, the outer radiant; calyx-teeth minute or obsolete; styles very short, the stylopodium depressed. Carpophore entire or bifid at the apex. Fruit linear or narrowly oblong, hispid, terminating in an elongated linear beak, flattened laterally, the beak hispid-ciliate on the margins; ribs filiform, obtuse, prominent; oil-tubes very small, solitary in the intervals, or obscure; seed subterete or slightly flattened dorsally in cross section, the face sulcate.

Type species, *Scandix Pecten-Veneris* L.

1. *Scandix Pecten-Veneris* L. Sp. Pl. 256. 1753.

Scandix Pecten Scop. Fl. Carn. ed. 2. 1: 211. 1772.

Scandix pectinifera Stokes, Bot. Mat. Med. 2: 122. 1812.

Scandix pectiniformis St. Lag. Ann. Soc. Bot. Lyon 7: 70. 1880.

Wyllia Pecten-Veneris Bubani, Fl. Pyren. 2: 407. 1900.

Selinum Pecten E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 75. 1904.

Plants 15-35 cm. high, more or less hispid, and commonly branched from the base; leaves oblong in general outline, excluding the petioles 3-14.5 cm. long, 1-7 cm. broad, the ultimate divisions linear, acute, 1-3 mm. long, 0.5-1 mm. broad; petioles 3.5-9 cm. long; involucre of two bractlets connate at base and lobed above, 4-15 mm. long, shorter than the flowers; rays 1 or 2, 1-3 cm. long; pedicels 8 mm. long to obsolete; fruit 6-15 mm. long, 1-2 mm. broad, ciliate, the linear beak 2-7 cm. long.

TYPE LOCALITY: "Inter Germaniae & Europae australioris segetes," collector unknown.

DISTRIBUTION: Eurasia; adventive in the United States, from New Jersey to Alabama, west to South Dakota and Texas; British Columbia to California.

ILLUSTRATIONS: Benth. Handb. Brit. Fl. ed. 2, f. 434; Reichenb. Ic. Fl. Germ. 21: pl. 2029; Bailion. Hist. Pl. 7: 138 (fr.); Karst. Fl. Deuts. ed. 2. 2: 423 (fr.); Britt. & Brown, Ill. Fl. 2: 531; ed. 2. 2: 627; Coste, Fl. Fr. 2: 217; Madroño 1: 118.

25. **TORILIS** Adans. Fam. Pl. 2: 99. 1763.

Erect or decumbent, herbaceous, caulescent, branching, hispid or pubescent annuals, from slender taproots. Leaves petiolate, membranaceous, 1-2-pinnate or pinnately decomposed, the ultimate divisions narrow. Petioles sheathing. Inflorescence of capitate or loose compound umbels; the umbels lateral or terminal and lateral, sessile or pedunculate. Involucre of a few small bracts, or wanting. Involucel of several linear or filiform bractlets. Rays 6-12, spreading-ascending, or obsolete. Pedicels spreading, short or obsolete. Flowers white; petals obovate with a narrower inflexed apex; calyx-teeth evident to obsolete; styles short, the stylopodium thick, conic. Carpophore bifid at the apex or cleft one-third or one-half of its length. Fruit ovoid or oblong, flattened laterally, tuberculate or prickly; primary ribs filiform, setulose, the lateral ribs displaced onto the commissural surface, the secondary hidden by the numerous glochidiate prickles or tubercles which occupy the entire interval; oil-tubes solitary under the secondary ribs, 2 on the commissure; seed flattened dorsally in cross section, the face concave to shallowly sulcate; strengthening cells present in the primary ribs, absent from the secondary.

Type species, *Tordylium Anthriscus* L. [*Torilis japonica* (Houtt.) DC.].

Umbels sessile or short-pedunculate, capitate, opposite the leaves.

Umbels usually long-pedunculate, spreading, terminal and lateral.

Rays 2-10; fruit ovoid-oblong, 1.5-5 mm. long.

Involucre of several bracts, 1 to each ray; bristles incurved-ascending, shorter than the width of the fruit.

Involucre wanting or of a single bract; bristles spreading almost at right angles, scarcely incurved, about as long as the width of the fruit.

Rays usually 2-3; fruit oblong, 5-7 mm. long.

1. *T. nodosa*.
2. *T. japonica*.
3. *T. arvensis*.
4. *T. scabra*.

1. **Torilis nodosa** (L.) Gaertn. Fruct. 1: 82. 1788.

Tordylium nodosum L. Sp. Pl. 240. 1753.

Caucalis nodosa Scop. Fl. Carn. ed. 2. 1: 192. 1772.

Caucalis nodiflora Lam. Fl. Fr. 3: 424. 1778.

Plants 0.9-6 dm. high, hispid throughout; leaves oblong in general outline, pinnately decomposed, the ultimate divisions filiform, 2-8 mm. long, 1-2 mm. broad, acute, entire or pinnately lobed; peduncles much shorter than the leaves, 2.5 cm. long to obsolete; involucre absent or of an inconspicuous, linear bract; involucel of linear, acute bractlets longer than the pedicels; rays few, short to obsolete; pedicels very short; fruit ovoid, 3-5 mm. long, 1-2 mm. broad, the outer mericarps bristly, the inner merely warty, or sometimes only the outer part of the mericarp bristly.

TYPE LOCALITY: "In Gallia, Italia ad vias," collector unknown.

DISTRIBUTION: Mediterranean region; adventive throughout the southern United States, Oregon, and California; Bermuda; South America.

ILLUSTRATIONS: Gaertn. Fruct. pl. 20; Benth. Handb. Brit. Fl. ed. 2, f. 440; Britt. & Brown, Ill. Fl. 2: 510; ed. 2. 2: 626; Fitch & Smith, Ill. Brit. Fl. ed. 4. 106; Jepson, Fl. Calif. 2: 673.

2. **Torilis japonica** (Houtt.) DC. Prodr. 4: 219. 1830.

Tordylium Anthriscus L. Sp. Pl. 240. 1753.

Caucalis Anthriscus Huds. Fl. Angl. 99. 1762.

Caucalis japonica Houtt. Nat. Hist. II. 8: 42. 1777.

Torilis Anthriscus C. C. Gmel. Fl. Bad. 1: 615. 1805. Not *T. Anthriscus* Gaertn. 1788, nor Bernh. 1800.

Plants rather stout, 4-7.5 dm. high, hispid throughout, the branches ascending; leaves narrowly ovate in general outline, 1-2-pinnate, the leaflets lanceolate to oblong, 0.5-6 cm. long, 2-15 mm. broad, acute to short-acuminate, regularly lacinate-dentate to incised or divided; peduncles 4-16 cm. long, longer than the leaves; involucre of as many bracts as there are rays; involucel of several subulate bractlets longer than the pedicels; rays 5-10, subequal, 7-30 mm. long, spreading; pedicels 1-3 mm. long; fruit ovoid, 1.5-4 mm. long, 2-3 mm. broad, the mericarps covered throughout with incurved-ascending, uncinat bristles which are shorter than the width of the fruit.

TYPE LOCALITY: "In Europae septentrionalis arvis ruderatis," collector unknown.

DISTRIBUTION: Eurasia to North Africa; adventive, New York to Virginia, west to Missouri, Oklahoma, and Texas; California; Oregon; Haiti.

ILLUSTRATIONS: Houtt. Nat. Hist. II. 8: pl. 45, f. 1; Curt. Fl. Lond. 2^o: pl. 22; ed. 2. 3: pl. 22; Benth. Handb. Brit. Fl. ed. 2, f. 441; Britt. & Brown, Ill. Fl. 2: 511; ed. 2. 2: 626

3. *Torilis arvensis* (Huds.) Link, Enum. Hort. Berol. 1: 265. 1821.*Caucalis arvensis* Huds. Fl. Angl. 98. 1762.

Plants slender, 3-10 dm. high, divaricately branched, appressed-hispid throughout; leaves ovate or ovate-lanceolate in general outline, 2-3-pinnate, or the upper simply pinnate, the leaflets ovate to linear-lanceolate, 5-60 mm. long, 2-20 mm. broad, acute or acuminate, regularly incised or divided; peduncles 2-12 cm. long, longer than the leaves; involucre wanting, or of a single small bract; involucre of several subulate bractlets longer than the pedicels; rays 2-10, subequal to somewhat unequal, 5-25 mm. long; pedicels 1-4 mm. long; fruit ovoid-oblong, 3-5 mm. long, 2-3 mm. broad, the mericarps densely covered with uncinat bristles, these spreading almost at right angles and about as long as the width of the fruit.

TYPE LOCALITY: "Habitat in arvis, cretaecis frequens." England, collector unknown.

DISTRIBUTION: Southern and central Europe; introduced in southwestern Oregon and northwestern California.

ILLUSTRATION: Hegi, Ill. Fl. Mittel-Eur. 5: f. 2396.

4. *Torilis scabra* (Thunb.) DC. Prodr. 4: 219. 1830.*Chaerophyllum scabrum* Thunb. Fl. Jap. 119. 1784.*Caucalis scabra* Makino, Bot. Mag. Tokyo 7: 44. 1893.

Plants 2-6 dm. high, appressed-hispid throughout; leaves ovate in general outline, 2-pinnate, the leaflets narrowly lanceolate to ovate, 2-10 mm. long, 2-5 mm. broad, acuminate, regularly incised or divided; peduncles 1-8 cm. long, longer than the leaves; involucre usually wanting; involucre of several subulate bractlets longer than the pedicels; rays usually 2-3, subequal, 1-4 cm. long; pedicels 2-5 mm. long; fruit oblong, 5-7 mm. long, 2-3 mm. broad, the mericarps covered throughout with uncinat bristles.

TYPE LOCALITY: "Crescit prope Iedo [Tokyo] et alibi," collector unknown.

DISTRIBUTION: China and Japan; introduced on ballast at Portland, Oregon.

ILLUSTRATIONS: Jour. Coll. Sci. Univ. Tokyo 16: pl. 1, f. 6 (fr.); Makino, Ill. Fl. Japan 270; Makino, Gensyoku Yagai-shokubutu 1: 57.

26. *CAUCALIS* L. Sp. Pl. 240. 1753.*Vabea* K.-Pol. Bull. Soc. Nat. Mosc. II. 28: 202. 1915.

Slender to rather stout, herbaceous, caulescent, branching, pubescent annuals, from slender taproots. Leaves petiolate, membranaceous, pinnate or pinnately decomposed, the leaflets or ultimate divisions entire, dentate, or lobed. Petioles sheathing. Inflorescence of loose or rarely subcapitate compound umbels; peduncles terminal and opposite the leaves. Involucre of a few entire or dissected bracts, or wanting. Involucre of a few entire or dissected, somewhat scarios bractlets. Rays few, spreading to divaricate. Pedicels short to obsolete. Flowers white; petals cuneate to obovate with a narrower inflexed apex, the outer often radiant; calyx-teeth evident; styles short, the stylopodium thick, conic. Carpophore entire or bifid at the apex. Fruit ovoid or oblong, flattened laterally; primary ribs filiform, bristly, the lateral displaced onto the commissural face, the secondary prominent and winged, with uncinat bristles; oil-tubes solitary under the secondary ribs, 2 on the commissure; seed subterete or flattened dorsally in cross section, the face deeply sulcate; strengthening cells present in the primary ribs, absent from the secondary.

Type species, *Caucalis daucooides* L.

Leaves simply pinnate, the leaflets 10-80 mm. long, 5-20 mm. broad; bracts pinnately decomposed, foliaceous; bractlets scarios-margined, entire; fruit 10-12 mm. long.

1. *C. latifolia*.

Leaves pinnately decomposed, the ultimate divisions 2-8 mm. long, 0.2-2 mm. broad; bracts entire, scarios; bractlets foliaceous, pinnatifid; fruit 3-7 mm. long.

2. *C. microcarpa*.1. *Caucalis latifolia* L. Syst. Nat. ed. 12. 2: 205. 1767.*Tordylium latifolium* L. Sp. Pl. 240. 1753.*Turgenia latifolia* Hoffm. Gen. Umbell. 59. 1814.*Daucus latifolius* Baillon, Hist. Pl. 7: 193. 1879.*Daucus Turgenia* E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 158. 1904.

Rather stout, 2-6 dm. high, more or less hispid throughout; leaves oblong to ovate in general outline, excluding the petioles 4-16 cm. long, 2.5-11 cm. broad, pinnate, the leaflets oblong to linear, obtuse, at least the upper confluent by a narrowly winged rachis, 1-8 cm. long, 5-20 mm. broad, coarsely and remotely dentate or lobed; petioles 2-4 cm. long, with a short scarious-margined sheath; peduncles stout, 2-12 cm. long; involucre of several scarious, lanceolate, acuminate, entire bracts, 5-12 mm. long; involucre of several ovate to obovate, conspicuously scarious-margined, entire bractlets, 5-8 mm. long, shorter than the fruit; rays 2-4, ascending to divaricate, 2-4.5 cm. long; pedicels 1-2, stout, spreading, 2-5 mm. long; flowers white or rose-colored; fruit oblong, 10-12 mm. long, 5-7 mm. broad, armed with rows of hooked bristles.

TYPE LOCALITY: "Habitat in Gallia, Italia," collector unknown.

DISTRIBUTION: Introduced from Europe into Pennsylvania and Oregon.

ILLUSTRATIONS: J. W. Loud. Brit. Wild Fl. pl. 38; Benth. Handb. Brit. Fl. ed. 2, f. 444; Fitch & Smith, Ill. Brit. Fl. ed. 4, 107.

2. *Caucalis microcarpa* H. & A. Bot. Beech. Voy. 348. 1838.

Daucus brachiatum Torr. Pacif. R. R. Rept. 4: 93. 1857.

Yabea microcarpa K.-Pol. Bull. Soc. Nat. Mosc. II. 28: 202. 1915.

Slender, 8-40 cm. high, more or less hispid throughout or sometimes glabrescent; leaves oblong to ovate in general outline, excluding the petioles 2-6 cm. long, 2-5 cm. broad, pinnately decomposed, the ultimate divisions linear to filiform, 2-8 mm. long, 0.2-2 mm. broad; petioles 25-35 mm. long, with a short, scarious-margined sheath; peduncles 2-10 cm. long; involucre of several pinnately decomposed, foliaceous bracts; involucre of several foliaceous, pinnatifid or rarely entire bractlets, mostly shorter than the fruit; rays 1-9, ascending, unequal, 1-8 cm. long; pedicels 2-9, erect, unequal, 15 mm. long to obsolete; flowers white; fruit oblong, 3-7 mm. long, armed with rows of hooked bristles.

TYPE LOCALITY: California, Douglas.

DISTRIBUTION: Idaho and British Columbia to the Pacific coast, south to Arizona, Sonora, and Baja California (*Elmer 2706, Heller 5403*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 7: 69; Madroño 1: 122, f. 11; Jepson, Man. Fl. Pl. Calif. 704, f. 683.

27. *DAUCUS* L. Sp. Pl. 242. 1753.

Platyspermum Hoffm. Gen. Umbell. xxvi, 64. 1814. Not *Platyspermum* Hook. 1829.

Tiricta Raf. New Fl. 4: 22. 1838.

Babiron Raf. New Fl. 4: 23. 1838.

Ballimon Raf. New Fl. 4: 28. 1838.

Peltactila Raf. New Fl. 4: 28. 1838.

Staflinus Raf. New Fl. 4: 28. 1838.

Platydaucus Reichenb. Nom. 2: 205. 1841.

Platyodon Reichenb. Nom. 2: 236. 1841.

Durieuca Boiss. & Reut. Pl. Nov. Hisp. 14. 1842.

Carota Rupr. Fl. Ingr. 466. 1860.

Pomelia Durando in Pomel, Mat. Fl. Atl. 7. 1860.

Ctenodaucus Pomel, Nouv. Mat. Fl. Atl. 145. 1874.

Low or tall, erect, herbaceous, caulescent, branching, pubescent annuals or biennials, from taproots. Leaves petiolate, membranaceous, pinnately decomposed, the ultimate divisions small and narrow. Petioles sheathing. Inflorescence of loose compound umbels, or subcompact by the incurving of the rays after anthesis; peduncles terminal and axillary. Involucre of numerous dissected or entire bracts, or wanting. Involucre of numerous toothed or entire bractlets, or wanting. Rays few to numerous, spreading or the outer often connivent over the shorter inner ones. Pedicels spreading, unequal. Flowers white, or the central flower of each umbellet purple, or rarely all reddish or yellow; petals obovate, unequally cleft, with a narrower inflexed apex, the outer often radiant; calyx-teeth obsolete to evident; styles short, the stylopodium conic. Carpophore entire or bifid at the apex. Fruit oblong to ovoid, flattened dorsally; primary ribs filiform, bristly; secondary ribs winged, the wings divided into a single row of barbed or glochidiate prickles; oil-tubes solitary under the secondary ribs, 2 on the commissure; seed flattened dorsally in cross section, the face shallowly concave to nearly plane.

Type species, *Daucus Carota* L.

Fruiting umbels many-rayed, compact in fruit by the incurving of the outer rays; rays 4-75 mm. long.

Bracts pinnately divided into short linear or lanceolate divisions; rays usually 4-40 mm. long; carpel usually broadest below the middle; central flower of the umbellet white.

Bracts pinnately divided into elongate filiform divisions; rays 30-75 mm. long; carpel broadest at the middle; central flower of the umbellet usually rose or purple.

Fruiting umbels few-rayed, open in fruit, the rays spreading-ascending; rays 15-120 mm. long.

1. *D. pusillus*.

2. *D. Carota*.

3. *D. montanus*.

1. *Daucus pusillus* Michx. Fl. Bor. Am. 1: 164. 1803.

Daucus ? *foetidus* Raf. Fl. Ludov. 81. 1817. (Hyponym.)

Daucus microphyllus Presl; DC. Prodr. 4: 213. 1830.

Babiron pusillum Raf. New Fl. 4: 23. 1838.

Daucus brevifolius Raf. New Fl. 4: 26. 1838.

? *Peltactila aurea* Raf. New Fl. 4: 28. 1838.

? *Peltactila grandiflora* Raf. New Fl. 4: 28. 1838.

? *Peltactila hispida* Raf. New Fl. 4: 28. 1838.

? *Peltactila parviflora* Raf. New Fl. 4: 28. 1838.

Daucus pusillus var. *scaber* T. & G. Fl. N. Am. 1: 636. 1840.

Daucus pusillus var. *microphyllus* T. & G. Fl. N. Am. 1: 636. 1840.

Daucus scaber Nutt.; T. & G. Fl. N. Am. 1: 636, as syn. 1840.

Plants annual, 3-90 cm. high, the stems usually solitary, simple or few-branched above, retrorsely papillate-hispid; leaves oblong in general outline, excluding the petioles 3-10.5 cm. long, 1.5-7 cm. broad, the ultimate divisions linear, 1-5 mm. long, 0.5-1 mm. broad, acute, more or less hispid; petioles 4-15 cm. long; peduncles 1.1-4.5 dm. long, retrorsely papillate-hispid; involucre of foliaceous, pinnately decompound bracts, the divisions short, linear or lanceolate; involucre of linear, acute bractlets, about equaling the pedicels; rays few to numerous, unequal, 0.4-4 cm. long, compact in fruit; pedicels unequal, 2-9 mm. long; flowers white; fruit oblong, 3-5 mm. long, about 2 mm. broad, usually broadest below the middle, the commissural surface with 2 rows of hispidulous hairs.

TYPE LOCALITY: "In campestribus Carolinae," Michaux?

DISTRIBUTION: South Carolina and Florida, west and south to Missouri, California, Baja California, and Nuevo León, north to British Columbia (*Baker 2843, Palmer 34,737*).

ILLUSTRATIONS: Mart. Fl. Bras. 11: pl. 90, f. 8 (fr.); Contr. U. S. Nat. Herb. 7: 249 (fr.); Carn. Inst. Wash. Publ. 131: pl. 5, f. d.

2. *Daucus Carota* L. Sp. Pl. 242. 1753.

Caucalis Carota Crantz, Class. Umbell. 113. 1767.

Caucalis Daucus Crantz, Stirp. Austr. 3: 125. 1767.

Tiricta daucoides Raf. New Fl. 4: 23. 1838.

? *Daucus levis* Raf. New Fl. 4: 25. 1838.

? *Daucus brevicaulis* Raf. New Fl. 4: 25. 1838.

? *Daucus nudicaulis* Raf. New Fl. 4: 25. 1838.

? *Daucus scariosus* Raf. New Fl. 4: 25. 1838.

Daucus scadiophylus Raf. New Fl. 4: 24. 1838.

? *Daucus heterophylus* Raf. New Fl. 4: 26. 1838.

Daucus agrestis Raf. New Fl. 4: 27. 1838.

? *Daucus strigosus* Raf. New Fl. 4: 27. 1838.

? *Ballimon nivicatum* Raf. New Fl. 4: 28. 1838.

? *Ballimon maritimum* Raf. New Fl. 4: 28. 1838.

Carota sativa Rupr. Fl. Ingr. 468. 1860.

Daucus Carota f. *rosea* Millsp. Bull. W. Va. Exp. Sta. 2: 369. 1892.

Daucus Carota f. *roseus* Farwell, Rep. Mich. Acad. 21: 369. 1920.

Daucus Carota f. *epurpurata* Farwell, Papers Mich. Acad. 2: 35. 1923.

Daucus Carota f. *Fischeri* Moldenke, Castanea 9: 55. 1944.

Daucus Carota f. *Goodmani* Moldenke, Castanea 9: 55. 1944.

Plants biennial, 1.5-12 dm. high, the stems solitary, glabrous to retrorsely hispid; leaves oblong in general outline, excluding the petioles 5-15 cm. long, 2-7 cm. broad, the ultimate divisions linear to lanceolate, 2-12 mm. long, 0.5-2 mm. broad, acute, mucronate, entire or few-cleft, glabrous to hispid especially on the veins and margins; petioles 3-10 cm. long; divisions of the cauline leaves often elongate; peduncles 2.5-6 dm. long, retrorsely hispid; involucre of filiform, elongate, pinnately divided or rarely entire, scarious-margined bracts, 3-30 mm. long, usually reflexed; involucre of linear, acuminate, entire or rarely pinnate, more or less scarious, ciliate bractlets, equaling or exceeding the flowers; rays numerous, unequal, 3-7.5 cm.

long, compact in fruit; pedicels unequal, 3–10 mm. long; flowers white, yellow, or pinkish, the central flower of each umbellet usually purple or pinkish; fruit ovoid, 3–4 mm. long, about 2 mm. broad, broadest at the middle.

TYPE LOCALITY: "In Europae campis exaridis," collector unknown.

DISTRIBUTION: Eurasia; adventive throughout the warmer parts of the earth; introduced through the United States & Canada, Mexico, Central America, and the West Indies.

ILLUSTRATIONS: Benth. Handb. Brit. Fl. ed. 2, f. 445; Reichenb. Ic. Fl. Germ. 21: pl. 2000; Baillon, Hist. Pl. 7: 84–86; Bot. Gaz. 12: pl. 15, f. 105 (fr.); Karst. Fl. Deuts. ed. 2: 2: 419; Britt. & Brown, Ill. Fl. 2: 510; ed. 2: 2: 625; L. H. Bailey, Cycl. Am. Hort. 254; L. H. Bailey, St. Cycl. Hort. 674, 675; Coste, Fl. Fr. 2: 160; Pammel, Man. Pois. Pl. 68 (fr.); Rydb. Fl. Pr. & Pl. 588.

3. *Daucus montanus* Humb. & Bonpl.; Spreng. in R. & S. Syst. Veg. 6: 482. 1820.

Daucus toriloides DC. Prodr. 4: 214. 1830.

Torilis peruviana Presl; DC. Prodr. 4: 214, as syn. 1830.

Plants annual, 1.2–8 dm. high, the stems usually solitary, erect, simple or few-branched, papillate-hispid with mostly retrorse hairs to glabrate; leaves oblong in general outline, excluding the petioles 3.5–11 cm. long, 2.5–5 cm. broad, the ultimate divisions linear, 2–5 mm. long, about 1 mm. broad, acute, more or less hispid; petioles 3–12 cm. long; peduncles 4.5–25 cm. long, retrorsely papillate-hispid; involucre of foliaceous, pinnately decompound bracts, the divisions short, linear; involucre of a few linear, acute bractlets shorter than the pedicels; rays 4–20, unequal, spreading, 1.5–12 cm. long; pedicels unequal, 3–20 mm. long; fruit oblong, 3–6 mm. long, 2–3 mm. broad, the commissural surface with 2 rows of hispidulous hairs.

TYPE LOCALITY: "In Silla de Caracas," Venezuela, *Humboldt & Bonpland*.

DISTRIBUTION: Sonora, Chihuahua, and Vera Cruz to Central America, Colombia, and Ecuador (*Palmer 104, Pringle 4884*).

ILLUSTRATION: Refug. Bot. pl. 299.

28. *ANTHRISCUS* Hoffm. Gen. Umbell. 38. 1814; nomen conservandum.

Slender, erect, herbaceous, caulescent, branching, hispid to glabrous annuals, biennials, or rarely perennials, from slender taproots or fascicles of fibrous roots. Leaves petiolate, membranaceous, ternate-pinnately or pinnately compound or decompound, the leaflets or ultimate divisions dentate or pinnatifid. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre usually wanting. Involucre of several narrow, entire, usually reflexed bractlets. Rays few, spreading. Pedicels spreading. Flowers white; petals oblong or cuneate with a narrower inflexed apex, the outer occasionally radiant; calyx-teeth obsolete; styles short, the stylopodium conic. Carpophore entire or bifid at the apex. Fruit ovoid to linear, attenuate into a beak at the apex, flattened laterally and often constricted at the commissure, smooth or bristly; ribs obsolete; oil-tubes obscure to obsolete; seed subterete in cross section, the face deeply sulcate; strengthening cells absent.

Type species, *Caucalis Scandix* Scop. [*Anthriscus scandicina* (Weber) Mansfeld].

Plants finely pubescent to glabrous; fruit linear to lanceolate, glabrous, 5–6 mm. long.

Leaves ternate or ternate-pinnately decompound, the leaflets 3–6 mm. long; bractlets linear-lanceolate, 2 mm. long; rays 3–6; fruit linear, the beak about one-third the length of the body.

Leaves bipinnate or ternate-bipinnate, the leaflets 20–50 mm. long; bractlets ovate to lanceolate, 2–6 mm. long; rays 6–12; fruit lanceolate, the beak about one-sixth the length of the body.

Plants hispid; fruit ovoid, bristly-tuberculate, about 4 mm. long.

1. *A. Cerefolium*.
2. *A. sylvestris*.
3. *A. scandicina*.

1. *Anthriscus Cerefolium* (L.) Hoffm. Gen. Umbell. 41. 1814.

Scandix Cerefolium L. Sp. Pl. 257. 1753.

Chaerophyllum Cerefolium Crantz, Stirp. Austr. 3: 70. 1767.

Myrrhodes Cerefolium Kuntze, Rev. Gen. 1: 268. 1891.

Selinum Cerefolium E. H. L. Krause in Sturm, Fl. Deuts. ed. 2: 12: 73. 1904.

Chaerophyllum Cerefolium Schinz & Thell. Viert. Nat. Ges. Zürich 53: 554. 1909.

Cerefolium Cerefolium Britton in Britt. & Brown, Ill. Fl. ed. 2: 2: 629. 1913.

Much branched annuals, 4.5–7 dm. high, finely pubescent above or glabrous throughout; leaves deltoid in general outline, excluding the petioles 5–15 cm. long, ternately or ternate-pinnately decomposed, the ultimate divisions ovate to oblong, 3–6 mm. long; petioles about 10 cm. long; upper cauline leaves nearly sessile; peduncles 3 cm. long to obsolete; rays 3–6, 1.5–4 cm. long; pedicels 3–6, 4–6 mm. long; involucre of several linear-lanceolate, acuminate, reflexed bractlets, about 2 mm. long, shorter than the pedicels; fruit linear, with a ribbed beak one-third of its length, 6 mm. long, 1–2 mm. broad, glabrous, the ribs obsolete.

TYPE LOCALITY: "In apris et arvis Europae australioris," collector unknown.

DISTRIBUTION: Europe; introduced into Quebec, and from Connecticut to Pennsylvania.

ILLUSTRATIONS: Bot. Gaz. 12: *pl.* 9, *f.* 85; Britt. & Brown, Ill. Fl. 2: 528; ed. 2: 2: 629; Fiori & Paol. Ic. Fl. Ital. *f.* 2383.

2. *Anthriscus sylvestris* (L.) Hoffm. Gen. Umbell. 40. 1814.

Chaerophyllum sylvestre L. Sp. Pl. 258. 1753.

Cerefolium sylvestre Besser, Prim. Fl. Gal. 1: 218. 1809.

Myrrhis sylvestris Spreng. Umbell. Prodr. 29. 1813.

Myrrhodes sylvestre Kuntze, Rev. Gen. 1: 268. 1891.

Chaerophyllum sylvestre Schinz & Thell. Viert. Nat. Ges. Zürich 53: 554. 1909.

Much branched annuals, 6–15 dm. high, finely pubescent below; leaves ovate in general outline, excluding the petioles 20–30 cm. long, ternate-bipinnate or bipinnate, the leaflets lanceolate to ovate, acuminate, sessile, 2–5 cm. long, 5–10 mm. broad, pinnately incised and toothed; petioles 5–20 cm. long; upper cauline leaves nearly sessile; peduncles 2–6 cm. long; involucre of several ovate to lanceolate, acuminate, reflexed bractlets, 2–6 mm. long, shorter than the pedicels; rays 6–12, unequal, 15–35 mm. long; pedicels 3–8, slender, 5–8 mm. long; fruit lanceolate, with a short beak about one-sixth of its length, 5–6 mm. long, 2–3 mm. broad, glabrous, the ribs obsolete.

TYPE LOCALITY: "In Europae pomariis et cultis," collector unknown.

DISTRIBUTION: Europe; introduced into Quebec and New York.

ILLUSTRATIONS: Hoffm. Gen. Umbell. *pl.* 1, *f.* 19; Reichenb. Ic. Fl. Germ. 21: *pl.* 2024; Karst. Fl. Deuts. ed. 2: 423, 426; Coste, Fl. Fr. 2: 219.

3. *Anthriscus scandicina* (Weber) Mansfeld, Repert.

Sp. Nov. 46: 309. 1939.

Scandix Anthriscus L. Sp. Pl. 257. 1753.

Chaerophyllum Anthriscus Crantz, Class. Umbell. 76. 1767.

Caucalis Scandix Scop. Fl. Carn. ed. 2: 1: 191. 1772.

Caucalis scandicina Weber; Wiggers, Prim. Fl. Holsat. 23. 1780.

Anthriscus vulgaris Pers. Syn. Pl. 1: 320. 1805. Not *A. vulgaris* Bernh. 1800.

Myrrhis Anthriscus Lag. Amen. Nat. 98. 1821.

Anthriscus Scandix Asch. Fl. Brand. 1: 260. 1860. Not *A. Scandix* Bieb. 1808.

Anthriscus Anthriscus Karst. Deuts. Fl. 857. 1882.

Myrrhodes Anthriscus Kuntze, Rev. Gen. 1: 268. 1891.

Cerefolium vulgare Bubani, Fl. Pyren. 2: 411. 1900.

Chaerophyllum Anthriscus Schinz. & Thell. Viert. Nat. Ges. Zürich 53: 554. 1909.

Branched annuals, 4.5–9 dm. high, more or less hispid throughout; leaves oblong-ovate to deltoid in general outline, excluding the petioles 5–15 cm. long, pinnately decomposed, the ultimate divisions linear-oblong, obtuse, mucronulate, 1–5 mm. long; petioles 3–8 cm. long; upper cauline leaves reduced; peduncles 2 cm. long to obsolete; involucre of a few lanceolate bractlets, shorter than the pedicels; rays 3–6, 1–2.5 cm. long; pedicels 3–7, 2–9 mm. long; fruit ovoid, with a short beak, about 4 mm. long, 2–3 mm. broad, covered with uncinately bristly tubercles.

TYPE LOCALITY: "In Europae aggeribus terrenis," collector unknown.

DISTRIBUTION: Europe; introduced into Nova Scotia and Virginia, and from western Oregon to central California.

ILLUSTRATION: Johnson & Sowerby, Brit. Wild. Fl. *f.* 567; Reichenb. Ic. Fl. Germ. 21: *pl.* 2029; Coste, Fl. Fr. 2: 219.

29. *TREPOCARPUS* Nutt.; DC. Coll. Mém. 5: 56. 1829.

Entasikon Raf. New Fl. 4: 28. 1838.

Cuminum (Trepocarpus) Baillon, Hist. Pl. 7: 201. 1879.

Slender, erect, herbaceous, caulescent, branching, glabrous annuals, from slender taproots. Leaves petiolate, membranaceous, pinnately decompose, the divisions short, linear. Petioles sheathing. Inflorescence of loose compound umbels; peduncles lateral, opposite the leaves. Involucre of a few foliaceous entire or divided bracts. Involucel of bractlets like the bracts. Rays few, spreading. Pedicels very short. Flowers white; petals obovate with a narrower inflexed apex; calyx-teeth prominent, linear, unequal; styles very short, the stylopodium conic. Carpophore 2-cleft to the base. Fruit oblong-linear, slightly flattened laterally, glabrous; primary ribs obsolete, but 4 secondary ribs and the face of the commissure prominently corky; oil-tubes small, solitary under the secondary ribs, 2 on the commissure, more or less imbedded in the seed and adhering to it; seed somewhat dorsally flattened in cross section, the face plane or slightly concave.

Type species, *Trepocarpus Aethusae* Nutt.

1. *Trepocarpus Aethusae* Nutt.; DC. Coll. Mém. 5: 56. 1829.

Trepocarpus brachycarpus DC. Prodr. 4: 202. 1830.

Entasikon tenuifolium Raf. New Fl. 4: 29. 1838.

? *Entasikon* ? *tuberosum* Raf. New Fl. 4: 29. 1838.

Athamanta cherophyloides Nutt.; Raf. New Fl. 4: 29, as syn. 1838.

Plants 3–5.5 dm. high, simple or freely branched above; leaves excluding the petioles 8–10 cm. long, pinnately decompose, the ultimate segments linear, acute, 2–12 mm. long, 0.5–1.5 mm. broad; petioles 5–20 mm. long; cauline leaves little reduced upwards; peduncles 4–9.5 cm. long; involucre of 1–several linear or leaflike bracts 3–15 mm. long, entire or divided; bractlets of the involucre like the bracts, 3–8 mm. long; rays 2–4, 5–15 mm. long, unequal; pedicels 2–8, 1 mm. or less long; calyx-teeth up to 1 mm. long, unequal; petals white; fruit 8–10 mm. long.

TYPE LOCALITY: "Territoire d'Arkansa," Nuttall.

DISTRIBUTION: Mississippi and Alabama to Arkansas and Texas (*Hall 258, Reverchon 375*).

ILLUSTRATIONS: DC. Coll. Mém. 5: *pl. 14*; Bot. Gaz. 12: *pl. 15, f. 87* (fr.); Contr. U. S. Nat. Herb. 7: 85 (fr.).

30. CUMINUM L. Sp. Pl. 254. 1753.

Cuminum St. Lag. Ann. Soc. Bot. Lyon 7: 65. 1880.

Luesnesia Kuntze, Rev. Gen. 1: 268. 1891.

Slender, erect, herbaceous, caulescent, glabrous (except the fruit) annuals, from slender taproots. Leaves petiolate, membranaceous, ternately or pinnately dissected. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre of slender, unequal, reflexed, entire or ternate bracts. Involucel of bractlets like the bracts. Rays few, spreading-ascending. Pedicels slender, spreading, longer than the fruit. Flowers white or rose; petals oblong with a narrower inflexed apex, the outer radiant; calyx-teeth subulate, longer than the styles; styles short, the stylopodium conic, attenuate into the rigid styles. Carpophore 2-cleft to the base. Fruit oblong, nearly terete but slightly flattened laterally, attenuate at the apex and base, setulose and bristly; primary ribs filiform, minutely setulose, the secondary very prominent, bristly; oil-tubes solitary in the intervals, 2 on the commissure; seed terete in cross section, the face slightly concave.

Type species *Cuminum Cyminum* L.

1. *Cuminum Cyminum* L. Sp. Pl. 254. 1753.

Ligusticum Cuminum Crantz, Class. Umbell. 82. 1767.

Luesnesia Cyminum Kuntze, Rev. Gen. 1: 268. 1891.

Selinum Cuminum E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 91. 1904.

Annual, glabrous, 2–3 dm. high; basal leaves ovate in general outline, excluding the petioles 5–10 cm. long, ternately dissected, the ultimate divisions linear-filiform, entire, 1–5 cm. long; petioles 1–2 cm. long; peduncles 3–10 cm. long; involucre of 5–7 linear and entire or ternate bracts with linear divisions, unequal, 1–5 cm. long, reflexed; involucel of bractlets like the bracts, 5–10 mm. long; rays 2–6, 5–25 mm. long, unequal; pedicels 2–8 mm. long; calyx-teeth about 1 mm. long; petals white or rose; fruit oblong, 6–7 mm. long, 2.5–3 mm. broad; seed-face slightly concave.

TYPE LOCALITY: "In Aegyptio, Aethiopia," collector unknown.

DISTRIBUTION: Mediterranean region; adventive in Texas.

ILLUSTRATIONS: Cav. Ic. 4: *pl.* 360; Baillon, *Hist. Pl.* 7: 91 (fr.); Karst. *Fl. Deuts. ed.* 2: 2: 421 (fr.); Hare, Caspari & Rusby, *Nat. Stand. Dispens.* 509 (fr.); Hegi, *Ill. Fl. Mittel-Eur.* 5: *f.* 2424, 2425.

31. CHAEROPHYLLUM L. Sp. Pl. 258. 1753.

Grammosciadium DC. *Prodr.* 4: 232. 1830.

Physocaulis Tausch, *Flora* 17: 342. 1834.

Rhynchosylis Tausch, *Flora* 17: 343. 1834.

Biasoletia Bertol. *Fl. Ital.* 3: 191. 1837.

Freyera Reichenb. *Handb.* 291. 1837.

Fiebera Opiz, *Seznam* 44. 1852.

Balansaea Boiss. & Reut. *Pug. Pl. Nov.* 49. 1852.

Bellia Bubani, *Fl. Pyren.* 2: 411. 1900.

Tall and slender or low, erect or spreading, herbaceous, caulescent, branching, pubescent or glabrous annuals or biennials (in our species), from taproots or tubers. Leaves petiolate, membranaceous, ternate-pinnately decomposed, the ultimate divisions or lobes small, confluent or distinct. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary, or frequently obsolete. Involucre usually wanting. Involucel of numerous conspicuous bractlets, longer or shorter than the pedicels, reflexed or spreading in fruit. Rays few, spreading-ascending. Pedicels spreading. Flowers white, rarely red or yellow; petals obovate or orbiculate, 2-cleft, with a narrower inflexed apex, the outer often somewhat radiant; calyx-teeth obsolete; styles short or slender, the stylopodium conic. Carpophore 2-lobed part-way to the base. Fruit linear to narrowly oblong, beaked or beakless, often narrowed toward the apex, rounded or narrowed toward the base, flattened laterally, glabrous or pubescent; ribs prominent, unwinged, narrower or broader than the intervals; oil-tubes small, usually solitary in the intervals, 2 on the commissure; seed terete in cross section, the face sulcate; each rib with a large group of strengthening cells occupying usually the whole thickness of the pericarp.

Type species, *Chaerophyllum temulum* L.

Introduced biennials, 3-20 dm. high; rays 6-20.

Ultimate leaf-divisions oval, obtuse, villous-hirsute; root slender;

rays 6-12.

Ultimate leaf-divisions linear to lanceolate, acute, glabrous or sparsely

hispidulous on the nerves; root tuberous; rays 15-20.

Native annuals, 5-9 dm. high; rays 1-5.

Fruit glabrous.

Bractlets of the involucre usually reflexed in fruit; rays usually 4;

pedicels usually more than 10, the umbellets compact.

Bractlets of the involucre spreading, not reflexed; rays usually 2-3;

pedicels usually fewer than 6, the umbellets spreading.

Plants more or less hispid; bractlets of the involucre usually

longer than the pedicels; fruit-ribs prominent, somewhat nar-

rower than to much exceeding the intervals.

Plants glabrous to sparsely hispid; bractlets of the involucre

shorter than the pedicels; fruit-ribs filiform, much narrower

than the intervals.

Fruit pubescent.

Fruit distinctly beaked, 6-8 mm. long; Texas and adjacent areas.

Fruit narrowed at the apex but not beaked, 5-6 mm. long; Ohio,

Indiana, and Kentucky.

1. *C. temulum*.

2. *C. bulbosum*.

3. *C. texanum*.

4. *C. Tainturieri*.

5. *C. procumbens*.

4a. *C. Tainturieri* var. *dasycarpum*.

5a. *C. procumbens* var. *Shortii*.

1. *Chaerophyllum temulum* L. Sp. Pl. 258. 1753.

Myrrhis temula All. *Fl. Ped.* 2: 29. 1785.

Scandix temula Roth, *Fl. Germ.* 1: 122. 1788.

Bellia temulenta Bubani, *Fl. Pyren.* 2: 412. 1900.

Selinum temulum E. H. L. Krause in Sturm, *Fl. Deuts. ed.* 2: 12: 63. 1904.

Plants erect, 3-10 dm. high, biennial from a taproot, the stems solitary, villous-hirsute; leaves ovate in general outline, large, 2-3-pinnate or 2-3-ternate, the leaflets ovate or ovate-oblong, pinnately lobed, the lobes oval, obtuse, villous-hirsute; peduncles 3-10 cm. long, or occasionally obsolete; involucre of 5-8 broadly lanceolate, mucronate, narrowly scarious-

margined, entire or toothed or lobed bractlets, shorter than the pedicels, reflexed in fruit; rays 6-12, unequal, 2-5 cm. long, pubescent; pedicels numerous, unequal, 4-10 mm. long; fruit oblong, beakless but tapering toward the apex, rounded at the base, 4.8-7 mm. long, 1.2-1.5 mm. broad, the ribs broader than the narrow intervals.

TYPE LOCALITY: "Ad Europae arvos, vias et sepes," collector unknown.

DISTRIBUTION: Western Europe to northern Africa; adventive at Philadelphia, Pennsylvania (*Martindale 1878*), and in New Jersey.

ILLUSTRATIONS: Benth. *Handb. Brit. Fl. ed. 2, f. 437*; Reichenb. *Ic. Fl. Germ. 21: pl. 2016*; Fiori & Paol. *Ic. Fl. Ital. f. 2392*; Coste, *Fl. Fr. 2: 221*.

2. *Chaerophyllum bulbosum* L. *Sp. Pl. 258. 1753.*

Scandix bulbosa Roth, *Fl. Germ. 1: 123. 1788.*

Myrrhis bulbosa Spreng. *Umbell. Prodr. 29. 1813.*

Selinum bulbosum E. H. L. Krause in Sturm, *Fl. Deuts. ed. 2. 12: 68. 1904.*

Plants erect, 1-2 m. high, biennial from a tuberous root, the stems solitary, villous-hirsute; leaves ovate-oblong in general outline, large, 2-4-pinnate or 2-4-ternate, the ultimate divisions confluent, lanceolate to linear, acute, mucronate, glabrous or sparingly hispidulous on the nerves; peduncles 3-8 cm. long; bractlets of the involucrel 5-6, linear-lanceolate, mucronate, scarious-margined, shorter than the pedicels, reflexed in fruit; rays 15-20, unequal, 2-4 cm. long, glabrous; pedicels numerous, 3-6 mm. long, unequal; fruit oblong, beakless, slightly narrowed at the apex and base, 4-7 mm. long, 1.5-2 mm. broad, the ribs broader than the narrow intervals.

TYPE LOCALITY: "In Alsatia, Hungaria, Helvetia," collector unknown.

DISTRIBUTION: Central and eastern Europe; adventive in the vicinity of Washington, D. C.

ILLUSTRATIONS: Reichenb. *Ic. Fl. Germ. 21: pl. 2017*; Karst. *Fl. Deuts. ed. 2. 2: 423 (fr.)*; Coste, *Fl. Fr. 2: 221*.

3. *Chaerophyllum texanum* Coult. & Rose, *Contr. U. S. Nat. Herb. 7: 59. 1900.*

Chaerophyllum reflexum Bush, *Trans. Acad. St. Louis 12: 62. 1902.*

Plants erect, 2.5-7.5 dm. high, annual, the stems solitary and usually branching near the base, sparsely hispidulous to glabrous; leaves oblong to ovate-oblong in general outline, excluding the petioles 1.5-9 cm. long, 1.5-8 cm. broad, ternate-pinnately dissected, the ultimate divisions distinct, linear, 2-11 mm. long, 0.5-1.5 mm. broad, obtuse to somewhat acute, glabrous or sparingly hispidulous on the nerves; petioles 3-8 cm. long, hispidulous, with a ciliate-margined sheath; peduncles mostly obsolete; involucrel of several conspicuous, ovate, rounded to acute bractlets, slightly longer than the pedicels, reflexed in fruit; rays 2-4, 1.5-7 cm. long; pedicels 6-20, 0.5-8 mm. long; fruit narrowly oblong, beakless but usually narrowed toward the apex, rounded to narrower at the base, 4-6 mm. long, 1.5-2 mm. broad, glabrous, the ribs equaling or exceeding the intervals.

TYPE LOCALITY: Near Houston, Texas, *Rose 173.*

DISTRIBUTION: Missouri and Louisiana to Kansas, Oklahoma, and Texas (*Bush 7531, Reverchon 4337*).

ILLUSTRATION: Rydb. *Fl. Pr. & Pl. 594.*

4. *Chaerophyllum Tainturieri* Hook. *Comp. Bot. Mag. 1: 47. 1835.*

Chaerophyllum daucophyllum Nutt.; T. & G. *Fl. N. Am. 1: 638, as syn. 1840.*

Chaerophyllum procumbens var. *Tainturieri* Coult. & Rose, *Bot. Gaz. 12: 160. 1887.*

Chaerophyllum Tainturieri var. *floridanum* Coult. & Rose, *Contr. U. S. Nat. Herb. 7: 60. 1900.*

Chaerophyllum floridanum Bush, *Trans. Acad. St. Louis 12: 62. 1902.*

Plants erect, 1.5-9 dm. high, annual, the stems solitary and usually branching near the base, sparsely hispid above and densely retrorsely-hispid below; leaves oblong to ovate-oblong in general outline, excluding the petioles 3-12 cm. long, 2-10 cm. broad, ternate-pinnately dissected, the ultimate divisions more or less confluent, ovate, 1-5 mm. long, 1-2.5 mm. broad, obtuse to acute, more or less hispid throughout; petioles 3-10 cm. long, hispid, with a subscarious ciliate-margined sheath; peduncles mostly obsolete; involucrel of several ovate, acute, ciliate-margined bractlets, usually longer than the pedicels, spreading and usually not

conspicuously reflexed in fruit; rays 1-5 (usually 3), 2-7.5 cm. long; pedicels 3-10, 10 mm. long to obsolete; fruit narrowly oblong, distinctly beaked, rounded to narrowed toward the base, 6-8 mm. long, 1.5-2 mm. broad, the ribs narrower to much broader than the intervals.

TYPE LOCALITY: New Orleans, Louisiana, *Tainturier*.

DISTRIBUTION: Virginia to Florida, west to Kansas and Texas (*Curtiss 4653, Hall 261*).

ILLUSTRATIONS: Bot. Gaz. 12: *pl. 9, f. 82* (fr.); Velenovský, *Vergl. Morph.* 808; Britt. & Brown, *Ill. Fl.* 2: 530; ed. 2: 2: 630.

4a. *Chaerophyllum Tainturieri* var. *dasycarpum* S. Wats. *Bibl.*
Ind. 416. 1878.

Chaerophyllum dasycarpum Nutt.; T. & G. *Fl. N. Am.* 1: 638, as syn. 1840.

Chaerophyllum procumbens var. *dasycarpum* Coult. & Rose, *Bot. Gaz.* 12: 160. 1887.

Similar to the species, but usually lower; fruit pubescent.

TYPE LOCALITY: New Orleans, Louisiana, *Tainturier*.

DISTRIBUTION: Alabama and Mississippi to Texas.

ILLUSTRATIONS: Bot. Gaz. 12: *pl. 9, f. 84*; *Contr. U. S. Nat. Herb.* 7: 58 (fr.).

5. *Chaerophyllum procumbens* (L.) Crantz, *Class.*
Umbell. 77. 1767.

Scandix procumbens L. *Sp. Pl.* 257. 1753.

Myrrhis bifida Spreng. *Umbell. Prodr.* 29. 1813.

Myrrhis procumbens Spreng. *Pug.* 2: 56. 1815.

Chaerophyllum procumbens var. *Boscii* DC. *Prodr.* 4: 225. 1830.

Chaerophyllum articulatum Bosc; DC. *Prodr.* 4: 225, as syn. 1830.

Chaerophyllum bifidum Willd.; DC. *Prodr.* 4: 225, as syn. 1830.

Chaerophyllum Boscii DC.; *Steud. Nom. Bot. ed. 2.* 1: 339. 1840.

Plants spreading, annual, the stems solitary and usually branching near the base, 1.5-7.5 dm. long, glabrous to sparingly hispid especially at the nodes; leaves oblong to ovate-oblong in general outline, excluding the petioles 3.5-12 cm. long, 2.5-9 cm. broad, ternate-pinnately dissected, the ultimate divisions confluent, linear to ovate, 1-7 mm. long, 1-4 mm. broad, obtuse to somewhat acute, glabrous or sparingly hispidulous on the nerves and margins; petioles 3.5-6 cm. long, the sheath with a scarios villous margin; peduncles slender to obsolete; involucre of several conspicuous, ovate, rounded to acute, villous-margined bractlets, shorter than the pedicels, spreading in fruit; rays 2-3, 2-5.5 cm. long; pedicels 2-6, 2-11 mm. long; fruit narrowly oblong, beakless but narrowed at the apex, rounded to narrowed at the base, 5-9 mm. long, 2-3 mm. broad, the ribs filiform, much narrower than the broad intervals.

TYPE LOCALITY: Virginia, *Clayton*.

DISTRIBUTION: New York and Ontario to Virginia, west to Iowa, Kansas, and Arkansas (*Bush 1462, Shull 435*).

ILLUSTRATIONS: Hill. *Veg. Syst.* 6: *pl. 46, f. 4*; Bot. Gaz. 12: *pl. 9, f. 79* (fr.); Britt. & Brown, *Ill. Fl.* 2: 529; ed. 2: 2: 629.

5a. *Chaerophyllum procumbens* var. *Shortii* T. & G. *Fl. N.*
Am. 1: 637. 1840.

Chaerophyllum Shortii Bush, *Trans. Acad. St. Louis* 12: 59. 1902.

Similar to the species, but usually more pubescent; fruit somewhat narrowed toward the apex, 5-6 mm. long, about 2 mm. broad, pubescent.

TYPE LOCALITY: Kentucky, *Short*.

DISTRIBUTION: Ohio and Indiana to Kentucky, along the Ohio River; Missouri? (*Deam 35,477*).

DOUBTFUL SPECIES

CHAEROPHYLLUM ARBORESCENS L. *Sp. Pl.* 259. 1753. The foliage figured by Hill (*Veg. Syst.* 6: *pl. 53, f. 3*) resembles that of certain species of *Angelica*. The inflorescence is suggestive of the genus *Arracacia*. From notes taken in the Linnean Herbarium by Dr. H. N. Moldenke, the foliage on the type specimen would seem to be that of one of the eastern American species of *Osmorhiza*. The writers know of no plant from "Virginia," the type locality, which would match the published description and illustration.

32. **OREOMYRRHIS** Endl. Gen. 787. 1839;
nomen conservandum.

Caldasia Lag. Amen. Nat. 98. 1821. Not *Caldasia* Willd. 1807, nor Mutis, 1810.

Low, herbaceous, short-caulescent to acaulescent, more or less pubescent perennials, from a long slender taproot. Leaves petiolate, membranaceous, 2-3-pinnatisect, the leaflets small, crowded. Petioles sheathing. Inflorescence of loose simple umbels; peduncles terminal, longer or shorter than the leaves. Involucre of several more or less connate, entire or divided bracts. Pedicels spreading. Flowers white or purplish; petals oval, often pubescent dorsally; calyx-teeth obsolete; styles short, erect, persistent, the stylopodium depressed-conic. Carpophore 2-cleft to the base. Fruit oblong, tapering toward the apex, rounded at the base, slightly flattened laterally, glabrous or pubescent; ribs filiform, unwinged; oil-tubes solitary to several in the intervals, 2-several on the commissure; seed terete in cross section, the face concave.

Type species, *Myrrhis andicola* H.B.K. (*Oreomyrrhis andicola* Endl.).

Involucral bracts connate only their lower third or fourth, the lobes cleft or divided, reflexed; ultimate leaf-divisions linear to narrowly lanceolate, flaccid.

Leaves 3-pinnatisect; involucral bracts ternate-pinnately dissected; fruit 4-6 mm. long; leaflets sparsely pilose to glabrate.

Leaves 2-pinnatisect; involucral bracts lobed or cleft; fruit 3-3.5 mm. long; leaflets rather densely pilose.

Involucral bracts connate at least half their length, the lobes entire or toothed, erect or spreading; ultimate leaf-divisions ovate to lanceolate, somewhat succulent.

1. *O. daucifolia*.

2. *O. orizabae*.

3. *O. tolucana*.

1. **Oreomyrrhis daucifolia** I. M. Johnston, Jour. Arnold
Arb. 19: 125. 1938.

Plants slender, 1-3 dm. high, the stems 1.5-14 cm. long; leaves oblong to oblong-ovate in general outline, excluding the petioles 2.5-7.5 cm. long, 5-30 mm. broad, 3-pinnatisect, flaccid, sparsely pilose to glabrate, the ultimate divisions linear, 1-3 mm. long, 0.5 mm. or less broad, the rachis sparsely puberulent; petioles 2.5-7 cm. long; peduncles 7-22 cm. long; involucral bracts connate their lower fourth, the lobes obovate, 3-7 mm. long, ternate-pinnately dissected, pilose, reflexed; pedicels 1-8 mm. long; fruit 4-6 mm. long, 1-1.5 mm. broad.

TYPE LOCALITY: Charcol, Sierra Cuchumatanes, Department of Huehuetenango, Guatemala, 3180 m. alt.; alpine meadow, *Skutch 1263*.

DISTRIBUTION: Mountains, Guatemala (*Standley 65,593, Steyermark 35,495, 36,127*).

2. **Oreomyrrhis orizabae** I. M. Johnston, Jour. Arnold
Arb. 19: 126. 1938.

Plants low and matted, 4-10 cm. high, the stems 5-30 mm. long, often obsolete; leaves oblong in general outline, excluding the petioles 1.5-3 cm. long, 5-15 mm. broad, 2-pinnatisect, flaccid, rather densely pilose, the ultimate divisions linear-lanceolate to lanceolate, 1-3 mm. long, 0.3-0.9 mm. broad, the rachis pilose throughout; petioles 1-2 cm. long; peduncles 25-65 mm. long; involucral bracts connate their lower fourth or third, the lobes obovate, 2.5-5 mm. long, deeply lobed or cleft, pilose, reflexed; pedicels 3-5 mm. long; fruit 3-3.5 mm. long, 1.2-1.5 mm. broad.

TYPE LOCALITY: Orizaba, Mexico, 3600-3700 m. alt., *Pringle 8546*.

DISTRIBUTION: Mount Orizaba, Mexico.

3. **Oreomyrrhis tolucana** I. M. Johnston, Jour. Arnold
Arb. 19: 127. 1938.

Plants low and matted, 25-75 mm. high, the stems 10-25 mm. long, often obsolete; leaves oblong to oblong-ovate in general outline, excluding the petioles 1-2 cm. long, 5-10 mm. broad, 2-pinnatisect, slightly succulent, pilose or glabrate, the ultimate divisions ovate to lanceolate, 1-3 mm. long, 0.5-1.5 mm. broad, the rachis pilose at the base of the leaflets; petioles 1-2 cm. long; peduncles 1-6 cm. long; involucral bracts connate at least their lower half, the lobes

oblong to orbicular, 1–2 mm. long, entire or toothed, somewhat pilose-ciliate, erect or spreading; pedicels 1–6 mm. long; fruit 2.5–3.5 mm. long, about 1.5 mm. broad.

TYPE LOCALITY: Toluca, Mexico, 4650 m. alt., *Pringle 4236*.

DISTRIBUTION: High mountains, Mexico (state) to Puebla (*Purpus 1679, 3789*).

33. FOENICULUM Adans. Fam. Pl. 2: 101. 1763.

Foeniculum Hill, Hort. Kew. 103. 1768.

Ozodia Wight & Arn. Prodr. Fl. Ind. Or. 1: 374. 1834.

Slender, erect, herbaceous, caulescent, branching, glabrous and glaucous perennials or biennials with a strong anise odor, from taproots. Leaves petiolate, membranaceous, pinnately decompound, the ultimate divisions filiform. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary. Involucre wanting. Rays numerous, ascending. Pedicels several, spreading. Flowers yellow; petals obovate with a narrower inflexed apex; calyx-teeth obsolete; styles very short, recurved, the stylopodium conic. Carpophore 2-cleft to the base. Fruit oblong, slightly flattened laterally, glabrous; ribs prominent, acute or obtuse; oil-tubes solitary in the intervals, 2 on the commissure; seed flattened dorsally in cross section, often sulcate under the intervals, the face plane or slightly concave.

Type species, *Anethum Foeniculum* L. (*Foeniculum vulgare* Mill.).

1. *Foeniculum vulgare* Mill. Gard. Dict. ed. 8.

Foeniculum, no. 1. 1768.

Anethum Foeniculum L. Sp. Pl. 263. 1753.

Ligusticum Foeniculum Crantz, Class. Umbell. 82. 1767.

Foeniculum officinale All. Fl. Ped. 2: 25. 1785.

Meum Foeniculum Spreng. in R. & S. Syst. Veg. 6: 433. 1820.

Ozodia foeniculacea Wight & Arn. Prodr. Fl. Ind. Or. 375. 1834.

Foeniculum Foeniculum Karst. Deuts. Fl. 837. 1882.

Selinum foeniculeum E.H.L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 115. 1904.

Plants stout, 9–21 dm. high; leaves ovate to deltoid in general outline, excluding the petioles 3 dm. long, 4 dm. broad, pinnately decompound, dark green, the ultimate divisions filiform, 4–40 mm. long, about 0.5 mm. broad; petioles 7–14 cm. long, wholly and broadly sheathing; peduncles 15–65 mm. long; rays 15–40, spreading-ascending in flower, ascending to suberect in fruit, somewhat unequal, 1–6.5 cm. long; pedicels several, 2–10 mm. long, subequal; fruit oblong, 3.5–4 mm. long, 1.5–2 mm. broad, the ribs acute.

TYPE LOCALITY: "In Narbonae, Aremoriae, Maderae rupibus cretaceis," collector unknown.

DISTRIBUTION: Mediterranean region; adventive throughout the United States, Mexico, Central America, and the West Indies.

ILLUSTRATIONS: Gaertn. Fruct. pl. 23; Wight, Ic. Pl. Ind. Or. 2: pl. 570; Fiori & Paol. Ic. Fl. Ital. f. 2318; Britt. & Brown, Ill. Fl. ed. 2. 2: 643; Britton, Fl. Bermuda 276; Madroño 1: 143.

34. TAENIDIA (T. & G.) Drude in E. & P. Nat. Pfl. 3⁸: 195. 1898.

Zizia § *Taenidia* T. & G. Fl. N. Am. 1: 614. 1840.

Pimpinella Sect. *Zizioides* Benth. & Hook. Gen. Pl. 1: 894. 1867.

Slender, erect, herbaceous, caulescent, branching, glabrous and glaucous perennials, from taproots. Leaves petiolate, membranaceous, 2–3-ternate or 2–3-pinnate, the leaflets lanceolate to ovate, entire. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary. Involucre wanting. Involucel wanting. Rays rather few, spreading-ascending, unequal. Pedicels few, spreading, the central flowers sterile, short-pedicellate. Flowers yellow; petals elongate with a narrower inflexed apex; calyx-teeth obsolete; styles slender, the stylopodium lacking. Carpophore 2-cleft to the base. Fruit oblong-oval, flattened laterally, glabrous; ribs filiform; oil-tubes usually 3 in the intervals, 4 on the commissure; seed subterete in cross section, the face plane.

Type species, *Smyrniium integerrimum* L. (*Taenidia integerrima* Drude).

1. *Taenidia integerrima* (L.) Drude in E. & P. Nat.Pfl. 3⁸: 195. 1898.

- Smyrniun integerrimum* L. Sp. Pl. 263. 1753.
Angelica integrifolia Walt. Fl. Car. 115. 1788.
Zizia integerrimus Spreng. Syst. 1: 887. 1825.
Zizia integerrima DC. Mém. Soc. Phys. Nat. Hist. Genève 4: 493. 1829.
Pimpinella integerrima A. Gray, Proc. Am. Acad. 7: 345. 1868.
Pimpinella integrifolia Wood, Bot. & Fl. 139. 1870.

Plants 3–8.5 dm. high, the stems purplish toward the base; basal leaves ovate to obovate in general outline, excluding the petioles 2.5–9 cm. long, 5–9 cm. broad, the leaflets ovate to lanceolate, 1–2.5 cm. long, 5–15 mm. broad, rounded to acute, shortly mucronulate at the apex, slightly decurrent to rounded at the base, sessile; petioles 4–17 cm. long; cauline leaves like the basal, the leaflets 15–45 cm. long, 8–35 mm. broad with wholly sheathing petioles 1–9.5 cm. long; peduncles 1–20 cm. long; rays 15–20, 15–95 mm. long, spreading to ascending, the central rays sterile and half the length of the fertile; umbellets about 35-flowered, the central flowers sterile and short-pedicellate; fertile pedicels 7–12 mm. long; fruit 3–4 mm. long, 2–3 mm. broad.

TYPE LOCALITY: Virginia, Clayton 549.

DISTRIBUTION: Quebec and Ontario to Georgia, west to Minnesota, Kansas, and Arkansas (*Biltmore Herb. 4350a*, *Friesner 7367*, *Mathias 1399*).

ILLUSTRATIONS: Bot. Gaz. 12: pl. 9, f. 69 (fr.); Flora 83: 265; Britt. & Brown, III. Fl. 2: 526; ed. 2: 640; Contr. U. S. Nat. Herb. 7: 109 (fr.); Rydb. Fl. Pr. & Pl. 596.

35. *ZIZIA* Koch, Nova Acta Acad. Leop.-Carol. 12: 128. 1825.*Carum* Sect. *Zizia* Benth. in Benth. & Hook. Gen. Pl. 1: 891. 1867.

Erect, herbaceous, caulescent, branching or simple, glabrous or nearly glabrous perennials, from a fascicle of somewhat fleshy roots. Leaves petiolate, membranaceous, simple or ternately compound, the leaflets serrate or dentate. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal, or terminal and lateral. Involucre wanting. Involucel of a few small, narrow bractlets. Rays rather few, spreading-ascending or spreading. Pedicels short and stout, spreading, the central flower of each umbellet sessile or subsessile. Flowers yellow; petals obovate or obcordate with a narrower inflexed apex; calyx-teeth prominent; styles slender, erect or spreading, the stylopodium lacking. Carpophore 2-cleft about one-half of its length. Fruit oblong to oval, flattened laterally, glabrous; ribs filiform; oil-tubes solitary in the intervals, two on the commissure; seed subterete in cross section, sulcate under the tubes, the face plane or slightly concave.

Type species, *Smyrniun aureum* L. (*Zizia aurea* Koch).

- Basal leaves simple (or occasionally ternate), the margins crenate-dentate. 1. *Z. aptera*.
 Basal leaves 1–2-ternate, the margins serrate or dentate.
 Rays lax and spreading, 5–8 cm. long; fruit oval, 3–4.5 mm. long, 2–3.5 mm. broad. 2. *Z. trifoliata*.
 Rays spreading-ascending, 1–3.5 cm. long; fruit oblong or oblong-ovoid, 2–4 mm. long, 1.5–2 mm. broad.
 Leaves ternate; rays 8–10; pedicels 1–2 mm. long; Florida. 3. *Z. latifolia*.
 Leaves 2-ternate; rays 10–15; pedicels 2–3 mm. long; more northerly and westerly in range. 4. *Z. aurea*.

1. *Zizia aptera* (A. Gray) Fernald, Rhodora 41: 441. 1939.

- Zizia cordata* Koch; DC. Prodr. 4: 100. 1830. Not *Smyrniun cordatum* Walt. 1788.
Thaspium trifoliatum var. *apterum* A. Gray, Man. ed. 2: 156. 1856.
Carum cordatum Benth. & Hook.; Coult. & Rose, Rev. N. Am. Umbell. 127, as syn. 1888. Not *Smyrniun cordatum* Walt. 1788.
Zizia aptera var. *occidentalis* Fernald, Rhodora 41: 444. 1939.

Plants 3–6 cm. high; basal leaves cordate to oval, excluding the petioles 4–7 cm. long, 3–5 cm. broad, simple or occasionally ternate, crenate-dentate; petioles 5–12 cm. long; cauline leaves ternately divided, the divisions lanceolate, coarsely serrate and often lobed; peduncles 6–12 cm. long; involucl of a few inconspicuous, linear, acute bractlets 1–2 mm. long, shorter or longer than the pedicels; rays 12–16, spreading-ascending, unequal, 1–3 cm. long; pedicels 1–3 mm. long; fruit oblong to oval, 2–4 mm. long, 2 mm. broad, the ribs filiform; oil-tubes solitary in the intervals, 2 on the commissure; seed-face slightly concave.

TYPE LOCALITY: New York and New Jersey, collector unknown.

DISTRIBUTION: Eastern Canada to Georgia, west to British Columbia, Washington, western Oregon, and Utah (*Grant 1392, Nelson 3300*).

ILLUSTRATIONS: Torr. Fl. N. Y. 1: pl. 33; Bot. Gaz. 12: pl. 5, f. 65 (fr.); Britt. & Brown, Ill. Fl. 2: 535; ed. 2. 2: 642; Contr. U. S. Nat. Herb. 7: 90 (fr.); Rydb. Fl. Fr. & Pl. 596.

2. *Zizia trifoliata* (Michx.) Fernald, *Rhodora* 42: 298. 1940.

Sison trifoliatum Michx. Fl. Bor. Am. 1: 168. 1803.

Zizia aurea var. *Bebbii* Coult. & Rose, Bot. Gaz. 12: 138. 1887.

Zizia Bebbii Britton; Vail, Mem. Torrey Club 2: 35. 1890.

Zizia arenicola Rose, Proc. U. S. Nat. Mus. 29: 442. 1905.

Plants 5-6 dm. high; basal leaves ovate in general outline, excluding the petioles 4-6 cm. long, 5-8 cm. broad, 1-2-ternately compound, the leaflets ovate to oblong-lanceolate, 2.5-5 cm. long, 1-2 cm. broad, usually distinct, shallowly dentate; petioles 3.5-8 cm. long; cauline leaves pinnate, the leaflets becoming lanceolate and often confluent upwards; peduncles 8-12 cm. long; involucl of a few, inconspicuous, linear, acute bractlets, 1-2 mm. long, shorter or longer than the pedicels; rays 4-11, lax and spreading, unequal, 5-8 cm. long; pedicels 1-2 mm. long; fruit oval, 3-4.5 mm. long, 2-3.5 mm. broad, the ribs filiform; oil-tubes solitary in the intervals, 2 on the commissure; seed-face nearly plane.

TYPE LOCALITY: Virginia and North Carolina, *Canby*.

DISTRIBUTION: Virginia to Florida, west to Arkansas (*Heller 841, Small & Heller 218*).

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. 2: 534; ed. 2. 2: 641; *Addisonia* 16: pl. 524; *Rhodora* 42: pl. 623.

3. *Zizia latifolia* Small, *Man. SE. Fl.* 982. 1933.

Plants 3-4 dm. high; basal leaves deltoid-ovate in general outline, excluding the petioles 6-8 cm. long, 9-11 cm. broad, ternate, the leaflets ovate to orbicular, 4-6 cm. long, 3-5 cm. broad, distinct, coarsely and sharply serrate; petioles 10-14 cm. long; cauline leaves like the basal; peduncles 4-7 cm. long; involucl of a few, inconspicuous, linear, acute bractlets, 1-2 mm. long; rays 8-10, spreading-ascending, unequal, 1-3 cm. long; pedicels 1-2 mm. long; fruit oblong, 2-4 mm. long, 1.5-2 mm. broad, the ribs filiform; oil-tubes solitary in the intervals, 2 on the commissure; seed-face slightly concave.

TYPE LOCALITY: Near Bristol, Florida, *Curtiss*.

DISTRIBUTION: Known only from the type locality.

4. *Zizia aurea* (L.) Koch, *Nova Acta Acad.*

Leop.-Carol. 12: 129. 1825.

Smyrniium aureum L. Sp. Pl. 622. 1753.

Thaspium aureum Nutt. Gen. 1: 196. 1818.

Sison aureus Spreng. in R. & S. Syst. Veg. 6: 410. 1820.

Thaspium aureum var. *apterum* A. Gray, *Man. ed.* 2: 156. 1856.

Carum aureum Benth. & Hook.; Coult. & Rose, *Rev. N. Am. Umbell.* 127, as syn. 1888.

Zizia aurea var. *obtusifolia* Bissell, *Rhodora* 2: 225. 1900.

Zizia aurea f. *obtusifolia* Fernald, *Rhodora* 41: 444. 1939.

Plants 4-8 dm. high; basal leaves ovate to orbicular in general outline, excluding the petioles 6-10 cm. long, 7-12 cm. broad, 2-ternate or the middle leaflet pinnatifid, the leaflets ovate to lanceolate, 2.5-5 cm. long, 1-3 cm. broad, distinct, sharply serrate; petioles 10-15 cm. long; cauline leaves like the basal, becoming narrowly lanceolate and confluent upwards; peduncles 5-15 cm. long; involucl of a few inconspicuous, linear, acute bractlets 1-3 mm. long, shorter than or equaling the pedicels; rays 10-15, spreading-ascending, unequal, 1-3.5 cm. long; pedicels 2-3 mm. long; fruit oblong-ovoid, 2-4 mm. long, 1.5-2 mm. broad, the ribs filiform; oil-tubes solitary in the intervals, 2 on the commissure; seed-face slightly concave.

TYPE LOCALITY: "America borealis," collector unknown.

DISTRIBUTION: Eastern Canada to Florida, west to Saskatchewan, Montana, and Texas (*Bush 757, Fernald 50*).

ILLUSTRATIONS: Bot. Gaz. 12: pl. 5, f. 63 (fr.); Miller & Whiting, *Wild Fl.* 208; Mathews, *Wayside Fl.* 1: 25; Britt. & Brown, Ill. Fl. 2: 534; ed. 2. 2: 641.

36. **HARBOURIA** Coult. & Rose, Rev. N. Am. Umbell. 26. 1888.

Slender, erect, subscapitose, herbaceous, caulescent, branching perennials, from long slender taproots. Leaves mostly basal, petiolate, membranaceous, pinnately decomposed, the ultimate divisions linear, mucronulate, distinct. Petioles sheathing. Inflorescence of loose to subcompact compound umbels, hirtellous to scabrous; peduncles terminal, usually in pairs. Involucre usually wanting. Involucel of a few inconspicuous linear bractlets, usually shorter than the pedicels. Rays few to numerous, spreading, subequal. Pedicels slender, spreading. Flowers yellow; petals oval with a narrower inflexed apex; calyx-teeth small, evident; style short, the stylopodium lacking. Carpophore entire. Fruit ovoid, flattened laterally and constricted at the commissure, granular-roughened; ribs 4-6, obtuse, corky, subequal; oil-tubes large, usually solitary in the intervals, 1-3 on the commissure; seed subterete in cross section, the face plane; strengthening cells present or wanting.

Type species, *Thaspium trachypleurum* A. Gray (*Harbouria trachypleura* Coult. & Rose).

1. **Harbouria trachypleura** (A. Gray) Coult. & Rose, Rev. N. Am.

Umbell. 125. 1888.

Thaspium trachypleurum A. Gray, Proc. Acad. Phila. 1863: 63. 1864.

Cicuta (?) *trachypleura* S. Wats. Bibl. Ind. 417. 1878.

Plants 8-55 cm. high, the stems glabrous except for hirtellous pubescence at the base of the umbel; leaves ovate-oblong in general outline, excluding the petioles 2.5-20 cm. long, 2-12 cm. broad, the ultimate divisions 2-30 mm. long, 0.5-1 mm. broad; petioles 0.8-20 cm. long; involucre wanting, or of 1 or 2 inconspicuous lanceolate bracts; involucel of several linear, acute bractlets 1-4 mm. long; rays 8-30, 5-35 mm. long; pedicels 1-4 mm. long; fruit 3-6 mm. long, 3-4 mm. broad.

TYPE LOCALITY: "On the mountains, at middle and lower elevations, Colorado," Hall & Harbour 215.

DISTRIBUTION: Southern Wyoming and northern Utah to central New Mexico (*Bethel & Clokey 4222, Nelson 160*).

ILLUSTRATIONS: Coult. & Rose, Rev. N. Am. Umbell. f. 146; Contr. U. S. Nat. Herb. 7: 93 (fr.); Clements & Clements, Rocky Mt. Fl. pl. 35, f. 13 (fr.); Ann. Mo. Bot. Gard. 17: pl. 27, f. 2.

37. **MUSINEON*** Raf. Jour. de Phys. 91: 71. 1820.

Marathrum Raf. Jour. de Phys. 89: 101. 1819. Not *Marathrum* Humb. & Bonpl. 1808.

Adorium Raf. Neog. 3. 1825.

Musenium § *Daucophyllum* Nutt.; T. & G. Fl. N. Am. 1: 642. 1840.

Daucophyllum Rydb. Bull. Torrey Club 40: 68. 1913.

Low, erect, short-caulescent or acaulescent with or without the development of a pseudoscape, herbaceous, glabrous to scabrous perennials, from long, thickened, subfusiform taproots. Leaves petiolate, membranaceous, 1-3-pinnate, or ternate, the ultimate divisions linear, distinct to confluent. Petioles sheathing. Inflorescence a loose or subcompact compound umbel; peduncles terminal, shorter or longer than the leaves. Involucre usually wanting. Involucel dimidiate or subdimidiate, of usually distinct, linear, acute, occasionally scarios-margined bractlets. Rays few, spreading. Pedicels short, spreading. Flowers white or yellow; petals oval to obovate with a narrower inflexed apex; calyx-teeth ovate, conspicuous; styles slender, spreading, the stylopodium lacking. Carpophore entire, bifid at the apex or 2-cleft nearly to the base. Fruit ovoid to linear-oblong, flattened laterally and somewhat constricted at the commissure, glabrous to scabrous; ribs acute, prominent; oil-tubes 1-4 in the intervals, 2-6 on the commissure, sometimes one in each rib; seed subterete in cross section, the face plane or concave; strengthening cells usually wanting.

Type species, *Seseli divaricatum* Pursh (*Musineon divaricatum* Nutt.).

Plants caulescent.

Stems dichotomously branching; pseudoscape usually developed.

Stems glabrous or nearly so; fruit usually glabrous.

Stems scabrous; fruit densely scabrous to minutely scaberulous.

1. *M. divaricatum*.
1a. *M. divaricatum*
var. *Hookeri*.

* Often erroneously written "Musenion," "Musineum," or "Musenium."

Stems not dichotomously branched; pseudostems not developed.

Leaves broadly ovate to oblong-ovate, 2-3-ternate, the ultimate divisions 2-11 mm. long; petioles inflated at the base into a conspicuous, purplish, scarious-margined sheath; Montana and northern Wyoming.

Leaves narrowly oblong, pinnate, the ultimate divisions 10-35 mm. long; petioles neither conspicuously inflated nor purplish; northern Utah.

Plants caulescent.

Peduncles entirely glabrous; involucrel conspicuous; fruit minutely scaberulous; Utah.

Peduncles mostly hirtellous at the base of the umbel; involucrel inconspicuous; fruit granular-scabrous; plains and foothills of eastern Wyoming and adjacent states.

2. *M. vaginatum*.

3. *M. lineare*.

3. *M. lineare*.

4. *M. tenuifolium*.

1. *Musineon divaricatum* (Pursh) Nutt.; T. & G. Fl.

N. Am. 1: 642, in part. 1840.*

Seseli divaricatum Pursh, Fl. Am. Sept. 732. 1814.

Adorium crassifolium Raf. Bull. Bot. Seringe 217. 1830.

Musineon pedunculatum A. Nelson, Bull. Torrey Club 28: 225. 1901.

Plants caulescent, spreading to erect, the stems glabrous to somewhat scabrous, usually dichotomously branching and longer than the leaves; leaves ovate-oblong in general outline, excluding the petioles 1.5-9 cm. long, 1-8 cm. broad, 1-2-pinnate or ternate-pinnate, the leaflets oblong, pinnately lobed, 5-15 mm. long, 3-10 mm. broad; petioles 1-13 cm. long; bractlets 2-4 mm. long, linear-lanceolate, acute, more or less distinct, sometimes scarious-margined, scaberulous, shorter than the yellow flowers; rays 10-20, subequal, 4-45 mm. long, glabrous or scaberulous; pedicels 1-3 mm. long; fruit ovoid to oblong, constricted at the apex, 3-6 mm. long, about 2 mm. broad, glabrous or rarely minutely scaberulous, the oil-tubes 3-4 in the intervals, 4-6 on the commissure and sometimes one in each rib, the seed-face concave.

TYPE LOCALITY: "In Upper Louisiana," Missouri bluffs at the mouth of L'eau qui court (Niobrara River, South Dakota), *Bradbury*.

DISTRIBUTION: Northern Montana to central Colorado, Missouri River valley of South Dakota and Nebraska, west to western Wyoming and Montana (*Nelson 7093, Osterhout 2801*).

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. 2: 643; Clements, Rocky Mt. Fl. pl. 35, f. 17 (fr.); Ann. Mo. Bot. Gard. 17: pl. 26, f. 1.

1a. *Musineon divaricatum* var. *Hookeri* T. & G. Fl.

N. Am. 1: 642. 1840.

Seseli lucidum Nutt. Fraser's Cat. No. 78. 1813. (Nomen nudum.)

Musenium Hookeri Nutt.; T. & G. Fl. N. Am. 1: 642, as syn. 1840.

Musenium trachyspermum Nutt.; T. & G. Fl. N. Am. 1: 642. 1840.

Musenium angustifolium Nutt.; T. & G. Fl. N. Am. 1: 642. 1840.

Adorium lucidum Kuntze, Rev. Gen. 1: 264. 1891.

Adorium Hookeri Rydb. Contr. U. S. Nat. Herb. 3: 501. 1896.

Stems scaberulous at the base of the umbel to densely scabrous throughout; leaves narrower in outline than in the species, usually scabrous along the veins and margins; rays and bractlets scabrous; fruit minutely scaberulous to densely scabrous, the oil-tubes rarely solitary in the intervals.

TYPE LOCALITY: "Plains of the Upper Platte, near the Rocky Mountains," *Nuttall*.

DISTRIBUTION: Central Saskatchewan to central Colorado; western North Dakota and eastern Wyoming to eastern Idaho and eastern Nevada. (*Clokey 4227, Nelson 7263*.)

ILLUSTRATIONS: Bot. Mag. pl. 1742; U. S. Dep. Agr. Bull. Bot. 26: pl. 23; Rydb. Fl. Pr. & Pl. 596.

2. *Musineon vaginatum* Rydb. Mem. N. Y. Bot.

Gard. 1: 288. 1900.

Plants caulescent, 4-30 cm. high, the stems purplish-tinged, scaberulous at the base of the umbel, otherwise glabrous; leaves broadly ovate to oblong-ovate in general outline, excluding the petioles 1-10.5 cm. long, 1.5-4 cm. broad, ternate, then 1-2-pinnate, the leaflets ovate, pinnately lobed, 5-11 mm. long, 2-5 mm. broad, rarely scaberulous above; petioles 1-4 cm. long, inflated at the base into a conspicuous, purplish, scarious-margined sheath; peduncle usually exceeding the leaves; involucre wanting, or rarely present as a low sheath;

* As "*Musenium*."

involucel of linear-lanceolate bractlets, 2-5 mm. long, shorter than the white or yellowish flowers; rays several, 4-17 mm. long; pedicels 2-4 mm. long; fruit ovoid-oblong, 3-4 mm. long, 1-2 mm. broad, glabrous to densely scaberulous, the oil-tubes usually 3 in the intervals, 4-5 on the commissure, the seed-face plane.

TYPE LOCALITY: Bridger Mountains, Montana, *Rydberg & Bessey 4626*.

DISTRIBUTION: Bridger Mountains, Montana; Big Horn Mountains, Wyoming; northern Utah (*Blankinship 218, Tweedy 2424*).

3. *Musineon lineare* (Rydb.) Mathias, Ann. Mo. Bot. Gard. 17: 265. 1930.

Aletes ? tenuifolia Coult. & Rose, Contr. U. S. Nat. Herb. 7: 108. 1900. Not *Musineon tenuifolium* Nutt. 1840, nor Coult. & Rose, 1930.
Daucophyllum lineare Rydb. Bull. Torrey Club. 40: 69. 1913.

Plants subcaulescent, subscespitose, 8-25 cm. high, the stems glabrous, slender, lax, usually longer than the leaves; leaves narrowly oblong in general outline, excluding the petioles 2-5 cm. long, about 2 cm. broad, pinnate, the leaflets linear, acute, 10-35 mm. long, about 1-2 mm. broad, distinct; petioles 3-14 cm. long; involucl conspicuous, subdimidiate, the bractlets distinct, linear-lanceolate, acute, greatly exceeding the yellow flowers; rays several, 2-5 mm. long; fruit ovoid-oblong, 3-4 mm. long, 1-2 mm. broad, minutely scaberulous, the oil-tubes 2-4 in the intervals, 6-8 on the commissure.

TYPE LOCALITY: Near Logan, Utah, *Rydberg*.

DISTRIBUTION: Known only from the region of the type locality (*Shear 3162, C. P. Smith 2337*).

4. *Musineon tenuifolium* Nutt.; T. & G. Fl. N. Am. 1: 642. 1840.*

Adorium tenuifolium Kuntze, Rev. Gen. 1: 264. 1891.
Daucophyllum tenuifolium Rydb. Bull. Torrey Club 40: 69. 1913.

Plants acaulescent, erect, subscespitose, 6-30 cm. high; leaves narrowly oblong in general outline, excluding the petioles 1.5-10 cm. long, 5-25 mm. broad, 1-3-pinnate, the ultimate divisions distinct, linear, acute, 2-30 mm. long, 0.5-1 mm. broad; petioles 1-12 cm. long; peduncles exceeding the leaves, hirtellous at the base of the umbel; involucre wanting, or of 1 or 2 inconspicuous and short to prominent and linear-lanceolate bracts, shorter than or equaling the rays; involucl of several inconspicuous, linear, acute, green bractlets, 1-2 mm. long, exceeding the white or yellow flowers; rays 8-30, subequal, 2-20 mm. long, frequently scabrous; pedicels 1-2 mm. long; fruit ovoid to narrowly oblong, slightly constricted at the apex, 2-5 mm. long, 1-2 mm. broad, granular-scabrous, the oil-tubes mostly 3 in the intervals, 2-4 on the commissure; seed-face plane.

TYPE LOCALITY: "Rocky Mountains," probably on the upper Platte River in Wyoming, *Nuttall*.

DISTRIBUTION: Western South Dakota and Nebraska to adjacent Wyoming and Colorado (*Goodding 47, Nelson 176*).

ILLUSTRATIONS: Ann. Mo. Bot. Gard. 17: pl. 22, f. 3; pl. 26, f. 2.

38. *ALETES* Coult. & Rose, Rev. N. Am. Umbell. 27. 1888.

Low, cespitose, herbaceous, acaulescent, glabrous to pubescent perennials, from slender, elongated roots. Leaves petiolate, membranaceous, pinnate or bipinnate, the leaflets short, linear to ovate, distinct or confluent, often lobed and spinulose-dentate or entire. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal, longer or shorter than the leaves. Involucre usually wanting. Involucl subdimidiate, of linear or lanceolate, connate or free bractlets, usually shorter than the flowers. Rays few to rather numerous, spreading to reflexed. Pedicels short, spreading. Flowers yellow; petals ovate with a narrower inflexed apex; calyx-teeth deltoid-ovate, conspicuous; styles slender, spreading, the stylopodium lacking. Carpophore 2-cleft to the base, sometimes readily deciduous. Fruit oblong to ovoid-oblong, slightly flattened laterally or subterete, glabrous; ribs subequal, prominent and corky-winged or obscure; oil-tubes solitary in the intervals, 2 on the commissure, sometimes

* As "*Musenium*."

one in the apex of each rib; seed subterete or flattened dorsally in cross section, channeled under the tubes, the face plane or concave; strengthening cells inconspicuous.

Type species, *Deweya* ? *acaulis* Torr. (*Aletes acaulis* Coult. & Rose).

Peduncles longer than the leaves; ribs corky-winged.

Rays 8-15; bractlets connate at the base.

Rays 4-8; bractlets distinct.

Peduncles shorter than the leaves; ribs obscure.

1. *A. acaulis*.

2. *A. MacDougali*.

3. *A. humilis*.

1. *Aletes acaulis* (Torr.) Coult. & Rose, Rev. N. Am.

Umbell. 126. 1888.

Deweya ? *acaulis* Torr. Pacif. R.R. Rep. 4: 94. 1857.

Oreosciadium acaule A. Gray, Proc. Am. Acad. 7: 343. 1868.

Seseli Hallii A. Gray, Proc. Am. Acad. 8: 288. 1870.

Musenium Greenei A. Gray, Proc. Am. Acad. 8: 387. 1872.

Carum (?) *Hallii* S. Wats. Bibl. Ind. 416. 1878.

Zizia Hallii Coult. & Rose, Bot. Gaz. 12: 137. 1887.

Aletes obovata Rydb. Bull. Torrey Club 31: 573. 1904.

Plants 5-35 cm. high; leaves oblong in general outline, excluding the petioles 2-10 cm. long, 1-4 cm. broad, 1-2-pinnate, the leaflets lanceolate to orbicular, acute, confluent, pinnately lobed and spinulose-dentate, 4-10 mm. long, 5-15 mm. broad, sometimes puberulent on the veins and ciliate; petioles 1.5-15 cm. long; peduncles 5-27 cm. long, longer than the leaves, occasionally puberulent at the base of the umbel; bractlets of the involucre lanceolate to linear, acute, 2-3 mm. long, membranaceous and sometimes ciliate, connate at the base; rays 8-15, subequal, 5-30 mm. long, spreading to reflexed, sometimes puberulent; pedicels 1-2 mm. long; fruit oblong, 4-7 mm. long, about 2 mm. broad, the 2 or 3 dorsal and the lateral ribs corky-winged, the wings obtuse; an accessory oil-tube in the apex of each rib.

TYPE LOCALITY: "In crevices of rocks near Santa Antonita, New Mexico," *Bigelow*.

DISTRIBUTION: Mountains of Colorado through New Mexico to western Texas and Chihuahua (*Bethel & Clokey 4228, Hall & Harbour 221*).

ILLUSTRATIONS: Coult. & Rose, Rev. N. Am. Umbell. f. 147 (fr.); Contr. U. S. Nat. Herb. 7: 106 (fr.); Ann. Mo. Bot. Gard. 17: pl. 22, f. 4; pl. 28, f. 1.

2. *Aletes MacDougali* Coult. & Rose, Contr. U. S. Nat.

Herb. 7: 107. 1900.

Oreoxis MacDougali Rydb. Bull. Torrey Club 40: 68. 1913.

Cymopterus MacDougali Tidestrom, Proc. Biol. Soc. Wash. 48: 42. 1935.

Plants 6-25 cm. high; leaves oblong in general outline, excluding the petioles 5-80 mm. long, 5-30 mm. broad, pinnate or occasionally 2-pinnate, the leaflets linear-oblong to ovate, entire or the broader incised and toothed, distinct or somewhat confluent in 2-pinnate leaves, 2-30 mm. long, 1-4 mm. broad; petioles 1-11 cm. long; peduncles 5-15 cm. long, longer than the leaves; involucre of several linear, distinct bractlets, 2-3 mm. long; rays 4-8, 3-17 mm. long; pedicels about 1 mm. long; fruit oblong, 4-8 mm. long, 1-5 mm. broad, the ribs corky-winged, the wings broadly linear, rounded or acute at the apex; oil-tubes solitary in the intervals, 2 on the commissure.

TYPE LOCALITY: "On Berry's trail to the Grand Canyon of the Colorado," Arizona, *MacDougal* 192.

DISTRIBUTION: Canyons and mesas of southeastern Utah and adjacent Arizona and Colorado (*Mathias 650, Rydberg & Garrett 9458*).

ILLUSTRATION: Ann. Mo. Bot. Gard. 17: pl. 30, f. 1.

3. *Aletes humilis* Coult. & Rose, Contr. U. S. Nat.

Herb. 7: 107. 1900.

Plants 2-10 cm. high; leaves oblong in general outline, excluding the petioles 15-40 mm. long, 10-35 mm. broad, 1-2-pinnate, the leaflets linear to ovate-oblong, acute, confluent in the bipinnate leaves, appearing as lobes of the leaflets, 1-10 mm. long, 0.5-5 mm. broad, sometimes puberulent on the veins and ciliate; petioles 1-6 cm. long; peduncles 1-4 cm. long, shorter than the leaves, sometimes puberulent at the base of the umbel; bractlets of the involucre linear, acute, 2-5 mm. long, free, sometimes ciliate; rays 4-6, subequal, 20-45 mm. long, lax, mostly

glabrous; pedicels about 2 mm. long; fruit ovoid-oblong, 3-4 mm. long, about 2 mm. broad; ribs acute, inconspicuous; accessory oil-tubes absent.

TYPE LOCALITY: Dale Creek, Larimer County, Colorado, *Osterhout 6*.

DISTRIBUTION: Known only from the region of the type locality (*Osterhout 2002, 4678*).

ILLUSTRATIONS: *Ann. Mo. Bot. Gard.* 17: *pl. 25, f. 38; pl. 28, f. 2*.

39. *NEOPARRYA* Mathias, *Ann. Mo. Bot. Gard.* 16: 393. 1929.

Low, erect, herbaceous, acaulescent, glabrous, caespitose perennials, from taproots. Leaves petiolate, pinnate, the leaflets somewhat rigid, linear, entire or rarely toothed. Petioles sheathing below. Inflorescence of loose compound umbels; peduncles terminal, longer than the leaves. Involucre wanting. Involucel of inconspicuous, linear-lanceolate bractlets, minutely scaberulous on the margins. Rays few, spreading to ultimately reflexed. Pedicels short, spreading. Flowers unknown; calyx-teeth evident, deltoid-acute to subacuminate, reflexed and persistent in fruit; styles short, the stylopodium lacking. Carpophore 2-cleft to the base. Fruit oblong, slightly flattened laterally, glabrous; ribs prominent but unwinged, the lateral a little more prominent than the dorsal, the whole pericarp conspicuously corky; oil-tubes numerous, of various sizes, scattered throughout the pericarp; seed flattened dorsally in cross section, the face plane or slightly convex; strengthening cells wanting.

Type species, *Neoparrya lithophila* Mathias.

1. *Neoparrya lithophila* Mathias, *Ann. Mo. Bot. Gard.* 16: 393. 1929.

Seseli Nuttallii A. Gray, *Proc. Am. Acad.* 8: 287, as to *Parry 83*. 1870.

Plants about 1.5 dm. high; leaves oblong-lanceolate in general outline, excluding the petioles 8-10 cm. long, about 2.5 cm. broad, the leaflets distant, remote, 5-20 mm. long; rays 7-10, unequal, 5-15 mm. long; pedicels 1-4 mm. long; bractlets of the involucre about 3 mm. long, reflexed in fruit; styles 2-3 mm. long; fruit 3-5 mm. long, 1-2 mm. broad.

TYPE LOCALITY: "On rocks, Huefano [Huerfano] Mountains," near Servilleta, Taos County, New Mexico, *Parry 83*.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATIONS: *Ann. Mo. Bot. Gard.* 16: *pl. 33; 17: pl. 22, f. 2*.

40. *RHYSOPTERUS* Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 185, in part. 1900.

Ryssosciadium Kuntze in Post & Kuntze, *Lex. Gen. Phan.* 493. 1903.

Low, subprostrate, herbaceous, acaulescent but with a slender pseudoscape, glabrous perennials, from long simple taproots. Leaves petiolate, subcoriaceous, ternate-subpinnate, the segments ovate, obtuse, confluent and giving the appearance of a lobed leaflet. Petioles scarious-winged, sheathing. Inflorescence of subcompact compound umbels; peduncles terminal, spreading, shorter to slightly longer than the leaves. Involucre wanting. Involucel of conspicuous, dimidiate, foliaceous bractlets longer than the pedicels. Rays few, stout, spreading and reflexed, subequal. Pedicels short, spreading. Flowers white; petals obovate with a narrower inflexed apex; calyx-teeth conspicuous, ovate, scarious-margined; styles very short, spreading, the stylopodium lacking. Carpophore wanting. Fruit ovoid to orbicular, flattened laterally, glabrous; ribs conspicuous, obtuse, corky, with a similar accessory pair on the commissural side of the laterals, producing a 7-ribbed mericarp, the ribs appearing somewhat crenulate-winged on the immature fruit; oil-tubes solitary in the intervals, 2 on the commissure, solitary in the apex of each rib; seed flattened dorsally in cross section, the face concave.

Type species, *Rhysopterus plurijugus* Coult. & Rose.

1. *Rhysopterus plurijugus* Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 186. 1900.

Cymopterus plurijugus M. E. Jones, *Contr. W. Bot.* 12: 25. 1908.

Plants, including the pseudoscape, 10-15 cm. high, the pseudoscape 4-13 cm. long; leaves ovate-oblong in general outline, excluding the petioles 1-4 cm. long, 1.5-5 cm. broad, the ulti-

mate lobes 1-4 mm. long and about as broad, mucronulate; petioles 5-30 mm. long; rays several, stout, 5-14 mm. long; bractlets of the involucre ovate-oblong, acute, mucronulate, frequently scarious-margined; fruit ovoid to orbicular, 3-4 mm. long, 2-3 mm. broad, sometimes purplish-tinted, the ribs equal.

TYPE LOCALITY: "Black serpentine dykes around a peak rising from Malheur Valley about 12 km. west of confluence of Cottonwood Creek and Malheur, near Harper Ranch, Oregon," *Leiberg 2240*.

DISTRIBUTION: Southeastern Oregon (*Peck 6448*).

ILLUSTRATIONS: *Contr. U. S. Nat. Herb.* 7: 186 (fr.); *Ann. Mo. Bot. Gard.* 17: *pl. 22, f. 5; pl. 27, f. 1*.

41. *APIUM* L. Sp. Pl. 264. 1753.

Celeri Adans. *Fam. Pl.* 2: 498. 1763.

Cyclospium Lag. *Amen. Nat.* 101. 1821.

Helosciadium Koch, *Nova Acta Acad. Leop.-Carol.* 12: 125. 1825.

Apium § *Cyclospium* DC. *Prodr.* 4: 105. 1830.

Slender or stout, erect, ascending, or prostrate, herbaceous or somewhat woody at base, caulescent (in our species), usually branching, glabrous annuals, biennials, or perennials, from taproots or creeping rootstocks rooting at the nodes. Leaves petiolate, membranaceous, simply pinnate to ternate-pinnately decomposed, the leaflets suborbicular to filiform. Petioles sheathing. Inflorescence of loose to subcompact, compound or rarely simple umbels; peduncles lateral and terminal, or some or all the umbels sessile. Involucre wanting to conspicuous. Involucel wanting to conspicuous. Rays usually rather few, spreading-ascending. Pedicels spreading or ascending. Flowers white or greenish; petals ovate to suborbicular with a narrower inflexed apex; calyx-teeth minute or obsolete; styles short, spreading or divaricate, the stylopodium short-conic to depressed. Carpophore entire, bifid at the apex, or more or less deeply 2-cleft. Fruit oblong-oval to orbicular or ellipsoid, flattened laterally and somewhat constricted at the commissure, glabrous or rarely somewhat setulose; ribs filiform, subequal, obtuse, prominent; oil-tubes solitary in the intervals, 2 on the commissure; seed subterete in cross section, the face plane.

Type species, *Apium graveolens* L.

Plants annual; leaves pinnately or ternate-pinnately decomposed; leaflets filiform to linear.

Plants perennial or biennial; leaves 1-2-pinnate; leaflets orbicular to lanceolate.

Terrestrial from a taproot; involucre wanting; calyx-teeth evident; carpophore shortly bifid.

Plants erect or ascending; leaves pinnate; rays 0.7-2.5 cm. long; fruit 1.5 mm. long.

Plants prostrate or decumbent; leaves usually bipinnate; rays 2-6 cm. long; fruit 2-2.5 mm. long.

Aquatic or amphibious from a creeping rootstock; involucre conspicuous; calyx-teeth obsolete; carpophore entire.

Involucre conspicuous; rays 5-6; fruit ellipsoid, subdidymous, broader than long.

Involucre inconspicuous; rays 15-20; fruit oblong-oval, longer than broad.

1. *A. leptophyllum*.

2. *A. graveolens*.

3. *A. australe*.

4. *A. repens*.

5. *A. nodiflorum*.

1. *Apium leptophyllum* (Pers.) F. Muell. & Benth. & Muell.

Fl. Austr. 3: 372. 1866.

Sison Ammi Jacq. *Hort. Vindob.* 2: 95. 1773. Not *S. Ammi* L. 1753.

Sium nodiflorum Walt. *Fl. Car.* 115. 1788. Not *S. nodiflorum* L. 1753.

Seseli Ammi Savi, *Due Cent.* 71. 1804.

Pimpinella leptophylla Pers. *Syn. Pl.* 1: 324. 1805.

Aethusa leptophylla Nutt. *Gen.* 1: 190. 1818.

Pimpinella domingensis Willd.; Spreng. in R. & S. *Syst. Veg.* 6: 411, as syn. 1820.

Helosciadium leptophyllum DC. *Mém. Soc. Phys. Nat. Hist. Genève* 4: 493. 1829.

Apium Ammi Urban in *Mart. Fl. Bras.* 11: 341. 1879.

Apium leptophyllum Maza, *Noc. Bot. Sist.* 74. 1893.

Apium Ammi var. *leptophyllum* Chodat & Wilczek, *Bull. Herb. Boiss.* II. 2: 526. 1902.

Helosciadium Ammi Britton, *Fl. Bermuda* 279. 1918.

Cyclospium leptophyllum Sprague, *Jour. Bot.* 61: 131. 1923.

Apium Ammi var. *genuinum* H. Wolff in Engler, *Pflanzenreich* 90 (4228): 54. 1927.

Apium depressum M. E. Jones, *Contr. W. Bot.* 18: 63. 1933.

Plants terrestrial, annual, alternately branching above, 0.5-6 dm. high; leaves oblong-ovate in general outline, excluding the petioles 3.5-10 cm. long, 3.5-8 cm. broad, 3-4-pinnately

decompound, the leaflets linear to filiform, 1.5-7 mm. long, 0.5-1 mm. broad; petioles 2.5-11 cm. long, the sheath white-scarious-margined; cauline leaves ternate-pinnately decompound, the leaflets filiform, 4-35 mm. long; umbels simple or compound, sessile or pedunculate, the peduncles up to 2 cm. long; involucre wanting; involucre wanting; rays 3-5, 1-2.2 cm. long; pedicels 2-8 mm. long; calyx-teeth inconspicuous; carpophore shortly 2-cleft; fruit ovoid, 1.2-3 mm. long, 1.5-2 mm. broad.

TYPE LOCALITY: "Ins. St. Dominica," collector unknown.

DISTRIBUTION: New York (on ballast), North Carolina, and Florida, west to California, Oregon (on ballast), Oklahoma, and Texas, south throughout Mexico, Central America, and the West Indies to South America (*Curtiss 1034*, *Palmer 33,644*, *Pringle 3231*).

ILLUSTRATIONS: Jacq. Hort. Vindob. 2: pl. 200; Reichenb. Ic. Fl. Germ. 21: pl. 1860; Mart. Fl. Bras. 11¹: pl. 91, f. 1; Bot. Gaz. 12: pl. 17, f. 117 (fr.); Britt. & Brown, Ill. Fl. 2: 534; E. & P. Nat. Pl. 3⁸: 175; Contr. U. S. Nat. Herb. 7: 86 (fr.); Britton, Fl. Bermuda 279.

2. *Apium graveolens* L. Sp. Pl. 264. 1753.

Seseli graveolens Scop. Fl. Carn. ed. 2. 1: 215. 1772.

Sium Apium Roth, Fl. Germ. 1: 128. 1788.

Sium graveolens Vest, Man. Bot. 517. 1805.

Apium vulgare Bubani, Fl. Pyren. 2: 344. 1900.

Selinum graveolens E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 38. 1904.

Celeri graveolens Britton in Britt. & Brown, Ill. Fl. ed. 2. 2: 660. 1913.

Carum graveolens K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 199. 1916.

Plants terrestrial, perennial, the stems erect or ascending, about 5-15 dm. high, from a taproot, not rooting at the nodes; leaves oblong to obovate in general outline, excluding the petioles 7-18 cm. long, 3.5-8 cm. broad, pinnate with few pairs of ovate to suborbicular leaflets, 2-4.5 cm. long, 2-5 cm. broad, usually 3-lobed to near the middle; petioles 3-26 cm. long; cauline leaves frequently cuneate, sometimes lacinate; umbels sessile or short-pedunculate, the peduncles up to 1.2 cm. long; involucre wanting; involucre wanting; rays 7-16, 0.7-2.5 cm. long; pedicels 1-6 mm. long; calyx-teeth minute but evident; carpophore shortly bifid; fruit suborbicular to ellipsoid, about 1.5 mm. long, 1.5-2 mm. broad.

TYPE LOCALITY: "In Europae humectis praesertim maritimis," collector unknown.

DISTRIBUTION: Eurasia; adventive throughout the United States, Mexico, Central America, and the West Indies.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: pl. 1854; Benth. Handb. Brit. Fl. ed. 2, f. 397; Baillon, Hist. Pl. 7: 124 (fr.); Karst. Fl. Deuts. ed. 2, 2: 394, 395; Britt. & Brown, Ill. Fl. 2: 533; ed. 2, 2: 660; Coste, Fl. Fr. 2: 216; Pammel, Man. Pois. Pl. 647.

3. *Apium australe* Thouars, Esq. Tristan d'Acugna 43. 1804.*

Apium prostratum Labill. Voy. Pérouse 1: 141. 1799 (nomen nudum); Nov. Holl. Pl. 1: 76. 1804.

Petroselinum prostratum DC. Prodr. 4: 102. 1830.

Helosciadium prostratum Bunge in Lehm. Pl. Preiss. 1: 295. 1845.

Helosciadium australe Bunge in Lehm. Pl. Preiss. 1: 294. 1845.

Apium antarcticum Banks & Sol.; Hook. f. Fl. Antart. 2: 287, as syn. 1846.

Apium Maclovianum Gand. Bull. Soc. Bot. Fr. 59: 709. 1913.

Selinum chrysoptomiale E. H. L. Krause, Beih. Bot. Centr. 32: 346. 1914.

Plants terrestrial, biennial or perennial, from a taproot, the stems prostrate or decumbent to suberect, 1.5-7 dm. long, sometimes rooting at the nodes; leaves oblong-ovate in general outline, excluding the petioles 5-25 cm. long, 2-4.5 cm. broad, usually bipinnate with few pairs of ovate primary leaflets, the ultimate divisions usually 3-lobed or toothed; petioles 2-6 cm. long; cauline leaves like the basal; umbels sessile or very short-pedunculate; involucre wanting; involucre wanting; rays 5-15, 2-6 cm. long; pedicels 2-3 mm. long; calyx-teeth minute but evident; carpophore shortly bifid; fruit suborbicular, 2-2.5 mm. long, the ribs prominent, broader than the intervals.

TYPE LOCALITY: Presumably Tristan da Cunha, collector unknown.

DISTRIBUTION: South America, Australia, Tasmania, and New Zealand; adventive at Torrey Pines, San Diego County, California.

ILLUSTRATIONS: Vent. Jard. Malm. pl. 81; Labill. Nov. Holl. Pl. pl. 103; Mart. Fl. Bras. 11¹: pl. 91, f. 2 (fr.).

* Pagination is that of Mém. Bot. 5. 1811.

4. *Apium repens* (Jacq.) Lag. Amen. Nat. 101. 1821.

- Sium repens* Jacq. Fl. Austr. 3: 34. 1775.
Helosciadium repens Koch, Nova Acta Acad. Leop.-Carol. 12: 126. 1825.
Helodium repens Dumort. Fl. Belg. 77. 1827.
Helosciadium nodiflorum var. *repens* F. Schultz, Arch. Fl. Eur. 25. 1874.
Apium nodiflorum var. *repens* Bab. Man. ed. 8. 157, in part. 1881.
Selinum repens E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 35. 1904.

Plants aquatic or amphibious, perennial, the stems slender and prostrate, rooting at all the nodes, from a horizontal, creeping rootstock; leaves oblong in general outline, excluding the petioles 4-6 cm. long, pinnate with 3-5 pairs of leaflets, the leaflets rather remote, suborbicular to ovate, 1-1.5 cm. long, 4-10 mm. broad, crenate-serrate, the terminal 3-parted or 3-lobed; petioles about 3 dm. long; umbels always pedunculate, the peduncles 3-15 cm. long, shorter than the leaves; involucre of 3-7 lanceolate or oblong, unequal, reflexed, deciduous bracts, 5-10 mm. long, 2-3 mm. broad; involucre of 6-8 bractlets like the bracts, shorter than the pedicels; rays 5-6, unequal, about 4 cm. long; calyx-teeth obsolete; carpophore entire; fruit subdidymous, ellipsoid, 1-1.25 mm. long, 1.2-1.5 mm. broad.

TYPE LOCALITY: Austria—"in pratis udis, nec in fossis aut rivulis vicinis ipsis, sed semper extra aquam," collector unknown.

DISTRIBUTION: Central and western Europe to the Mediterranean region; introduced on ballast at Philadelphia, Pennsylvania.

ILLUSTRATIONS: Jacq. Fl. Austr. pl. 260; Johnson & Sowerby, Brit. Wild Fl. f. 520; Reichenb. Ic. Fl. Germ. 21: pl. 1855; Coste, Fl. Fr. 2: 213; Heukels, Fl. Nederl. 2: 429; Engler, Pflanzenreich 90 (4:223): 42; Hegi, Ill. Fl. Mittel-Eur. 5: f. 2430 a-h, 2431, pl. 196, f. 1, 1a.

5. *Apium nodiflorum* (L.) Lag. Amen. Nat. 101. 1821.

- Sium nodiflorum* L. Sp. Pl. 251. 1753.
Cicula nodiflora Crantz, Class. Umbell. 97. 1767.
Seseli nodiflorum Scop. Fl. Carn. ed. 2. 1: 213. 1772.
Sison nodiflorum Brot. Fl. Lusit. 1: 423. 1804.
Pimpinella nodiflora Stokes, Bot. Mat. Med. 2: 149. 1812.
Helosciadium nodiflorum Koch, Nova Acta Acad. Leop.-Carol. 12: 126. 1825.
Helodium nodiflorum Dumort. Fl. Belg. 77. 1827.
Selinum nodiflorum E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 34. 1904.

Plants aquatic or amphibious, perennial, the stems creeping to ascending or erect, 1.5-10 dm. high or long, from a creeping rhizome and rooting at the lower nodes; leaves oblong in general outline, excluding the petioles up to 3 dm. long, pinnate with 3-9 pairs of leaflets, the leaflets ovate to lanceolate, about 6 cm. long, 1.5 cm. broad, usually crenate-margined, the terminal 3-lobed; umbels sessile or short-pedunculate; involucre of 2 or 3 bracts, or wanting; involucre of 5-8 conspicuous, triangular-lanceolate bractlets, equaling or exceeding the pedicels; rays 15-20, unequal, about 3 cm. long; calyx-teeth obsolete; carpophore entire; fruit broadly oval or oblong-oval, 1-2 mm. long.

TYPE LOCALITY: "In Europa ad ripas fluviorum," collector unknown.

DISTRIBUTION: Central Europe to northern Africa; introduced on ballast in Pennsylvania, New Jersey, and South Carolina.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: pl. 1856; Benth. Handb. Brit. Fl. ed. 2, f. 398; Karst. Fl. Deuts. ed. 2. 2: 394; G. Post, Fl. Syria 344; Fiori & Paol. Ic. Fl. Ital. f. 2278; Coste, Fl. Fr. 2: 213; Hegi, Ill. Fl. Mittel-Eur. 5: f. 2429.

42. **PETROSELINUM** Hoffm. Gen. Umbell. xxv, 78. 1814.

Slender, erect, herbaceous, caulescent, branching, glabrous biennials, from taproots. Leaves petiolate, membranaceous, ternate-pinnately or pinnately decomposed, the ultimate divisions ovate to linear, toothed or lobed. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary. Involucre of a few inconspicuous bracts, or wanting. Involucre of several linear bractlets shorter than the flowers. Rays few to numerous, spreading-ascending. Pedicels numerous, spreading. Flowers yellow or greenish-yellow; petals obovate with a narrower inflexed apex; calyx-teeth obsolete; styles short, spreading, the stylopodium low-conic. Carpophore 2-cleft to the base or to the middle. Fruit ovoid to oblong, flattened laterally, glabrous; ribs prominent, filiform; oil-tubes solitary in the intervals, 2 on the commissure; seed subterete in cross section, the face plane.

Type species, *Apium Petroselinum* L. (*Petroselinum crispum* Mansfeld).

1. *Petroselinum crispum* (Mill.) Mansfeld, Repert. Sp.

Nov. 46: 307. 1939.

Apium Petroselinum L. Sp. Pl. 264. 1753.*Apium crispum* Mill. Gard. Dict. ed. 8. *Apium* No. 2. 1768.*Petroselinum hortense* Hoffm. Gen. Umbell. 163. 1814. (Nomen nudum.)*Petroselinum sativum* Hoffm. Gen. Umbell. 177. 1814. (Nomen nudum.)*Petroselinum vulgare* Lag. Amen. Nat. 103. 1821.*Carum Petroselinum* Benth. & Hook. Gen. Pl. 1: 891. 1867.*Petroselinum Petroselinum* Karst. Deuts. Fl. 831. 1882.*Selinum Petroselinum* E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 41. 1904.

Plants 3–13 dm. high; leaves deltoid in general outline, the ultimate divisions ovate-lanceolate to linear, 2–5 cm. long, 1.5–4 cm. broad, distinct, petiolulate, toothed or lobed; petioles 1–2 dm. long; peduncles 3–8 cm. long; involucre of a few inconspicuous, entire bracts or wanting; involucre of 5–6 linear, acute, entire bractlets shorter than the flowers; rays 10–20, subequal to unequal, 1–5 cm. long; pedicels 2–5 mm. long; fruit ovoid-oblong, 2–4 mm. long, 1.5–3 mm. broad.

TYPE LOCALITY: "In Sardinia juxta seaturigines," collector unknown.

DISTRIBUTION: Central and northern Europe; adventive in Canada, the United States, Mexico, Central America, and the West Indies.

ILLUSTRATIONS: Baillon, Hist. Pl. 7: 118 (fr.); Britt. & Brown, Ill. Fl. ed. 2. 2: 642; L. H. Bailey, St. Cycl. Hort. 2476; Hegi, Ill. Fl. Mittel-Eur. 5: f. 2433, 2434, pl. 196, f. 2–2c.

43. *PIMPINELLA* L. Sp. Pl. 263. 1753.

Slender or low, erect, herbaceous or woody at the base, caulescent, branching, glabrous to hirsute perennials (or occasionally biennials or annuals), from slender taproots. Leaves simple or ternately or pinnately compound or dissected, the divisions various; cauline leaves often heteromorphic, dissected. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre usually wanting. Involucre of small bractlets or wanting. Rays few to numerous, spreading-ascending. Pedicels spreading. Flowers white (or sometimes tinged with other colors); petals broad with a narrower inflexed apex, glabrous to hirsute, the outer often radiant; calyx-teeth minute or obsolete; styles slender, the stylopodium conic or low-conic. Carpophore 2-cleft to the middle or to the base. Fruit oblong to orbicular, narrowed at the apex, rounded or cordate at the base, somewhat flattened laterally, glabrous to pubescent; ribs equal, filiform to very narrowly winged; oil-tubes several in the intervals, or forming a circle around the seed; seed pentagonal or terete in cross section, the face more or less concave.

Type species, *Pimpinella Saxifraga* L.

Perennial; basal leaves pinnate; outer petals somewhat radiant; fruit glabrous.

Fruit ovoid-oblong, 2.5–3.5 mm. long, the ribs evident.

Fruit orbicular to oval, 2–2.5 mm. long, the ribs obscure.

Plants glabrous, puberulent, or subvillous.

Plants hirsute.

Annual; basal leaves simple; petals equal; fruit puberulent.

1. *P. major*.2. *P. Saxifraga*.2a. *P. Saxifraga* subsp. *nigra*.3. *P. Anisum*.1. *Pimpinella major* (L.) Huds. Fl. Angl. 110. 1762.*Pimpinella Saxifraga* var. *major* L. Sp. Pl. 264. 1753.*Pimpinella magna* L. Mant. 219. 1771.*Tragoselinum majus* Lam. Fl. Fr. 3: 448. 1778.*Tragoselinum magnum* Moench, Meth. 99. 1794.*Carum magnum* Baillon, Hist. Pl. 7: 178. 1879.*Selinum pimpinelloides* E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 55. 1904.

Perennial, glabrous to hirtellous, 3–10 dm. high; basal leaves oblong to ovate in general outline, excluding the petioles 8–20 cm. long, 4–15 cm. broad, pinnate, the leaflets 7–13, oval to oblong-lanceolate, 2–9 cm. long, 1–4 cm. broad, the terminal usually 3-cleft, all sharply serrate to incised; petioles 1–2 dm. long; cauline leaves reduced upwards with narrow sheaths; involucre wanting; involucre wanting, or of a few deciduous bractlets; rays 8–20, subequal, 3–4 cm. long; pedicels up to 5 mm. long; marginal petals somewhat radiant, white, rose, or purple; carpophore 2-cleft to the base; fruit ovoid-oblong, 2.5–3.5 mm. long, 1.5–2 mm. broad, glabrous,

the ribs filiform but evident; oil-tubes usually 3 in the intervals, 4 on the commissure; seed-face nearly plane.

TYPE LOCALITY: "In Europa australiore," collector unknown.

DISTRIBUTION: Europe; adventive in Pennsylvania.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: *pl. 1868*; Benth. Handb. Brit. Fl. ed. 2, *f. 411*; Fiori & Paol. Ic. Fl. Ital. *f. 2284*; Coste, Fl. Fr. 2: 206; Hegi, Ill. Fl. Mittel-Eur. 5: *f. 2451 a-c*.

2. *Pimpinella Saxifraga* L. Sp. Pl. 263. 1753.

Tragoselinum Saxifragum Moench, Meth. 99. 1794.

Selinum Pimpinella E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 53. 1904.

Apium Saxifragum Calest. Webbia 1: 178. 1905.

Perennial, glabrous to puberulent or subvillos, 1.5-6 dm. high; basal leaves oblong in general outline, excluding the petioles 3.5-12 cm. long, 2-7 cm. broad, pinnate, the leaflets 6-20, ovate to orbicular, 1-3 cm. long, sharply serrate, incised, or pinnately decomposed; petioles 1.5-4 cm. long; cauline leaves reduced with smaller, linear-lanceolate divisions, the uppermost leaves reduced to narrow sheaths; peduncles 2-8 cm. long; involucre wanting, or of a few bracts; involucre wanting, or of a few bractlets; rays 7-20, 2-4 cm. long; pedicels 3-8 mm. long; calyx-teeth obsolete; marginal petals often radiant; carpophore 2-cleft to the base; fruit oval to orbicular, 2-2.5 mm. long, 1.5-2 mm. broad, glabrous, compressed laterally, the ribs filiform and somewhat obscure; oil-tubes usually 3 in the intervals, 2-4 on the commissure; seed-face slightly concave.

TYPE LOCALITY: "In Europae pascuis siccis," collector unknown.

DISTRIBUTION: Eurasia; adventive from New Brunswick to Pennsylvania and Ohio.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: *pl. 1869*; Benth. Handb. Brit. Fl. ed. 2, *f. 410*; Britt. & Brown, Ill. Fl. 2: 526; ed. 2. 2: 655; Coste, Fl. Fr. 2: 206.

2a. *Pimpinella Saxifraga* subsp. *nigra* (Mill.) Gaudin, Fl. Helv. 2: 440. 1828.

Pimpinella nigra Mill. Gard. Diet. ed. 8. *Pimpinella*, no. 4. 1768.

Carum nigrum Baillon, Hist. Pl. 7: 178. 1879. (Hyponym.)

Selinum Pimpinella nigra E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 55. 1904.

Similar to the species but hirsute.

TYPE LOCALITY: Presumably France, collector unknown.

DISTRIBUTION: Europe; adventive on the San Juan Islands, Washington.

ILLUSTRATIONS: Berg. & Schmidt, Offiz. Gewächse *pl. 1b*; Reichenb. Ic. Fl. Germ. 21: *pl. 1869*; Syreishchikov, Ill. Fl. Mosk. Gub. 2: 403.

3. *Pimpinella Anisum* L. Sp. Pl. 264. 1753.

Apium Anisum Crantz, Class. Umbell. 101. 1767.

Anisum vulgare Gaertn. Fruct. 1: 102. 1788.

Anisum officinarum Moench, Meth. 100. 1794.

Sison Anisum Spreng. Ges. Natur. Freunde Berlin Mag. 6: 260. 1814.

Tragium Anisum Link, Enum. 1: 285. 1821.

Carum Anisum Baillon, Hist. Pl. 7: 119, 178. 1879.

Pimpinele anisa St. Lag. Ann. Soc. Bot. Lyon 7: 131. 1880.

Selinum Anisum E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 56. 1904.

Annual, puberulent to pubescent, 15-75 cm. high; basal leaves ovate or cordate in general outline, excluding the petioles 2-4 cm. long, simple, serrate to incised; petioles exceeding the blades; lower cauline leaves 3-lobed or ternate, the upper ternately or pinnately divided, the uppermost with linear divisions; involucre wanting, or of a solitary bract; involucre wanting, or of a few filiform bractlets; rays 7-20, up to 4 cm. long; pedicels much exceeding the fruit; calyx-teeth obsolete; petals equal; carpophore 2-cleft nearly to the middle; fruit ovoid-oblong, 3-5 mm. long, 2-2.5 mm. broad, puberulent, compressed laterally, the ribs about equally prominent, unwinged; oil-tubes 4-8 in the intervals, 2-4 on the commissure; seed-face concave.

TYPE LOCALITY: "In Aegypto," collector unknown.

DISTRIBUTION: Mediterranean Region; adventive in Massachusetts; Yucatan.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: *pl. 1865*; Karst. Fl. Deuts. 3: *pl. 371*; E. & P. Nat. Pfl. 3: 175 (fr.); Hegi, Ill. Fl. Mittel-Eur. 5: *f. 2456*.

44. **CARUM** L. Sp. Pl. 263. 1753.

Karos Nieuwl. & Lunell, Am. Midl. Nat. 4: 485. 1916.

Slender, erect, herbaceous, caulescent, branching, glabrous biennials or perennials, from taproots. Leaves petiolate, membranaceous, pinnately dissected, the ultimate divisions narrow to filiform, entire or toothed. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre of a few filiform bracts or wanting. Involucel of bractlets like the bracts, or wanting. Rays few, spreading-ascending. Pedicels ascending, unequal. Flowers white (or rarely rose-tinged); petals obovate with a narrower inflexed apex; calyx-teeth obsolete; styles short, spreading, the stylopodium low-conic. Carphophore 2-cleft to the base. Fruit oblong to oblong-oval, flattened laterally, glabrous; ribs filiform, prominent; oil-tubes solitary in the intervals, 2 on the commissure; seed subterete in cross section, the face plane.

Type species, *Carum Carvi* L.

1. **Carum Carvi** L. Sp. Pl. 263. 1753.

Ligusticum Carvi Roth, Fl. Germ. 1: 124. 1788.

Pimpinella Carvi Jessen, Deuts. Exc.-Fl. 191. 1879.

Carvi Careum Bubani, Fl. Pyren. 2: 352. 1900.

Selinum Carvi E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 47. 1904.

Carum Carvi f. *rhodochryanthum* A. H. Moore, Rhodora 11: 178. 1909.

Karos Carvi Nieuwl. & Lunell, Am. Midl. Nat. 4: 485. 1916.

Biennial, 3-10 dm. high, glabrous throughout; leaves oblong to oval in general outline, excluding the petioles 8-15 cm. long, 3-8 cm. broad, pinnately dissected, the leaflets ovate, 2-3 cm. long, 1-3 cm. broad, distinct, laciniately cleft into linear, entire or dentate lobes; petioles 5-8 cm. long; cauline leaves with broadly dilated petioles; peduncles 4-12 cm. long; involucre of 1-3 filiform bracts, 5-10 mm. long, or wanting; involucel of bractlets similar to the bracts, 2-3 mm. long, or wanting; rays 7-14, spreading-ascending, unequal, 1-5 cm. long; pedicels ascending, 3-13 mm. long; flowers white or rarely rose-colored; fruit oblong-oval, 3-4 mm. long, 2-2.5 mm. broad, glabrous, the ribs prominent; oil-tubes solitary in the intervals, 2 on the commissure; seed-face plane.

TYPE LOCALITY: "In Europae borealis pratis," collector unknown.

DISTRIBUTION: Introduced from Europe: Newfoundland and Quebec to Virginia, west to British Columbia and Washington (*Kirkwood 1769, Muenscher & Maguire 2437*).

ILLUSTRATIONS: Karst. Fl. Deuts. ed. 2. 2: 397; Coste, Fl. Fr. 2: 209; Britt. & Brown, Ill. Fl. 2: 535; ed. 2. 2: 659; Canad. Dep. Agr. Exp. Farms Bull. 11. 23: 25.

45. **AEGOPODIUM** L. Sp. Pl. 265. 1753.

Podagraria Hill, Brit. Herb. 405. 1756.

Stout, erect, herbaceous, caulescent, branching, glabrous perennials, from creeping rootstocks. Leaves petiolate, membranaceous, ternately or ternate-pinnately compound, the leaflets large, mucronate-dentate, serrate, or lobed. Petioles sheathing. Inflorescence of loose compound umbels; the peduncles terminal and lateral, exceeding the leaves. Involucre usually wanting. Involucel usually wanting. Rays numerous, spreading-ascending. Pedicels spreading. Flowers white or reddish-tinged; petals obovate with a narrower inflexed apex; calyx-teeth minute or obsolete; styles slender, reflexed, the stylopodium thick, conic. Carphophore somewhat bifurcate. Fruit oblong-ovoid, flattened laterally, glabrous; ribs filiform, inconspicuous; oil-tubes obscure; seed subterete in cross section, the face plane.

Type species, *Aegopodium Podagraria* L.

1. **Aegopodium Podagraria** L. Sp. Pl. 265. 1753.

Ligusticum Podagraria Crantz, Stirp. Austr. 3: 84. 1767.

Seseli Aegopodium Scop. Fl. Carn. ed. 2. 1: 215. 1772.

Sium Podagraria Weber; Wiggers, Prim. Fl. Holsat. 24. 1780.

Podagraria Aegopodium Moench, Meth. 90. 1794.

Sison Podagraria Spreng. Umbell. Prodr. 35. 1813.

Pimpinella Podagraria Lestib. f. Bot. Belg. 2: 269. 1827.

Carum Podagraria Roth, Enum. Pl. Germ. 1: 946. 1827.

Apium Podagraria Caruel in Parl. Fl. Ital. 8: 467. 1889.

Selinum Podagraria E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 57. 1904.

Erect, alternately branching above, 4.5-9 dm. high, glabrous throughout; leaves deltoid in general outline, excluding the petioles 3-20 cm. long, 3-30 cm. broad, the leaflets 2.5-8 cm. long, 1-4 cm. broad, acute to acuminate at the apex, rounded, caudate, or decurrent at the base, sessile to short-petiolulate, the margins sharply mucronate-dentate; petioles 3-6 dm. long, slightly sheathing at the base; cauline leaves reduced upwards, usually ternate, subsessile with conspicuous sheaths; peduncles terminal, 5-30 cm. long, exceeding the leaves; rays 15-25, ascending, subequal, 1.5-7 cm. long; pedicels 1-7 mm. long; fruit oblong-ovoid, rounded at the apex and base, 3-4 mm. long, 1.5-3 mm. broad, glabrous, the ribs filiform, inconspicuous.

TYPE LOCALITY: "In Europa ad sepes inque pomariis," collector unknown.

DISTRIBUTION: Eurasia; introduced in waste places: Quebec, eastern Massachusetts, south to central Pennsylvania and New Jersey.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: pl. 1861; Britt. & Brown, Ill. Fl. 2: 539; ed. 2. 2: 654; Coste, Fl. Fr. 2: 209; L. H. Bailey, St. Cycl. Hort. 223.

46. BUPLEURUM L. Sp. Pl. 236. 1753.

Agrostana Hill, Veg. Syst. 5: 32. 1763.

Tenorea Spreng. Umbell. Prodr. 32. 1813.

Odontites Spreng. Ges. Nat. Freunde Berlin Mag. 6: 258. 1814.

Buprestis Spreng. Ges. Nat. Freunde Berlin Mag. 6: 258. 1814.

Diaphyllum Hoffm. Gen. Umbell. ed. 2. 115. 1816.

Isophyllum Hoffm. Gen. Umbell. ed. 2. 115. 1816.

Agostana Stuart; S. F. Gray, Nat. Arr. Brit. Pl. 2: 526. 1821.

Diatropa Dumort. Fl. Belg. 76. 1827.

Trachypleurum Reichenb. Consp. 143. 1828.

Oriparia Raf. Bull. Bot. Seringe 218. 1830.

Perfoliata Raf. Good Book 54. 1840.

Tepso Raf. Good Book 54. 1840.

Perfoliata Fourr. Ann. Soc. Linn. Lyon II. 16: 390. 1868.

Odontea Fourr. Ann. Soc. Linn. Lyon II. 16: 391. 1868.

Low or slender, erect or spreading, herbaceous or woody at the base, caulescent or rarely acaulescent, alternately or dichotomously branching, glabrous and often glaucous annuals, perennials, or rarely biennials, from woody or fibrous taproots. Basal leaves petiolate, membranaceous, entire, with usually parallel venation; cauline leaves usually sessile, and clasping, auriculate, or perfoliate. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre of conspicuous foliaceous bracts, or wanting. Involucel of broad, foliaceous, often connate, rarely colored bractlets, sometimes longer than the flowers and fruit. Rays few, spreading-ascending to divaricate. Pedicels spreading. Flowers yellow, sometimes greenish- or purplish-tinged; petals oblong to orbicular with a narrower inflexed apex; calyx-teeth obsolete; styles short, the stylopodium depressed-conic. Carpophore 2-cleft to the base. Fruit oblong to orbicular or ellipsoid, slightly flattened laterally and constricted at the commissure, glabrous or roughened or tuberculate; ribs filiform; oil-tubes numerous and continuous about the seed cavity, or several in the intervals and on the commissure, or obscure or wanting; seed subterete in cross section, the face plane.

Type species, *Bupleurum rotundifolium* L.

Perennial; bractlets shorter than the flowers and fruit; oil-tubes continuous about the seed and one in each rib.

Annual; bractlets longer than the flowers and fruit; oil-tubes obscure or wanting.

Involucre present, vitreo-fenestrate; cauline leaves not perfoliate.

Involucre wanting; cauline leaves perfoliate.

Rays 4-10; fruit oblong-oval, smooth.

Rays 2-5; fruit ovoid-globose, tuberculate or rugose.

1. *B. americanum*.

2. *B. Fontanesii*.

3. *B. rotundifolium*.

4. *B. subovalum*.

1. *Bupleurum americanum* Coult. & Rose, Rev. N. Am.

Umbell. 115. 1888.

Bupleurum angulosum sensu Cham. & Schlecht. Linnaea 1: 383, in part. 1826. Not *B. angulosum* L. 1753.

Bupleurum angulosum sensu H. & A. Bot. Beech. Voy. 124. 1832. Not *B. angulosum* L. 1753.

Bupleurum ranunculoides sensu Hook. Fl. Bor. Am. 1: 263. 1832. Not *B. ranunculoides* L. 1753.

? *Bupleurum ranunculoides* var. *arcticum* Regel in Regel & Tiling, Fl. Ajan. 97. 1858.

? *Bupleurum ranunculoides* var. *trivadiatum* f. *arcticum* H. Wolff in Engler, Pflanzenreich 43 (4223): 117. 1910.

Bupleurum purpureum Blankinship, Mont. Agr. Coll. Stud. 1: 89. 1905.

Bupleurum triradiatum var. *ajanense* K.-Pol. Acta Hort. Petrop. 30: 200, as to American plants. 1915.

? *Bupleurum triradiatum* var. *humilius* Rupr.; K.-Pol. Acta Hort. Petrop. 30: 200. 1915.

? *Bupleurum triradiatum* var. *arcticum* K.-Pol. Acta Hort. Petrop. 30: 200. 1915.

Perennial and often caespitose, 2-40 cm. high, green and glabrous throughout; leaves linear to oblong-lanceolate, 2-16 cm. long, 3-8 mm. broad, acute, tapering at the base but sessile or nearly so, clustered at the base; cauline leaves few or none, lanceolate, more or less auriculate; peduncles 2-10 cm. long; involucre of 2-6 ovate to lanceolate, acute, foliaceous bracts, 5-15 mm. long, 3-7 mm. broad; involucre of 6-8 oblanceolate to ovate, acute bractlets, 3-5 mm. long, 1-3 mm. broad, united at the base, shorter than the flowers and fruit; rays 4-14, spreading-ascending, unequal, 5-35 mm. long; pedicels 1-3 mm. long; flowers yellow or purplish; fruit oblong, 3-4 mm. long, 2-2.5 mm. broad, smooth, the ribs filiform, evident; oil-tubes numerous about the seed and 1 in each rib; seed-face plane.

TYPE LOCALITY: Alaska, *Lay* & *Collie*.

DISTRIBUTION: Yukon Territory and Alaska, south to northern Wyoming and Montana (*Mexia* 2258, *Payson* & *Payson* 2682, 3014).

ILLUSTRATIONS: Coult. & Rose, Rev. N. Am. Umbell. f. 128; Contr. U. S. Nat. Herb. 7: 84 (fr.); Jour. Russe Bot. 1913: pl. 2; Clements & Clements, Rocky Mt. Fl. pl. 35; Fedch. Fl. Asiat. Ross. 10: 20; Mont. Agr. Coll. Stud. 1: 90.

2. *Bupleurum Fontanesii* Caruel in Parl. Fl. Ital. 8: 417. 1889.

Bupleurum Odontites L. Sp. Pl. 237, in part. 1753.

Bupleurum Odontites var. *Fontanesii* Fiori & Paol. Ic. Fl. Ital. f. 2254. 1899.

Tepso Odontites Raf. Good Book 54. 1840.

Annual, 3-8 dm. high, green and glabrous throughout; leaves linear-lanceolate to narrowly linear, 20 cm. long, about 5 mm. broad, long-acuminate, narrowed at the base and petiolate, clustered at the base; cauline leaves numerous, like the basal, sessile but not perfoliate; peduncles slender; involucre of 5-6 lanceolate, acuminate bracts, vitreo-fenestrate or translucent in age; involucre of 5-6 lanceolate bractlets, united at the base, two to three times as long as the flowers and fruit; rays 5-7, divaricate or rarely contracted, 20-30 mm. long; pedicels filiform, 2-5 times as long as the fruit; petals about 0.8 mm. long; fruit ovoid-ellipsoid, about 1 mm. long, 0.5-0.7 mm. broad, smooth, the ribs filiform; seed-face concave.

TYPE LOCALITY: Italy, collector unknown.

DISTRIBUTION: Introduced from the Mediterranean region into Massachusetts and Oregon.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: pl. 1885, f. 1-5; Fiori & Paol. Ic. Fl. Ital. f. 2254; Engler, Pflanzenreich 43 (4228): 65.

3. *Bupleurum rotundifolium* L. Sp. Pl. 236, excl. var. β . 1753.

Bupleurum perfoliatum Lam. Fl. Fr. 3: 405, in part. 1778.

Bupleurum perfoliatum var. *rotundifolium* Desv. Jour. de Bot. Desv. 2: 315. 1809.

Diatropa rotundifolia Dumort. Fl. Belg. 76. 1827.

Perfolisa obtusifolia Raf. Good Book 54. 1840.

Tenorea rotundifolia Bubani, Fl. Pyren. 2: 360. 1900.

Bupleurum rotundifolium f. *typicum* H. Wolff in Engler, Pflanzenreich 43 (4228): 42. 1910.

Annual, 2-6 dm. high, glaucous and glabrous throughout; basal and lower cauline leaves oblong- to obovate-lanceolate, 3-8 cm. long, 1.5-5 cm. broad, rounded at the apex, subpetiolate or perfoliate at the base; upper cauline leaves numerous, ovate, perfoliate; peduncles 2-7 cm. long; involucre wanting; involucre of 5-6 broadly ovate to obovate, acuminate bractlets, 8-12 mm. long, 6-10 mm. broad, united at the base, two to three times as long as the flowers and fruit; rays 4-10, spreading-ascending, 5-15 mm. long; pedicels 10-12, equaling or shorter than the fruit; flowers yellow, the petals 0.5-0.8 mm. long; fruit oblong-oval, 2.5-3 mm. long, 1.5-2 mm. broad, dark purplish-brown, smooth, the ribs filiform; seed-face slightly concave.

TYPE LOCALITY: "Inter Europae australis segetes." collector unknown.

DISTRIBUTION: Introduced from the Mediterranean region; New York to North Carolina, west to South Dakota and Arkansas.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: pl. 1880; Bot. Gaz. 12: pl. 9, f. 77; Coste, Fl. Fr. 2: 203; Britt. & Brown, Ill. Fl. 2: 529; ed. 2. 2: 639.

4. *Bupleurum subovatum* Link; Spreng. Sp. Umbell. 19. 1818.

Bupleurum rotundifolium var. β . L. Sp. Pl. 236. 1753.
Bupleurum protractum Hoffmg. & Link, Fl. Port. 2: 387. 1820.
Bupleurum rotundifolium var. *subovatum* Fiori & Paol. Ic. Fl. Ital. 265. 1899.
Tenorea protracta Bubani, Fl. Pyren. 2: 360. 1900.
Trachypleurum subovatum Calest. Webbia 163. 1905.

Annual, about 5 dm. high, glaucous and glabrous throughout; leaves linear to oblong-lanceolate, subpetiolate; cauline leaves numerous, broadly ovate, 5–20 cm. long, 1–10 cm. broad, acute to acuminate, perfoliate; peduncles 1–8 cm. long; involucre wanting; involucre of 5–6 suborbicular to obovate-rotund, short-acuminate bractlets, 10–15 mm. long, united at the base or rarely to the middle, twice as long as the flowers and fruit; rays 2–5, divaricate, 5–20 mm. long; pedicels 10–20, slender, half as long as the fruit; petals about 1.25 mm. long; fruit ovoid-globose, 3–5 mm. long, about 3.5 mm. broad, black, tuberculate or rugose, the ribs prominent; seed-face plane.

TYPE LOCALITY: "Habitat inter Europae australis segetes," collector unknown.

DISTRIBUTION: Introduced from the Mediterranean region into Pennsylvania.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: pl. 1880; G. Post, Fl. Syria 340; Fiori & Paol. Ic. Fl. Ital. f. 2244; Coste, Fl. Fr. 2: 203; Heukels, Fl. Nederl. 2: 439; Engler, Pflanzenreich 43 (4228): 45.

DOUBTFUL SPECIES

BUPLEURUM TUBEROSUM Sessé & Moc. Fl. Mex. 82. 1894. Described from Mexico (?). The writers have been unable to obtain any information concerning the application of this name. Probably not of this genus.

BUPLEURUM RUPESTRE Raf. Med. Repos. II. 5: 353. 1808. (Nomen nudum.)

47. *CONIUM* L. Sp. Pl. 243. 1753.

Slender, erect, herbaceous, caulescent, branching, glabrous biennials, the stems spotted, from stout taproots. Leaves petiolate, membranaceous, pinnately decomposed, the ultimate divisions pinnately incised. Petioles sheathing. Inflorescence a compound dichasium of loose compound umbels; peduncles terminal and axillary. Involucre of numerous, inconspicuous, lanceolate bracts. Involucre of numerous bractlets like the bracts, shorter than the pedicels. Rays numerous, spreading-ascending. Pedicels spreading. Flowers white; petals obovate or cuneate with a narrower inflexed apex; calyx-teeth obsolete; styles reflexed, the stylopodium depressed-conic. Carpophore entire. Fruit broadly ovoid, flattened laterally, glabrous; ribs prominent, obtuse, undulate, crenate; oil-tubes very small and numerous, irregular; seed terete in cross section, the face deeply and narrowly sulcate.

Type species, *Conium maculatum* L.

1. *Conium maculatum* L. Sp. Pl. 243. 1753.

Cicuta officinalis Crantz, Class. Umbell. 98. 1767.
Coriandrum Cicuta Crantz, Stirp. Austr. 3: 100. 1767.
Conium Cicuta Neck. Delic. 142. 1768.
Cicuta major Lam. Fl. Fr. 3: 456. 1778.
Coriandrum maculatum Roth, Fl. Germ. 1: 130. 1788.
Conium maculosum Pall. Reise Südl. Statth. 1: 478. 1799.
Sium Conium Vest. Man. Bot. 513. 1806.
Selinum Conium E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 79. 1904.

Plants 5–30 dm. high; leaves broadly ovate in general outline, excluding the petioles 1.5–3 dm. long, 5–30 cm. broad; petioles dilated; rays 15–25 mm. long, subequal; involucre of ovate-acuminate, short bracts; involucre of bractlets like the bracts, with a conspicuous midrib, shorter than the pedicels; pedicels 4–6 mm. long; fruit 2–2.5 mm. long, about 2 mm. broad, the ribs very prominent in the dry fruit.

TYPE LOCALITY: "In Europae cultis, agris, ruderalis," collector unknown.

DISTRIBUTION: Europe, Asia, North Africa; widely introduced throughout Canada, the United States, and Mexico.

ILLUSTRATIONS: Benth. Handb. Brit. Fl. ed. 2, f. 446; Reichenb. Ic. Fl. Germ. 21: pl. 2032; Baillon, Hist. Pl. 7: 133, 134; Bot. Gaz. 12: pl. 2, f. 23 (fr.); Britt. & Brown, Ill. Fl. 2: 532; ed. 2. 2: 653; Sturm, Fl. Deuts. ed. 2. 12: pl. 38; Pammel, Man. Pois. Pl. 50; Madroño 1: 125; Muensch. Pois. Pl. f. 55.

48. **AMMI** L. Sp. Pl. 243. 1753.*Visnaga* Gaertn. Fruct. 92. 1788.

Slender, erect, herbaceous, caulescent, branching, essentially glabrous annuals, biennials, or perennials, from slender taproots. Leaves petiolate, membranaceous, ternate-pinnately or pinnately dissected, the ultimate divisions filiform to lanceolate. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary. Involucre of numerous entire or divided bracts. Involucel of numerous entire bractlets shorter or longer than the pedicels. Rays numerous, spreading-ascending. Pedicels spreading. Flowers white; petals ovate to obovate with a broad, shallowly bilobed, inflexed apex; calyx-teeth minute; styles slender, more than twice as long as the depressed-conic stylopodium. Carpophore entire or 2-cleft to the base, flat. Fruit oblong to ovoid, flattened laterally, glabrous; ribs acute; oil-tubes solitary in the intervals, 2 on the commissure; seed subtetrate in cross section, the face plane.

Type species, *Ammi majus* L.

Inflorescence borne on a discoid receptacle; umbels compact in fruit; carpophore entire.

1. *A. Visnaga*.

Inflorescence not borne on a discoid receptacle; umbels spreading in fruit; carpophore 2-cleft to the base.

2. *A. majus*.1. **Ammi Visnaga** (L.) Lam. Fl. Fr. 3: 462. 1778.*Daucus Visnaga* L. Sp. Pl. 242. 1753.*Apium Visnaga* Crantz, Class. Umbell. 104. 1767.*Selinum Visnaga* E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 44. 1904.

Erect, branching biennial (?), 2-8 dm. high, glabrous throughout; leaves deltoid in general outline, excluding the petioles 5-20 cm. long, pinnately decomposed, the ultimate divisions linear to filiform, setaceous to cuspidate-acute, divaricate, entire, 5-35 mm. long, 0.5-1 mm. broad; petioles about 10 cm. long; cauline leaves ternately or pinnately dissected; peduncles 8-14 cm. long; involucre bracts equaling or exceeding the rays; involucel of numerous setiform-acute, entire bractlets, ascending at maturity and equaling or exceeding the pedicels; rays 60-100, subfiliform, unequal, 2-5 cm. long, spreading in flower but rigidly contracted in fruit, borne on a discoid receptacle; pedicels numerous, filiform, unequal, 3-13 mm. long, spreading in flower but rigidly contracted in fruit, borne on a small discoid receptacle; carpophore entire; fruit oblong-ovoid to ovoid, 2-2.5 mm. long, 1.5-1.7 mm. broad.

TYPE LOCALITY: "Habitat in Europa australi," collector unknown.

DISTRIBUTION: Eurasia; sporadically introduced; Pennsylvania, North Carolina, Alabama, Florida, Oregon, California, Bermuda, and Oaxaca.

ILLUSTRATIONS: Fiori & Paol. Ic. Fl. Ital. f. 2271; Coste, Fl. Fr. 2: 210; Cadevall & Sallent, Fl. Catal. 3: 85.

2. **Ammi majus** L. Sp. Pl. 243. 1753.*Apium Ammi* Crantz, Stirp. Austr. 3: 109. 1767.*Apium Ammi-majus* Crantz, Class. Umbell. 103. 1767.*Selinum ammoides* E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 43. 1904.*Carum majus* K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 198. 1916.

Erect, branching annual, 2-8 dm. high, the inflorescence scabrous; leaves oblong in general outline, excluding the petioles 6-20 cm. long, 5-14 cm. broad, ternate or pinnate, the leaflets lanceolate, obtuse to acute at the apex, cuneate at the base and somewhat recurved on the rachis, 10-15 mm. long, 5-20 mm. broad, setulose-serrate with minute, subequal teeth; petioles 3-13 cm. long; cauline leaves bipinnate with linear divisions, the uppermost greatly reduced; peduncles 8-14 cm. long; involucre bracts exceeding the rays; involucel of numerous linear-acuminate, scarious-margined bractlets, spreading to reflexed at maturity and slightly shorter than the pedicels; rays 50-60, subfiliform, 2-7 cm. long, spreading to ascending in flower, but spreading in fruit, somewhat scabrous; pedicels numerous, filiform, unequal, 1-10 mm. long, spreading to ascending; carpophore bifid to the base; fruit oblong, 1.5-2 mm. long, 1 mm. or less broad.

TYPE LOCALITY: "In Europa australi," collector unknown.

DISTRIBUTION: Eurasia; sporadically introduced; Newfoundland, Pennsylvania, South Dakota, Texas, Oregon, California, Tamaulipas, Bermuda, and Martinique.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: *pl. 1864*; Coste, Fl. Fr. 2: 210; Britton, Fl. Bermuda 277.

49. **FALCARIA** Host. Fl. Austr 1: 381. 1827; nomen conservandum.

Slender, erect, herbaceous, caulescent, branching, glabrous biennials or perennials (rarely annuals). Leaves petiolate, membranaceous, entire or 1-2-ternate, the divisions cartilaginous-serrate or pinnatisect. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre of numerous, narrow, entire bracts, or wanting. Involucel of bractlets like the bracts. Rays rather few, spreading or divaricate. Pedicels slender, spreading. Flowers white; petals obovate to orbiculate with a narrower inflexed apex; calyx-teeth prominent; styles short, equaling the stylopodium; stylopodium low-conic with an obsolete undulate margin. Carpophore 2-cleft to the base. Fruit oblong, flattened laterally, glabrous; ribs depressed, obtuse, broader than the intervals; oil-tubes usually solitary in the intervals, usually 2 on the commissure; seed subterete in cross section, the face plane; strengthening cells present.

Type species, *Sium Falcaria* L. [*Falcaria soides* (Wibel) Asch.].

1. **Falcaria soides** (Wibel) Asch. Fl. Brand. 1: 241. 1860.

Sium Falcaria L. Sp. Pl. 252. 1753.

Seseli Falcaria Crantz, Stirp. Austr. 3: 95. 1767.

Drepanophyllum soides Wibel, Prim. Fl. Werth. 196. 1799.

Prionitis falcata Delarbre, Fl. Auv. ed. 2: 421. 1800.

Falcaria vulgaris Bernh. Syst. Verz. Pfl. Erf. 176. 1800.

Sium falcatum Dubois, Méth. 442. 1803.

Bunium Falcaria Bieb. Fl. Taur.-Cauc. 1: 211. 1808.

Drepanophyllum Falcaria Desv. Fl. Anjou 248. 1827.

Falcaria Rivini Host, Fl. Austr. 1: 381. 1827.

Prionitis Falcaria Dumort. Fl. Belg. 77. 1827.

Critamus Falcaria Reichenb. in Mössler, Handb. ed. 2: 478. 1827.

Helosciadium Falcaria Hegetschw. Fl. Schw. 262. 1840.

Carum Falcaria Lange in Wilk. & Lange, Prodr. Fl. Hisp. 3: 92. 1880.

Falcaria Falcaria Karst. Deuts. Fl. 835. 1882.

Selinum Falcaria E. H. L. Krause in Sturm, Fl. Deuts. ed. 2: 12: 45. 1904.

Ammi Falcaria Börner, Fl. Deuts. Volk. 1912.

Plants 3-9 dm. high; leaves oblong to ovate in general outline, excluding the petioles 1.5-3 dm. long, 1-2-ternate or pinnate, the leaflets linear-lanceolate or linear, 5-25 cm. long, 4-15 mm. broad, often falcate, finely serrate and callous-margined; petioles 1.5-3 dm. long; cauline leaves ternately or pinnately divided; peduncles 2-7 cm. long; involucre of 4-12 linear, acute, unequal, entire bracts 5-20 mm. long; bractlets of the involucel similar to the bracts, 3-10 mm. long; rays 10-20, 2-4.5 cm. long; pedicels 5-10 mm. long; fruit linear-oblong, 3-5 mm. long, 1-2 mm. broad.

TYPE LOCALITY: "In Flandria, Helvetia, Bohemia, Alsatia, Gallia," collector unknown.

DISTRIBUTION: Eurasia; introduced in New York, Pennsylvania, Iowa, Missouri, Kansas, and Costa Rica.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: *pl. 1862*; Karst. Fl. Deuts. 2: 400 (fr.); Fiori & Paol. Ic. Fl. Ital. f. 2293; Coste, Fl. Fr. 2: 211; Sturm, Fl. Deuts. ed. 2: 12: *pl. 7*.

50. **PERIDERIDIA** Reichenb. Handb. 219. 1837.

Eulophus Nutt.; DC. Coll. Mém. 5: 69. 1829. Not *Eulophus* R. Br. 1821.

Alenia H. & A. Bot. Beech. Voy. 349. 1838.

Edosmia Nutt.; T. & G. Fl. N. Am. 1: 612. 1840.

Podosciadium A. Gray, Proc. Am. Acad. 7: 345. 1868.

Taeniopleurum Coult. & Rose, Bot. Gaz. 14: 283. 1889.

Carum of American authors, not *Carum* L. 1753.

Slender or stout, erect, herbaceous, caulescent, branching, glabrous perennials, from tuberous or fusiform fascicled roots. Leaves petiolate, membranaceous, ternately, pinnately, or ternate-pinnately compound, the ultimate divisions ovate to linear. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral, longer than the leaves.

Involucre of few to numerous narrow, more or less scarious, entire bracts. Involucel of usually scarious or colored bractlets, shorter or longer than the flowers. Rays few to numerous, spreading-ascending. Pedicels spreading. Flowers white or pink; petals obovate or obcordate with a narrower inflexed apex; calyx-teeth conspicuous; styles short, erect or divaricate, or slender and recurved; stylopodium conic or low-conic. Carpophore 2-cleft to the base. Fruit linear-oblong to orbicular, flattened laterally, glabrous; ribs filiform, prominent to inconspicuous; oil-tubes 1-5 in the intervals, 2-8 on the commissure; seed subterete in cross section, loose in the pericarp or remaining firmly attached to it, the face plane or broadly concave, with or without a central longitudinal ridge.

Type species, *Eulophus americanus* Nutt. (*Perideridia americana* Reichenb.).

- Styles short, usually less than 1 mm. long, stout, erect or divaricate; plants coarse from fascicles of numerous fibrous or slightly thickened roots.
- Leaves ternate-pinnately dissected; leaflets ovate or ovate-lanceolate, 5-25 mm. broad; seed becoming free from the pericarp. 1. *P. Howellii*.
- Leaves pinnately dissected; leaflets linear or lanceolate, 1-6 mm. broad; seed remaining attached to the pericarp. 2. *P. Kelloggii*.
- Styles elongate, filiform, reflexed; plants usually more slender from solitary tubers or fascicles of few tuberous roots.
- Fruit 3.5 mm. long, 2.5-4 mm. broad; pedicels 8-15 mm. long; eastern United States. 8. *P. americana*.
- Fruit 2-8 mm. long, 1.5-2.5 mm. broad; pedicels 2-10 mm. long; western United States.
- Basal leaves 1-2-pinnate or 1-2-ternate, the petioles and rachis not dilated, the ultimate divisions not dimorphic.
- Fruit orbicular to suborbicular, 2-3 mm. long, 1.5-2.5 mm. broad; bractlets usually setaceous. 3. *P. Gairdneri*.
- Fruit oblong to ovoid, 2.5-3.5 mm. long, 1.5-2.5 mm. broad; bractlets scarious or scarious-margined, often conspicuous.
- Fruit usually rounded at base and apex; oil-tubes solitary in the intervals; Washington, Oregon, and northern California. 4. *P. oregana*.
- Fruit usually narrowed at base and apex; oil-tubes 2-4 in the intervals; central and southern California, Nevada, and Arizona. 5. *P. Parishii*.
- Basal leaves ternate-pinnately or pinnately decompound, the petioles and rachis dilated, the ultimate divisions usually dimorphic.
- Rays 10-20, 1-2.5 cm. long, forming small, compact umbels. 6. *P. Bolanderi*.
- Rays 5-12, 3-8 cm. long, forming large, loose umbels.
- Fruit 4-6 mm. long; oil-tubes several in the intervals. 7. *P. Pringlei*.
- Fruit 6-8 mm. long; oil-tubes solitary in the intervals. 9. *P. californica*.

1. *Perideridia Howellii* (Coul. & Rose) Mathias,

Brittonia 2: 244. 1936.

Carum Howellii Coul. & Rose, Rev. N. Am. Umbell. 129. 1888.

Taeniopleurum Howellii Coul. & Rose, Bot. Gaz. 14: 284. 1889.

Ataenia Howellii Greene, Pittonia 1: 274. 1889.

Stout, from a fascicle of fibrous or slightly thickened roots, 6-12 dm. high; leaves oblong to ovate in general outline, excluding the petioles 1-3 dm. long, 1-2-pinnate, the leaflets ovate to ovate-lanceolate, 2-4 cm. long, 5-25 mm. broad, entire to serrate-lobed; petioles 6-25 cm. long; peduncles slender, 5-15.5 cm. long; involucre of several linear to linear-spatulate, acuminate or acute, scarious-margined, reflexed bracts, 10-20 mm. long; involucel of several bractlets like the bracts, 3-6 mm. long, often longer than the flowers but shorter than the fruit; rays usually 20-25, 3-6 cm. long; pedicels 4-8 mm. long; styles divergent, less than 0.5 mm. long; stylopodium conic; fruit oblong, 3-6 mm. long, 2.5-4 mm. broad; oil-tubes solitary in the intervals, 2 on the commissure; seed sulcate under the tubes, the face plane to concave.

TYPE LOCALITY: Wet places, Grants Pass, Josephine County, Oregon, *Thomas Howell 710*.

DISTRIBUTION: Southern Oregon and northern California (*Cusick 2957*, *Heller 11,678*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 7: 102 (fr.); Madroño 1: 129.

2. *Perideridia Kelloggii* (A. Gray) Mathias, Brittonia 2: 244. 1936.

Carum Kelloggii A. Gray, Proc. Am. Acad. 7: 344. 1868.

Ataenia Kelloggii Greene, Pittonia 1: 274. 1889.

Stout, from a fascicle of fibrous or slightly thickened roots, 7-15 dm. high; leaves deltoid in general outline, excluding the petioles 15-30 cm. long, 1-2-ternate-pinnate, the ultimate

divisions linear to lanceolate, entire, 3–12 cm. long, 1–6 mm. broad; petioles 4–7 cm. long, often sheathing throughout; peduncles slender, 5–18 cm. long; involucre of several linear to linear-lanceolate, more or less scarious, reflexed bracts, 5–15 mm. long; involucre of several linear to lanceolate, more or less scarious, eventually reflexed bractlets, 2–6 mm. long, often longer than the flowers but shorter than the fruit; rays 10–20, 15–65 mm. long; pedicels 2–6 mm. long; styles divergent, about 0.5 mm. long; stylopodium conic; fruit oblong, 4–5 mm. long, 2–3 mm. broad; oil-tubes solitary in the intervals, 2 on the commissure; seed sulcate under the tubes, the face plane to slightly concave with a commissural ridge.

TYPE LOCALITY: San Jose, Santa Clara County, California, *Brewer 832*.

DISTRIBUTION: Sierra Nevada and Coast Ranges of northern and central California (*Heller 7535, Jones 29,049*).

ILLUSTRATION: Madroño 1: 127.

3. *Perideridia Gairdneri* (H. & A.) Mathias, *Brittonia* 2: 244. 1936.

? *Osmorhiza ? edulis* Raf. *Med. Fl.* 2: 249. 1830.

Atenia Gairdneri H. & A. *Bot. Beech. Voy.* 349. 1838.

Edosmia Gairdneri T. & G. *Fl. N. Am.* 1: 612. 1840.

Edosmia montana Nutt.; T. & G. *Fl. N. Am.* 1: 612, as syn. 1840.

Edosmia praealtia Nutt.; T. & G. *Fl. N. Am.* 1: 612, as syn. 1840.

Carum Gairdneri A. Gray, *Proc. Am. Acad.* 7: 344. 1868.

Carum montanum Blankinship, *Mont. Agr. Coll. Sci. Stud.* 1: 91. 1905.

Carum Garretii A. Nelson; Coult. & Rose, *Contr. U. S. Nat. Herb.* 12: 443. 1909.

Carum montana Rydb. *Bull. Torrey Club* 40: 67. 1913.

Atenia Garretii Rydb. *Bull. Torrey Club* 40: 68. 1913.

Carum erythrorrhizum Piper, *Proc. Biol. Soc. Wash.* 29: 100. 1916.

Atenia erythrorrhiza H. Wolff in Engler, *Pflanzenreich* 90 (4229): 172. 1927.

Slender, from a solitary fusiform tuber or a small fascicle of tubers, 3–12 dm. high; leaves oblong to ovate in general outline, excluding the petioles 1–2 dm. long, pinnate or occasionally bipinnate, the ultimate divisions linear or rarely lanceolate, 2–15 cm. long, entire or rarely lobed or toothed; petioles 4–8 cm. long; peduncles slender, 2–12 cm. long; involucre wanting or of 1–several setaceous bracts; involucre of several linear, scarious or green bractlets, 1–4 mm. long, mostly shorter than the flowers and fruit; rays usually 8–20, 1.5–6 cm. long; pedicels 3–7 mm. long; styles slender, recurved, about 1 mm. long; stylopodium low; fruit orbicular to suborbicular, 2–3 mm. long, 1.5–2.5 mm. broad; oil-tubes solitary in the intervals, 2 on the commissure; seed terete in cross section.

TYPE LOCALITY: California, *Lay & Collie*.

DISTRIBUTION: Alberta, South Dakota, and Montana to British Columbia and Washington, south to Arizona and New Mexico and through the Coast Ranges to Southern California (*Heller & Heller 3422, Sandberg & Leiber 414*).

ILLUSTRATIONS: *Mont. Agr. Coll. Stud.* 1: 92; Madroño 1: 128; Rydb. *Fl. Pr. & Pl.* 592.

4. *Perideridia oregana* (S. Wats.) Mathias, *Brittonia* 2: 243. 1936.

Edosmia oregana Nutt.; T. & G. *Fl. N. Am.* 1: 612, as syn. 1840.

Carum oreganum S. Wats. *Proc. Am. Acad.* 20: 368. 1885.

Atenia oregana Greene, *Pittonia* 1: 274. 1889.

Slender, from a fascicle of fusiform or ovoid tubers, 3–6 dm. high; leaves lanceolate to deltoid in general outline, 5–15 cm. long, 1–2-ternate or ternate-pinnate, the ultimate divisions linear to narrowly lanceolate, 15–65 mm. long, the terminal often elongate; petioles 3–9 cm. long; peduncles slender, 2.5–14 cm. long; involucre of several linear to lanceolate, scarious bracts, 2–8 mm. long, or occasionally wanting; involucre of several linear to lanceolate, acuminate, scarious bractlets, 2–7 mm. long, shorter or longer than the flowers and fruit; rays 6–20, 1–3 cm. long; pedicels 2–5 mm. long; styles slender, recurved, 1–1.5 mm. long; stylopodium low; fruit oblong-ovoid, 2.5–3.5 mm. long, 2–2.5 mm. broad; oil-tubes solitary in the intervals, 2 on the commissure; seed sulcate under the tubes.

TYPE LOCALITY: "Wappatoo [Sauvies] Island," at the mouth of the Willamette River, Oregon, *Nuttall*.

DISTRIBUTION: Western Washington and Oregon, south to northern California (*Butler 1822, Cusick 2948*).

ILLUSTRATION: *Contr. U. S. Nat. Herb.* 7: 103 (fr.).

5. *Perideridia Parishii* (Coul. & Rose) Nelson & Macbr.

Bot. Gaz. 61: 33. 1916.

- Caryum Gairdneri* var. *latifolium* A. Gray, Proc. Am. Acad. 7: 344. 1868.
Pimpinella Parishii Coul. & Rose, Bot. Gaz. 12: 157. 1887.
Eulophus Parishii Coul. & Rose, Rev. N. Am. Umbell. 112. 1888.
Eulophus Pringlei var. *simplex* Coul. & Rose, Rev. N. Am. Umbell. 113. 1888.
Eulophus Parishii var. *Rusbyi* Coul. & Rose, Bot. Gaz. 14: 281. 1889.
Caryum Lemmonii Coul. & Rose, Bot. Gaz. 14: 283. 1889.
Eulophus simplex Coul. & Rose, Contr. U. S. Nat. Herb. 7: 112. 1900.
Perideridia simplex Nelson & Macbr. Bot. Gaz. 61: 33. 1916.
Conopodium Parishii K.-Pol. Bull. Soc. Nat. Mosc. II, 29: 205. 1916.
Conopodium simplex K.-Pol. Bull. Soc. Nat. Mosc. II, 29: 205. 1916.
Perideridia Pringlei var. *simplex* House, Bull. N. Y. State Mus. 233-234: 68. 1921.
Perideridia Rusbyi House, Bull. N. Y. State Mus. 233-234: 68. 1921.
Ataxia Lemmonii H. Wolff in Engler, Pflanzenreich 90 (4²²⁹): 172. 1927.
Eulophus Parishii var. *typicus* H. Wolff in Engler, Pflanzenreich 90 (4²²⁹): 334. 1927.

Slender, from a solitary tuber or a fascicle of fusiform or ovoid tubers, 2-8 dm. high; leaves lanceolate to ovate in general outline, excluding the petioles 5-15 cm. long, ternate, or sometimes simple or biternate, the leaflets linear to lanceolate, 2-10 cm. long, the terminal often elongate and more or less distant; petioles 3-7 cm. long; peduncles slender, 6-15 cm. long; involucre wanting, or of an occasional minute bract; involucre of several linear to obovate, scarious or colored bractlets, 2-4 mm. long, shorter than the flowers and fruit; rays 8-15, usually unequal, 1-4 cm. long; pedicels 3-8 mm. long; styles slender, recurved, 1-2 mm. long; stylopodium conic; fruit oblong to ovoid, 2.5-3.5 mm. long, 1.5-2.5 mm. broad; oil-tubes 2-4 in the intervals, 6 on the commissure.

TYPE LOCALITY: Damp meadows, Bear Valley, San Bernardino Mountains, California, *Parish* 987 (part).

DISTRIBUTION: Nevada to California, south to Arizona and through the Sierra Nevada to southern California (*Heller 11,649, Parish 3171*).

ILLUSTRATIONS: Bot. Gaz. 12: pl. 9, f. 73; Coul. & Rose, Rev. N. Am. Umbell. f. 124.

6. *Perideridia Bolanderi* (A. Gray) Nelson & Macbr.

Bot. Gaz. 61: 33. 1916.

- Polosciadium Bolanderi* A. Gray, Proc. Am. Acad. 7: 346. 1868.
Eulophus Bolanderi Coul. & Rose, Rev. N. Am. Umbell. 112. 1888.
Conopodium Bolanderi K.-Pol. Bull. Soc. Nat. Mosc. II, 29: 205. 1916.
Eulophus Bolanderi var. *benignus* Jepson, Madroño 1: 130. 1923.
Eulophus cuspidatus Jepson, Madroño 1: 133. 1923.

Slender, from a fascicle of fusiform tubers, 2.5-8 dm. high; leaves deltoid in general outline, excluding the petioles 5-15 cm. long, ternate-pinnately dissected, the ultimate divisions oblong to filiform, 5-30 mm. long, the terminal often elongate, 5-8 cm. long, the lateral usually lobed and toothed, the petioles and rachises somewhat inflated; petioles 2-8 cm. long; peduncles slender, 6-14 cm. long; involucre of 1-several narrowly lanceolate to linear, scarious bracts, 5-12 mm. long; involucre of several narrowly lanceolate to obovate, acuminate, scarious bractlets, 3-6 mm. long, shorter or longer than the flowers and fruit; rays 10-20, 1-2.5 cm. long; pedicels 3-6 mm. long; styles slender, recurved, 1-2 mm. long; stylopodium low; fruit oblong, 3-5 mm. long, 2-2.5 mm. broad; oil-tubes 2-5 in the intervals, 6 on the commissure; seed flattened dorsally.

TYPE LOCALITY: Mariposa Trail, Yosemite, Sierra Nevada, California, *Bolander*.

DISTRIBUTION: Wyoming and Idaho to northwestern Utah and eastern Oregon, south in the Sierra Nevada to central California (*Baker 1366, Heller 11,572, Purpus 5293*).

ILLUSTRATION: Armstrong, Field Book W. Wild. Fl. 337

7. *Perideridia Pringlei* (Coul. & Rose) Nelson & Macbr.

Bot. Gaz. 61: 33. 1916.

- Eulophus Pringlei* Coul. & Rose, Rev. N. Am. Umbell. 113. 1888.
Conopodium Pringlei K.-Pol. Bull. Soc. Nat. Mosc. II, 29: 205. 1916.

Slender, from a cluster of more or less elongated fusiform tubers, 3-6 dm. high; leaves ovate to deltoid in general outline, excluding the petioles 5-10 cm. long, pinnately dissected,

the ultimate divisions narrowly linear, 2-80 mm. long, the petioles and rachises broadly inflated; petioles 4-9 cm. long; peduncles slender, 3-10 cm. long; involucre of 1-several small lanceolate bracts, or wanting; involucre of several narrowly subulate, scarious bractlets, 2-4 mm. long; rays 5-8, 3-8 cm. long; pedicels 5-10 mm. long; styles slender, recurved, about 1 mm. long; stylopodium low-conic; fruit oblong, 4-6 mm. long, about 2-3 mm. broad; oil-tubes 3-5 in the intervals, 8 on the commissure.

TYPE LOCALITY: California, *Pringle 40*.

DISTRIBUTION: Coast Ranges and Tehachapi Mountains of central California to southern California (*Elmer 3850, Jones 3230*).

8. *Perideridia americana* (Nutt.) Reichenb.; Steud. Nom.

Bot. ed. 2: 304. 1841.

Eulophus americanus Nutt.; DC. Coll. Mém. 5: 69. 1829.

Conopodium americanum K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 205. 1916.

Slender, from a fascicle of tuberous roots, 7-12 dm. high; leaves oblong-lanceolate in general outline, excluding the petioles 8-15 cm. long, 4-10 cm. broad, ternate-pinnately or pinnately compound, the ultimate divisions linear to linear-oblong, entire, acute, 5-50 mm. long; petioles 5-9 cm. long, sheathing throughout; upper cauline leaves with elongate divisions, the uppermost reduced, simple or little divided; peduncles slender, 5-15 cm. long; involucre of 1-several bracts, or wanting; involucre of several linear-acuminate bractlets, 2-5 mm. long, shorter than the pedicels; rays 6-14, slender, spreading-ascending, 3-9 cm. long; pedicels spreading, 8-15 mm. long; styles about 1 mm. long, recurved; stylopodium depressed-conic; fruit ovoid, 3-5 mm. long, 2.5-4 mm. broad, the ribs evident, filiform; oil-tubes 3 in the intervals, 4 on the commissure; seed slightly concave or plane under the tubes, the face slightly concave.

TYPE LOCALITY: "La territoire de l'Arkansa," *Nuttall*.

DISTRIBUTION: Ohio to Tennessee, west to Kansas and Arkansas (*Bush 213, Palmer 2107*).

ILLUSTRATIONS: DC. Coll. Mém. 5: 69, pl. 2, f. M (fr.); Bot. Gaz. 12: pl. 9, f. 75 (fr.); Britt. & Brown, Ill. Fl. 2: 528; ed. 2: 654; Contr. U. S. Nat. Herb. 7: 111 (fr.).

9. *Perideridia californica* (Torr.) Nelson & Macbr.

Bot. Gaz. 61: 33. 1916.

Chaerophyllum ? californicum Torr. Pacif. R.R. Rep. 4: 93. 1857.

Podosciadium californicum A. Gray, Proc. Am. Acad. 7: 346. 1868.

Eulophus californicus Coult. & Rose, Rev. N. Am. Umbell. 114. 1888.

Conopodium californicum K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 205. 1916.

Eulophus californicus var. *sanctorus* Jepson, Madroño 1: 130. 1923.

Slender, from a fascicle of fusiform tubers, 5-10 dm. high; leaves deltoid in general outline, excluding the petioles 15-25 cm. long, ternate-pinnately dissected, the ultimate divisions usually dimorphic, the terminal linear, elongate, entire, 3-8 cm. long, the lateral linear to ovate, entire to pinnatifid, 5-30 mm. long, the rachises and petioles often slightly inflated; petioles 2-5 cm. long, often sheathing throughout; peduncles slender, 4-20 cm. long; involucre of several linear-lanceolate, acuminate bracts, 3-12 mm. long; involucre of several lanceolate to ovate-lanceolate, acuminate, scarious or colored bractlets, 1-4 mm. long, shorter than the flowers and fruit; rays 5-10, 3-6 cm. long; pedicels 5-10 mm. long; styles slender, recurved, about 1 mm. long; stylopodium low; fruit oblong, 6-8 mm. long, 2-3 mm. broad; oil-tubes solitary in the intervals, 4 on the commissure; seed-face deeply concave and with a prominent central ridge.

TYPE LOCALITY: "Wet ravines, Knights Ferry," Stanislaus County, California, *Bigelow*.

DISTRIBUTION: Central California (*Elmer 4344, Constance & Morrison 2595*).

ILLUSTRATION: Madroño 1: 130.

51. *LIGUSTICUM* L. Sp. Pl. 250. 1753.

Cynapium Nutt.; T. & G. Fl. N. Am. 1: 640. 1840.

Stout or slender, erect, scapose to caulescent, simple or branching, glabrous or somewhat puberulent perennials, from fibrous root-crowns surmounting taproots. Leaves petiolate, membranaceous to subcoriaceous, ternate or ternate-pinnately decomposed, the leaflets few

to many, linear to obovate or cuneate, entire to pinnately lobed and incised. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral, or only terminal. Involucre wanting, or of inconspicuous deciduous bracts. Involucel wanting, or of several linear or filiform bractlets shorter than the flowers. Rays few to numerous, spreading-ascending. Pedicels slender, spreading-ascending. Flowers white or pinkish; petals spatulate to obovate with a narrower inflexed apex; calyx-teeth minute to evident; styles short, spreading, the stylopodium low-conic. Carpophore 2-cleft to the base. Fruit ovoid to oblong, slightly flattened laterally, or apparently subterete, glabrous; ribs prominent to narrowly thin-winged; oil-tubes small, 1-6 in the intervals, 2-10 on the commissure; seed flattened dorsally or subterete in cross section, usually channeled under the intervals, the face plane to deeply concave, with or without a central longitudinal ridge.

Type species, *Ligusticum scoticum* L.

Leaves 2-4-ternately compound, the leaflets 1-8 cm. broad, usually crenate or serrate; eastern North America and Alaska.

Stems sparsely branched above; plants 1-6 dm. high; leaves biternate; fruit oblong, 6-8 mm. long.

Leaflets ovate, mostly acute at the apex, 4-12 cm. long; oil-tubes 2 or 3 in the intervals; seed-face plane beneath the commissural tubes.

Leaflets obovate, rounded at the apex, 2-5 cm. long; oil-tubes solitary in the intervals; seed-face channeled beneath the commissural tubes.

Stems much branched above; plants 6-18 dm. high; leaves 3-4-ternate; fruit ovoid, 4-5 mm. long.

Leaves ternate-pinnately decomposed, the leaflets 0.5-5 cm. broad, usually pinnately lobed or incised; western North America.

Leaflets large and broad, 3-8 cm. long, 2-5 cm. broad, serrate, toothed or somewhat lobed.

Leaflets small, 0.3-5 cm. long, 0.1-4 cm. broad, pinnately dissected.

Plants slender; leaflets linear, 1-3 mm. broad.

Plants caulescent; pedicels 8-12 mm. long; fruit 5-7 mm. long.

Plants subscaepose; pedicels 3-8 mm. long; fruit 3-5 mm. long.

Plants stouter; leaflets ovate, oblong, or lanceolate, 5-40 mm. broad.

Plants glabrous, 2-6 dm. high, scaepose or with 1 or 2 much reduced cauline leaves.

Plants glabrous or pubescent, 3-15 dm. high, with well developed cauline leaves.

Ribs of the fruit narrowly winged.

Fruit oblong, 5-8 mm. long, 2-4 mm. broad; Rocky Mountain region to Mexico.

Leaflets ovate, 2.5-5 cm. long.

Leaflets ovate or oblong, 0.5-0.7 cm. long.

Fruit oval or oblong, 4-5 mm. long, 2-3 mm. broad; Pacific Coast.

Leaflets ovate, irregularly cleft into few, linear-oblong divisions; cauline sheaths narrow; seed-face concave.

Leaflets lanceolate, very regularly cleft into numerous, linear divisions; cauline sheaths dilated; seed-face plane.

Ribs of the fruit unwinged.

1. *L. scoticum*.

2. *L. Hultenii*.

3. *L. canadense*.

4. *L. verticillatum*.

8. *L. filicinum*.

8a. *L. filicinum* var. *tenuiifolium*.

7. *L. Grayi*.

5. *L. Porteri*.

5a. *L. Porteri* var. *brevisolium*.

10. *L. californicum*.

6. *L. Canbyi*.

9. *L. apiifolium*.

1. *Ligusticum scoticum* L, Sp. Pl. 250. 1753.

Angelica scotica Lam. Encyc. 1: 173. 1783.

Ligusticum boreale Salisb. Prodr. 164. 1796.

Ligusticum biternatum Stokes, Bot. Mat. Med. 2: 94. 1812.

Apium ternatum Willd. in R. & S. Syst. Veg. 6: 431. 1820. Not *A. ternatum* Siebold, 1830, nor

Pall.; Steud. 1840.

Petroselinum ternatum Mutel, Fl. Fr. 2: 402. 1835.

Haloscias scoticum Fries, Summa Veg. Scand. 180. 1845.

Meum scoticum Baillon, Hist. Pl. 7: 191. 1879.

Slender, caulescent, sparingly branched, 3-6 dm. high, glabrous throughout; leaves ovate to orbicular in general outline, excluding the petioles 8-25 cm. long, 8-20 cm. broad, 2-ternate, the leaflets ovate to cuneate, usually acute at the apex, distinct, sessile, 4-12 cm. long, 2-8 cm. broad, coarsely serrate and occasionally incised; petioles 10-25 cm. long; cauline leaves like the basal; peduncles alternate, 4-17 cm. long; involucre of 3-6 linear bracts, 5-15 mm. long; involucre of more numerous but similar bractlets, 3-10 mm. long, shorter than the flowers and fruit; rays 10-20, stout, spreading-ascending, 1-5 cm. long; pedicels slender, spreading-ascend-

ing, 5–10 mm. long; calyx-teeth evident; flowers white or pinkish; fruit oblong, 6–8 mm. long, 3–5 mm. broad, slightly compressed laterally, the ribs narrowly winged; oil-tubes 2–3 in the intervals, 6 on the commissure; seed flattened dorsally in cross section, the face plane.

TYPE LOCALITY: "Ad litora Maris in Anglia, Suecia," collector unknown.

DISTRIBUTION: Greenland, Newfoundland, and Labrador, south to Massachusetts and Connecticut (Fernald, Long & St. John 7863, St. John 1290).

ILLUSTRATIONS: Benth. Handb. Brit. Fl. ed. 2, f. 423; Bot. Gaz. 12: pl. 3, f. 27; Britt. & Brown, Ill. Fl. 2: 519; ed. 2, 2: 648.

2. *Ligusticum Hulthenii* Fernald, *Rhodora* 32: 7. 1930.

Slender, caulescent, sparingly branched, 1–6 dm. high, glabrous throughout; leaves orbicular or elliptic in general outline, excluding the petioles 6–12 cm. long, 6–14 cm. broad, 2-ternate, the leaflets obovate, obtuse at the apex, often cuneate at the base, distinct, sessile, 2–5 cm. long, 1–3 cm. broad, crenate to coarsely serrate and occasionally incised; petioles 6–20 cm. long; cauline leaves like the basal, more coarsely toothed; peduncles alternate, 8–20 cm. long; involucre of 2–4 linear to lanceolate bracts, 5–12 mm. long; involucre of more numerous but similar bractlets, 3–9 mm. long, shorter than the flowers and fruit; rays 9–16, stout, spreading-ascending, 1.5–3 cm. long; pedicels slender, spreading-ascending, 4–8 mm. long; calyx-teeth evident; flowers white or pinkish; fruit oblong, 7–8 (10?) mm. long, 2.5–3 mm. broad, nearly terete, the ribs narrowly winged; oil-tubes apparently solitary in the intervals, 2–4 on the commissure; seed flattened dorsally in cross section, channeled under the tubes, the face sulcate.

TYPE LOCALITY: Nazan Bay, Atka, Alaska, Van Dyke 238.

DISTRIBUTION: Coast of Alaska and British Columbia (Funston 70, Johnston & Palmer 8).

ILLUSTRATIONS: *Rhodora* 32: pl. 194; Sharples, Alaska Wild. Fl. 71.

3. *Ligusticum canadense* (L.) Britton, Mem. Torrey Club 5: 240. 1894.

Ferula canadensis L. Sp. Pl. 247. 1753.

? *Angelica lobata* Walt. Fl. Car. 115. 1788.

Ligusticum actaeifolium of authors, not *L. actaeifolium* Michx. 1803.

Stout, caulescent, freely branched, 6–18 dm. high, glabrous throughout or the inflorescence slightly puberulent; leaves ovate to orbicular in general outline, excluding the petioles 18–24 cm. long, 16–28 cm. broad, 3–4-ternate or 3–4-ternate-pinnate, the leaflets ovate to oblong or narrowly lanceolate, acute at the apex, usually distinct, petiolulate or sessile, 3–13 cm. long, 1–4 cm. broad, entire to coarsely serrate; petioles 15–25 cm. long; cauline leaves like the basal; peduncles alternate and verticillate, slender, 3–10 cm. long; involucre usually wanting; involucre of 2–5 linear or oblong bractlets, 3–4 mm. long, shorter than the flowers and fruit; rays 6–14, spreading-ascending, unequal, 1.5–3 cm. long; pedicels spreading-ascending, 3–4 mm. long; calyx-teeth evident; flowers white; fruit ovoid, 4–7 mm. long, 2–5 mm. broad, slightly compressed laterally, the ribs narrowly winged; oil-tubes 3 or 4 in the intervals, 6 on the commissure; seed flattened dorsally in cross section, the face slightly concave.

TYPE LOCALITY: Virginia, Clayton.

DISTRIBUTION: Pennsylvania to Georgia, west to Missouri and Arkansas (*Biltmore Herb.* 5549, *Palmer* 6241).

ILLUSTRATIONS: *Contr. U. S. Nat. Herb.* 7: 129 (fr.); Britt. & Brown, Ill. Fl. ed. 2, 2: 647.

4. *Ligusticum verticillatum* (Geyer) Coult. & Rose; Rose, *Contr. U. S. Nat. Herb.* 3: 320. 1895.

Angelica ? *verticillata* Geyer; Hook. Lond. Jour. Bot. 6: 233. 1847.

Stout, caulescent, freely branched, 6–12 dm. high, glabrous throughout or the inflorescence puberulent or roughened; leaves ovate in general outline, excluding the petioles about 5 dm. long, 1–2-ternate-pinnate, the leaflets ovate to oblong, acute at the apex, distinct, 3–8 cm. long, 2–5 cm. broad, serrate to somewhat lobed; cauline leaves like the basal; peduncles alternate or verticillate, 1.5–4 cm. long; involucre wanting, or of 1–several linear, deciduous bracts; involucre of several linear bractlets, 3–5 mm. long; rays 25–30, ascending, unequal, 4–7 cm. long; pedicels ascending, 5–11 mm. long; flowers white; fruit oval, 4–6 mm. long, 3–4 mm. broad,

slightly compressed laterally, the ribs narrowly winged; oil-tubes 3 or 4 in the intervals, 6-8 on the commissure; seed flattened laterally in cross section, the face plane to slightly concave.

TYPE LOCALITY: "Shady grassy borders of pine woods, on high plains of the Nez Percés Indians," Idaho, *Geyer 414*.

DISTRIBUTION: Northern Montana and Idaho (*Constance, Beelle & Ownbey 2732, Heller & Heller 3453*).

ILLUSTRATION: *Contr. U. S. Nat. Herb.* 3: *pl. 12*.

5. *Ligusticum Porteri* Coult. & Rose, *Rev. N. Am.*

Umbell. 86. 1888.

Ligusticum Goldmani Coult. & Rose, *Proc. Wash. Acad.* 1: 146. 1900.

Ligusticum Nelsoni Coult. & Rose, *Proc. Wash. Acad.* 1: 147. 1900.

Ligusticum simulans Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 135. 1900.

Ligusticum affine A. Nelson, *Bull. Torrey Club* 28: 223. 1901.

Ligusticum madrense Rose, *Contr. U. S. Nat. Herb.* 8: 336. 1905.

Stout, caulescent, freely branched, 5-10 dm. high, glabrous throughout or the inflorescence puberulent; leaves ovate in general outline, excluding the petioles 15-28 cm. long, 12-20 cm. broad, 1-3-ternate-pinnate, the leaflets ovate, mostly distinct, sessile to petiolulate, 2.5-5 cm. long, 1-3 cm. broad, regularly incised, the lobes obtuse or acute, entire or toothed; petioles 1-3 dm. long; cauline leaves like the basal, with shallowly lobed divisions; peduncles stout, alternate and often verticillate, 6-30 cm. long, slightly swollen at the apex; involucre wanting, or of an occasional solitary, deciduous bract; involucre wanting or of several linear bractlets, 2-7 mm. long, equaling or shorter than the flowers and fruit; rays 11-24, ascending, subequal, 2.5-6 cm. long; pedicels spreading-ascending to rather strict, 5-12 mm. long; flowers white; fruit oblong, 5-8 mm. long, 2-4 mm. broad, terete, the ribs narrowly winged; oil-tubes 4-6 in the intervals, 8-10 on the commissure; seed flattened dorsally in cross section, channeled under the tubes, the face concave.

TYPE LOCALITY: Headwaters of the Platte, near Denver, Colorado. *Coulter*.

DISTRIBUTION: High Mountains of Colorado, Wyoming, and eastern Nevada, south to Arizona, Chihuahua, and Nuevo León (*Baker, Earle & Tracy 546, Townsend & Barber 350*).

ILLUSTRATION: *Clements & Clements, Rocky Mt. Fl. pl. 35, f. 19*.

5a. *Ligusticum Porteri* var. *brevilobum* (Rydb.) Math. &

Const. Bull. Torrey Club 68: 123. 1941.

Ligusticum brevilobum Rydb. *Fl. Rocky Mts.* 613. 1917.

Leaflets ovate to oblong, 0.5-0.7 cm. long; otherwise like the species.

TYPE LOCALITY: Aquarius Plateau, Utah, *Rydb. & Carlton 7473*.

DISTRIBUTION: High mountains of southeastern Utah (*Jones 5680, Rydb. & Garrett 8909*).

6. *Ligusticum Canbyi* Coult. & Rose, *Rev. N. Am.*

Umbell. 86. 1888.

Cynapium nudicaule Nutt.; T. & G. *Fl. N. Am.* 1: 641, as syn. 1840.

Pimpinella apiodora var. *nudicaulis* A. Gray, *Proc. Am. Acad.* 8: 385. 1872.

Ligusticum Leibergii Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 134. 1900.

Ligusticum caeruleomontanum St. John, *Fl. SE. Wash.* 297. 1937.

Stout, caulescent, freely branched, 5-12 dm. high, the inflorescence puberulent or glabrate, the foliage scaberulous; leaves ovate-deltoid in general outline, excluding the petioles 6-20 cm. long, 6-15 cm. broad, ternate-pinnate, the leaflets lanceolate, mostly distinct, 3-5 cm. long, 5-20 mm. broad, laciniately cleft into linear, acute divisions; petioles 8-20 cm. long; cauline leaves few, like the basal, the petioles dilated; peduncles alternate or verticillate, stout, 6-24 cm. long; involucre wanting or of a solitary linear bract; involucre of 1-several linear bractlets, 2-5 mm. long, shorter than the flowers and fruit; rays 15-30, spreading-ascending, 2.5-5 cm. long; pedicels spreading-ascending, 5-10 mm. long; flowers white or pinkish; calyx-teeth minute; fruit oval to oblong, 4-5 mm. long, 2-3 mm. broad, slightly compressed laterally, the ribs narrowly winged; oil-tubes 4-6 in the intervals, 6-8 on the commissure; seed flattened dorsally in cross section, the face plane.

TYPE LOCALITY: "Low grounds, near headwaters of Joeko River," Montana, *Canby 155*.

DISTRIBUTION: Western Montana and adjacent Idaho to central Washington (*Constance et al. 1249, Leiberg 1009*).

ILLUSTRATION: *Contr. U. S. Nat. Herb. 7: pl. 4.*

7. *Ligusticum Grayi* Coult. & Rose, *Rev. N. Am. Umbell.* 88. 1888.

Ligusticum apiifolium var. *minor* A. Gray; *Brewer & Wats. Bot. Calif.* 1: 264. 1876.

Ligusticum purpureum Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 137. 1900.

Ligusticum Pringlei Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 138. 1900.

Ligusticum Cusickii Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 138. 1900.

Ligusticum tenuifolium var. *dissimilis* A. Nelson, *Bot. Gaz.* 53: 224. 1912.

Stout, scapose or short-caulescent, 2-6 dm. high, glabrous throughout; leaves oblong to deltoid-ovate in general outline, excluding the petioles 6-20 cm. long, 3-8 cm. broad, ternate-pinnate, the leaflets ovate to oblong, distinct, petiolulate, 1-2 cm. long, 5-15 mm. broad, deeply and regularly pinnatifid, the lobes or teeth oblong, obtuse or acute; petioles 1-10 cm. long; cauline leaves none or 1 or 2, much reduced; peduncles solitary, rarely with accessory verticillate or alternate ones, 7-20 cm. long; involucre wanting, or of 1 or 2 linear, deciduous bracts; involucre of 4-8 linear bractlets, 2-5 mm. long, shorter than the flowers and fruit; rays 5-14, spreading-ascending, subequal, 2-3.5 cm. long; pedicels spreading-ascending, 3-8 mm. long; calyx-teeth minute; flowers white or pinkish; fruit oval-oblong, 4-6 mm. long, 2-3 mm. broad, slightly compressed laterally, the ribs narrowly winged; oil-tubes 3-5 in the intervals, 8 on the commissure; seed dorsally flattened in cross section, the face slightly concave.

TYPE LOCALITY: Ostrander's Meadows, Yosemite Valley, California, *Bolander 6341*.

DISTRIBUTION: Western Montana, Idaho, and Washington, south to Nevada and the Sierra Nevada of central California (*Constance, Beetle & Detling 2794, Heller 9563*).

ILLUSTRATIONS: Coult. & Rose, *Rev. N. Am. Umbell. f. 92*; Madroño 1: 138, *f. 2f.*

8. *Ligusticum filicinum* S. Wats. *Proc. Am. Acad.* 11: 140. 1876.

Ligusticum apiifolium Benth. & Hook.; S. Wats. *Bot. King's Expl.* 125. 1871. Not *L. apiifolium* Gray, 1868.

Ligusticum scopulorum sensu Parry, *Am. Nat.* 9: 271. 1875. Not *L. scopulorum* A. Gray, 1868.

Slender, caulescent, freely branched, 5-10 dm. high, glabrous throughout or the inflorescence scaberulous; leaves ovate to deltoid in general outline, excluding the petioles 1-3 cm. long, ternate-pinnately decompound, the ultimate divisions linear, acute, mucronate, 3-12 mm. long, 1-3 mm. broad; petioles 6-20 cm. long; cauline leaves few, like the basal, reduced upwards, short-petiolate or sessile with dilated sheaths; peduncles alternate or verticillate, 6-17 cm. long; involucre wanting; involucre of 1-several short, filiform bractlets, or wanting; rays usually 10-20, slender, spreading-ascending, subequal, 2.5-6 cm. long; pedicels slender, spreading-ascending, 8-12 mm. long; calyx-teeth minute; flowers white; fruit oblong, 5-7 mm. long, 2-3 mm. broad, slightly compressed laterally, the ribs narrowly winged; oil-tubes 3-5 in the intervals, 6-8 on the commissure; seed dorsally flattened in cross section, the face plane to slightly concave.

TYPE LOCALITY: Uintah Mountains, northern Utah, *Watson 454*.

DISTRIBUTION: Montana and Wyoming, west to Utah and Idaho (*Parry 121, Payson & Payson 4979*).

8a. *Ligusticum filicinum* var. *tenuifolium* (S. Wats.) Math. & Const. *Bull. Torrey Club* 68: 123. 1941.

Ligusticum tenuifolium S. Wats. *Proc. Am. Acad.* 14: 293. 1879.

Ligusticum oregonum Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 138. 1900.

Very slender, subscaupose; leaves oblong to oval, 6-14 cm. long, 3-7 cm. broad; cauline leaf usually solitary, reduced, sessile; rays 5-15, 1.5-3 cm. long; pedicels 3-8 mm. long; fruit 3-5 mm. long.

TYPE LOCALITY: Mountains of Colorado, *Hall & Harbour 216* (part).

DISTRIBUTION: Colorado and Montana, west to Utah and eastern Oregon (*Constance & Jacobs 1329, Payson & Payson 5118*).

9. *Ligusticum apiifolium* (Nutt.) A. Gray, Proc. Am. Acad. 7: 347. 1868.

Cynapium apiifolium Nutt.; T. & G. Fl. N. Am. 1: 641. 1840.

Pimpinella apiodora A. Gray, Proc. Am. Acad. 7: 345. 1868.

Ligusticum apiodorum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 132. 1900.

Ligusticum Helleri Coult. & Rose; A. Heller, Muhlenbergia 2: 227. 1906. (Nomen nudum.)

Ligusticum apiodorum var. *Helleri* Coult. & Rose; Mathias, Brittonia 2: 245. 1936.

Stout, caulescent, freely branched, 3-15 dm. high, glabrous to pubescent, the inflorescence often puberulent; leaves ovate to orbicular in general outline, excluding the petioles 1-3 dm. long, 10-25 cm. broad, ternate-pinnate, the leaflets ovate to oblong, 1-5 cm. long, 0.5-4 cm. broad, coarsely toothed to deeply pinnatifid, the divisions obtuse or acute, mucronate, scabrous or glabrate on the margins and veins; petioles 1-3 dm. long; cauline leaves like the basal, reduced; peduncles alternate or verticillate, 1-3 dm. long; involucre wanting, or of 1-several narrow bracts; involucre of several linear to lanceolate bractlets, 3-7 mm. long, shorter than the flowers and fruit; rays 12-20, spreading-ascending, unequal, 2-5 cm. long; pedicels spreading-ascending, 5-10 mm. long; calyx-teeth minute; flowers white or pinkish; fruit oval to orbicular, 3.5-5.5 mm. long, 2.5-3 mm. broad, slightly compressed laterally, the ribs filiform to prominent but unwinged; oil-tubes 3-6 in the intervals, 6-8 on the commissure; seed flattened dorsally in cross section, the face concave.

TYPE LOCALITY: "Plains of Clackam [Columbia River], near the confluence of the Wahlamet [Willamette]," near Oregon City, Clackamas County, Oregon, Nuttall.

DISTRIBUTION: Western Washington and Oregon to the coast of central California (*Elmer* 4803, *Heller & Heller* 3973).

ILLUSTRATIONS: Henshaw, Mountain Fl. Am. pl. 17; Madroño 1: 138.

10. *Ligusticum californicum* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 132. 1900.

Stout, caulescent, unbranched below the inflorescence, 5-9 dm. high, glabrous throughout; leaves ovate-deltoid in general outline, excluding the petioles 15-30 cm. long, 10-25 cm. broad, bipinnate to ternate-pinnate, the leaflets ovate, mostly distinct, 2-4 cm. long, 1-2 cm. broad, toothed or cleft into few, linear-oblong divisions; petioles 1-3 dm. long; cauline leaves few, like the basal, the petioles narrow; peduncles alternate or occasionally verticillate, moderately stout, 1-3 dm. long; involucre wanting; involucre of several linear bractlets, 3-5 mm. long, shorter than the flowers and fruit; rays 9-20, spreading-ascending, 3-7 cm. long; pedicels spreading-ascending, 5-11 mm. long; flowers white or pinkish; calyx-teeth minute; fruit oval, 4-6 mm. long, 2.5-3.5 mm. broad, slightly compressed laterally, the ribs narrowly winged; oil-tubes several in the intervals and on the commissure; seed flattened dorsally in cross section, the face concave.

TYPE LOCALITY: "Covelo," Mendocino County, California, Chesnut.

DISTRIBUTION: Northern Coast Ranges of California (*Tracy* 3951, *M. S. Baker* 10,364).

52. *PODISTERA* S. Wats. Proc. Am. Acad. 22: 475. 1887.

Ligusticella Coult. & Rose, Contr. U. S. Nat. Herb. 12: 445. 1909.

Orumbella Coult. & Rose, Contr. U. S. Nat. Herb. 12: 445. 1909.

Low, caespitose, herbaceous, acaulescent, glabrous or scabrous perennials, from a long thickened root bearing a crown of fibrous sheaths. Leaves petiolate, membranaceous, pinnate to bipinnate, the leaflets lanceolate to orbicular, entire or variously incised or lobed. Petioles sheathing. Inflorescence of subcompact compound umbels; peduncles terminal, exceeding the leaves. Involucre of numerous narrow bracts, or wanting. Involucre of conspicuous, dimidiate, foliaceous or subscarios, toothed or entire bractlets, longer or shorter than the flowers and fruit, by reduction of the rays sometimes appearing to form a false involucre. Rays few, short to obsolete, stout, spreading. Pedicels short to obsolete, terete or flattened and winged. Flowers yellow or purplish (also white or pinkish?); petals oval to obovate with a narrower inflexed apex; calyx-teeth conspicuous, ovate; styles short or slender, flattened and tape-like, the stylopodium conic. Carpophore 2-cleft to the base. Fruit ovoid-oblong to ovoid, slightly

flattened laterally, glabrous; ribs filiform, inconspicuous to prominent; oil-tubes 2—several in the intervals and on the commissure; seed slightly flattened dorsally in cross section, the face plane to slightly concave.

Type species, *Cymopterus ? nevadensis* A. Gray (*Podistera nevadensis* S. Wats.).

- Plants scabrous; rays and pedicels obsolete or nearly so; fruit 1–2 mm. long, about 1 mm. broad.
- Plants glabrous; rays and pedicels developed, not obsolete; fruit 2–5 mm. long, 2–3 mm. broad.
- Involucre wanting; bractlets 2–3-toothed, exceeding the fruit; pedicels terete, unwinged; flowers yellowish-green; Colorado.
- Involucre of numerous bracts; bractlets entire, shorter than the fruit; pedicels flattened and winged; flowers purplish; Alaska.
1. *P. nevadensis*.
2. *P. Eastwoodae*.
3. *P. Macounii*.

1. *Podistera nevadensis* (A. Gray) S. Wats. Proc. Am. Acad. 22: 475. 1887.

Cymopterus ? nevadensis A. Gray, Proc. Am. Acad. 6: 536. 1866.

Podistera albensis Jepson, Madroño 1: 140. 1923.

Plants about 1–5 cm. high; leaves narrowly oblong to ovate in general outline, excluding the petioles 3–10 mm. long, 3–8 mm. broad, the leaflets apiculate, 1–3 mm. long, about 1 mm. broad; petioles 3–15 mm. long, scariosus-sheathing; peduncles 5–30 mm. long; involucre wanting; involucre of several ovate, 3–5-cleft bractlets, 2–4 mm. long, about equaling the flowers and fruit; rays several, flattened, winged, very short to obsolete; pedicels nearly obsolete; flowers orange-yellow, fading paler; fruit 1–2 mm. long, about 1 mm. broad; oil-tubes 12–16 on the dorsal and lateral surfaces, 4–6 on the commissure.

TYPE LOCALITY: At and near the top of Mount Dana, California, alt. 3,900 m., *Brewer 2717*.

DISTRIBUTION: California, in the Sierra Nevada from the region of Lake Tahoe to that of Yosemite, in the White Mountains, and in the San Bernardino Mountains (*Eastwood 548*, *Hull & Babcock 3607*).

ILLUSTRATIONS: CONTR. U. S. NAT. HERB. 7: 125 (fr.); ANN. MO. BOT. GARD. 17: pl. 22, f. 1 (fr.).

2. *Podistera Eastwoodae* (Coulter & Rose) Math. & Const. Bull. Torrey Club 69: 247. 1942.

Ligusticum Eastwoodae Rose; Eastw. Zoc 4: 17. 1893 (nomen nudum); Coulter & Rose; Rose, Contr. U. S. Nat. Herb. 3: 320. 1895.

Ligusticella Eastwoodae Coulter & Rose, Contr. U. S. Nat. Herb. 12: 445. 1909.

Plants 1–3 dm. high; leaves oblong in general outline, excluding the petioles 5–9 cm. long, 2–3 cm. broad, the leaflets ovate, 10–15 mm. long, 10–15 mm. broad, deeply 2–3-lobed, the lobes cleft into linear acute segments; petioles 2–8 cm. long; peduncles 1–3 dm. long; involucre wanting; involucre of several oval, 2–3-toothed bractlets, 4–6 mm. long, exceeding the flowers and fruit; rays 5–8, 2–8 mm. long; pedicels terete, unwinged, 1–2 mm. long; flowers greenish-yellow; fruit oval, 3–4 mm. long, 2–2.5 mm. broad, the ribs filiform; oil-tubes 2 or 3 in the intervals, 4 (?) on the commissure; seed-face slightly concave.

TYPE LOCALITY: Cumberland Basin, La Plata Mountains, Colorado, *Eastwood*.

DISTRIBUTION: High mountains of Colorado to New Mexico and Utah (*Baker 790*, *Baker, Earle & Tracy 215*).

ILLUSTRATIONS: CONTR. U. S. NAT. HERB. 3: pl. 13; 7: pl. 5; 12: pl. 82.

3. *Podistera Macounii* (Coulter & Rose) Math. & Const. Bull. Torrey Club 69: 247. 1942.

Ligusticum Macounii Coulter & Rose; Rose, Contr. U. S. Nat. Herb. 1: 289. 1893.

Orumbella Macounii Coulter & Rose, Contr. U. S. Nat. Herb. 12: 446. 1909.

Ligusticella Macounii Math. & Const. Bull. Torrey Club 68: 123. 1941.

Plants 8–10 cm. high; leaves oblong in general outline, excluding the petioles 2–5 cm. long, 8–25 mm. broad, the leaflets ovate to orbicular, 5–15 mm. long, 5–15 mm. broad, coarsely lobed or incised; petioles 3–12 cm. long; involucre of numerous linear-lanceolate bracts, 5–10 mm. long; involucre of bractlets similar to the bracts, exceeding the pedicels but shorter than the fruit; rays 6–12, 3–20 mm. long; pedicels flattened, narrowly winged, 2–3 mm. long; flowers purplish, the petals obovate; fruit oval, 4–5 mm. long, 2–3 mm. broad, the ribs prominent,

obtuse, corky; oil-tubes 2 or 3 in the intervals, 2-4 on the commissure; seed-face plane or slightly concave.

TYPE LOCALITY: Cape Vancouver, Alaska, *J. M. Macoun*.

DISTRIBUTION: Southern Alaska (*Coville & Kearney 1938, Trelease 4540*).

ILLUSTRATION: *Contr. U. S. Nat. Herb. 1: pl. 23.*

53. *CORIANDRUM* L. Sp. Pl. 256. 1753.

Keramocarpus Fenzl in Russegg. *Reise 1²: 966.* 1843.

Slender, erect, herbaceous, caulescent, glabrous annuals, from slender taproots. Leaves petiolate, membranaceous, pinnately dissected. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre usually wanting. Involucel of a few small, narrow bractlets. Rays few, spreading-ascending. Pedicels spreading. Flowers white or rose; petals oblong with a narrower inflexed apex, the outer usually radiant; calyx-teeth prominent, acute, often unequal; styles slender, spreading, the stylopodium conic. Carpophore 2-cleft to the base. Fruit orbicular, terete, with a hard pericarp, glabrous, the mericarps boat-shaped, not separating readily at maturity; primary ribs filiform, the secondary filiform or obscure; oil-tubes wanting; seed flattened dorsally in cross section, the face concave.

Type species, *Coriandrum sativum* L.

1. *Coriandrum sativum* L. Sp. Pl. 256. 1753.

Selinum Coriandrum E. H. L. Krause in Sturm, *Fl. Deuts. ed. 2: 12: 163.* 1904.

Plants 2-7 dm. high; basal leaves ovate in general outline, excluding the petioles 3-15 cm. long, 2-10 cm. broad, simple and ternately or pinnately lobed, or pinnate, the leaflets flabelliform, cuneate at the base, 1-2 cm. long, 5-10 mm. broad, variously toothed or incised; petioles 2-15 cm. long; cauline leaves pinnately dissected, the ultimate divisions of the upper leaves linear to filiform, 2-15 mm. long, 0.5-1.5 mm. broad, obtuse, entire; peduncles 3-10 cm. long, or occasionally abortive; involucre wanting, or of a solitary bract; involucel dimidiate, of a few linear bractlets, 2-4 mm. long; rays 2-8, 1-2.5 cm. long; pedicels 2-5 mm. long; calyx-teeth ovate-lanceolate, unequal, the outer up to 1 mm. long; petals white or rose, the outer radiant; fruit 1.5-5 mm. in diameter.

TYPE LOCALITY: "In Italiae agris," collector unknown.

DISTRIBUTION: Mediterranean Region; widely adventive in the United States, Mexico, Central America, and the West Indies.

ILLUSTRATIONS: Reichenb. *IC. Fl. Germ. 21: pl. 2043;* Baillon, *Hist. Pl. 7: 129, 130;* Karst. *Fl. Deuts. 2: 429;* E. & P. *Nat. Pf. 3⁸: 159* (fl., fr.); Coste, *Fl. Fr. 2: 165;* Britt. & Brown, *Ill. Fl. ed. 2: 647;* Hegi, *Ill. Fl. Mittel-Eur. 5: pl. 194, f. 2.*

54. *BIFORA* Hoffm. *Gen. Umbell. ed. 2: 191.* 1816; nomen conservandum.

Anidrum Neck. *Elem. 1: 188.* 1790.

Biforis Spreng. *Anl. ed. 2: 635.* 1818.

Atrema DC. *Coll. Mém. 5: 71.* 1829.

Slender, erect, herbaceous, caulescent, branching, glabrous annuals, from slender taproots. Leaves petiolate, membranaceous, ternate-pinnately decomposed, the ultimate divisions filiform. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary, exceeding the leaves. Involucre of a few small linear bracts, or wanting. Involucel of a few bractlets like the bracts. Rays few, spreading-ascending. Pedicels short, spreading. Flowers white; petals obovate or orbiculate with a narrower inflexed apex, the outer frequently radiant; calyx-teeth evident to obsolete; stylopodium low-conic. Carpophore 2-cleft to the base. Fruit orbicular to ellipsoid and didymous, subterete, flattened laterally, constricted at the commissure, the mericarps boat-shaped, glabrous; ribs filiform, the pericarp very thin and hard; oil-tubes wanting; seed subterete in cross section, the face deeply and broadly concave.

Type species, *Coriandrum testiculatum* L. (*Bifora testiculata* Hoffm.).

Involucre present; pedicels 2 mm. long; fruit subglobose, 4-5 mm. broad; ribs evident.

Involucre wanting; pedicels 5-8 mm. long; fruit ellipsoid, didymous, 5-7 mm. broad; ribs obsolete.

1. *B. americana*.

2. *B. radians*.

1. *Bifora americana* (DC.) Benth. & Hook.; S. Wats. *Bibl. Ind.* 415. 1878.*Atrema americanum* DC. *Coll. Mém.* 5: 71. 1829.*Coriandrum americanum* Nutt.; DC. *Prodr.* 4: 250, as syn. 1830.*Anidrum americanum* Kuntze, *Rev. Gen.* 1: 264. 1891.

Branching, 25–75 cm. high, glabrous throughout, or the foliage and stems, especially at the nodes, scaberulous; leaves ovate-oblong in general outline, excluding the petioles 2–5 cm. long, 1–3 cm. broad, ternate-pinnately decomposed, the ultimate divisions filiform, distinct, obtuse, 2–25 mm. long, 1 mm. or less broad, glabrous to slightly scaberulous; petioles 2–15 mm. long, somewhat inflated at the base; peduncles slightly scaberulous at the summit; involucre of a few small, entire to pinnatifid, linear bracts; involucre of bractlets like the bracts, shorter than or equaling the flowers; rays 4–14, 15–35 mm. long, somewhat scaberulous; pedicels about 2 mm. long; fruit subglobose, 2–3 mm. long, 4–5 mm. broad, the ribs filiform.

TYPE LOCALITY: "Près de la rivière Rouge," Nuttall.

DISTRIBUTION: Northeastern and central Texas and adjacent Arkansas and Oklahoma (*Lindheimer 830*, *Palmer 11,724*).ILLUSTRATIONS: DC. *Coll. Mém.* 5: *pl. 18*; *Bot. Gaz.* 12: *pl. 17, f. 119* (fr.); *Contr. U. S. Nat. Herb.* 7: 71 (fr.).2. *Bifora radians* Bieb. *Fl. Taur.-Cauc.* 3: 233. 1819.

Branching, 20–40 cm. high, glabrous throughout; leaves ovate-oblong in general outline, excluding the petioles 2–5 cm. long, 2–4 cm. broad, ternate-pinnately decomposed, the ultimate divisions filiform, distinct, acute, 5–15 mm. long, about 0.5 mm. broad, glabrous; petioles 2–5 cm. long, narrowly sheathing at the base; peduncles 3–8 cm. long; involucre wanting; involucre of several small, setaceous, entire bractlets, shorter than the flowers; rays 5–7, 15–25 mm. long, glabrous; pedicels 5–8 mm. long; fruit ellipsoid, didymous, 2–3 mm. long, 5–7 mm. broad, sharply constricted at the commissure, scarcely roughened, the ribs obsolete.

TYPE LOCALITY: "Europae occidentalis australioris incola et vulgo in hortis culta," collector unknown.

DISTRIBUTION: Introduced from the Mediterranean region in ballast in Rhode Island and Pennsylvania.

ILLUSTRATIONS: Reichenb. *ic. Fl. Germ.* 21: *pl. 2042*; Garcke, *Fl. Deuts. ed.* 17: 273; Fiori & Paol. *ic. Fl. Ital. f. 2406*; Coste, *Fl. Fr.* 2: 165.55. *BERULA* Hoffm. in Besser, *Enum. Pl. Volh.* 44. 1822.*Berla* Bubani, *Fl. Pyren.* 2: 356. 1900.

Slender, erect, stoloniferous, herbaceous, caulescent, branching, glabrous perennials, from fascicled fibrous roots. Leaves petiolate, membranaceous, pinnate, the leaflets entire, serrate, or lobed, or those of the submerged leaves decomposed. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary, exceeding the leaves. Involucre of conspicuous, narrow, entire or toothed bracts. Involucre of conspicuous narrow bractlets. Rays rather few, spreading-ascending or spreading. Pedicels spreading. Flowers white; petals obovate with a narrower inflexed apex; calyx-teeth subulate, minute; styles short, the stylopodium conic. Carpophore 2-cleft to the base, the halves adnate to the mericarps throughout their length. Fruit oval to orbicular, flattened laterally, glabrous; ribs filiform, obscure in the thick corky pericarp; oil-tubes numerous, contiguous and closely surrounding the seed cavity; seed terete in cross section, the face plane; strengthening cells absent.

Type species, *Sium erectum* Huds. (*Berula erecta* Coville).1. *Berula erecta* (Huds.) Coville, *Contr. U. S. Nat.**Herb.* 4: 115. 1893.*Sium erectum* Huds. *Fl. Angl.* 103. 1762.*Sium angustifolium* L. *Sp. Pl. ed.* 2: 1672. 1763.*Sium Berula* Gouan, *Fl. Monsp.* 218. 1765.*Berula angustifolia* Mert. & Koch in Röhl. *Deuts. Fl. ed.* 3: 433. 1826.*Sium pusillum* Nutt.; T. & G. *Fl. N. Am.* 1: 611. 1840. Not *S. pusillum* Poir. 1810.*Sium incisum* Torr. in Frém. *Rep. Calif.* 90. 1845.*Apium Berula* Caruel in Parl. *Fl. Ital.* 8: 463. 1889.*Selinum Berula* E. H. L. Krause in Sturm, *Fl. Deuts. ed.* 2: 12: 33. 1904.*Sium Novae-Mexicae* K.-Pol. *Bull. Soc. Nat. Mosc. II.* 28: 173. 1915.*Berula pusilla* Fernald, *Rhodora* 44: 189. 1942.

Caulicent, 2-8 dm. high; leaves narrowly oblong in general outline, excluding the petioles 1-3 dm. long, 3-10 cm. broad, pinnate, the leaflets oblong, distinct, 1.5-4 cm. long, 5-30 mm. broad, subentire to serrate or lobed; petioles 4-20 cm. long; cauline leaves reduced, the leaflets often linear; peduncles 2-8 cm. long; involucre of 6-8 linear to lanceolate, unequal, foliaceous, scarious-margined, entire to incisely toothed bracts, 5-15 mm. long; involucre of 4-8 linear to lanceolate, acute, entire bractlets, 1-5 mm. long; rays 6-15, subequal, 1-2 cm. long; pedicels 2-5 mm. long; fruit oval to orbicular, 1.5-2 mm. long, the ribs filiform; oil-tubes numerous about the seed.

TYPE LOCALITY: None given, but presumably European.

DISTRIBUTION: Europe and Mediterranean region; New York, Ontario, and Illinois, west to British Columbia and California, south to Florida, Federal District, Oaxaca, and Baja California (Palmer 41,886, *Purpus* 4103).

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: pl. 1878; Britt. & Brown, Ill. Fl. 2: 538; ed. 2. 2: 655; Contr. U. S. Nat. Herb. 7: 116 (fr.); Sturm, Fl. Deuts. ed. 2. 12: pl. 12; Pammel, Man. Pois. Pl. 650; Clements & Clements, Rocky Mt. Fl. pl. 35, f. 16; Madroño 1: 136; Jepson, Man. Fl. Pl. Calif. 711, f. 693.

56. *SIUM* L. Sp. Pl. 251. 1753.

Sium Adans. Fam. Pl. 2: 498. 1763.

Mauchartia Neck. Elem. 1: 172. 1790.

Stout or slender, erect, herbaceous, caulescent, branching, glabrous perennials, from fascicles of fibrous roots. Leaves petiolate, membranaceous, pinnate to pinnately decomposed, or rarely simple and incised, the leaflets serrate to pinnatifid. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary. Involucre of sub-foliaceous, entire or incised, often reflexed bracts. Involucre of conspicuous narrow bractlets. Rays rather few, spreading-ascending. Pedicels spreading. Flowers white; petals obovate or orbiculate with a narrower inflexed apex, the outer sometimes radiant; calyx-teeth minute to obsolete, often unequal; styles short, reflexed, the stylopodium depressed, or rarely conic. Carpophore 2-cleft to the base, the halves adnate to or free from the mericarps (if adnate the carpophore apparently wanting), or the carpophore entire. Fruit oval to orbicular, slightly flattened laterally and somewhat constricted at the commissure, glabrous; ribs prominent, subequal, corky; oil-tubes 1-3 in the intervals, 2-6 on the commissure; seed subterete in cross section, the face plane; a prominent group of strengthening cells in the apex of each rib.

Type species, *Sium latifolium* L.

Plants stout, 6-12 dm. high; rays 10-20, subequal.

1. *S. suave*.

Plants slender, 2-6 dm. high; rays 5-11, unequal.

Plants at least partially aquatic; submerged or floating leaves often reduced to the terminal leaflet, or the leaflets coarsely serrate to incised; rays slender but not filiform.

2. *S. Carsonii*.

Plants terrestrial, without submerged or floating leaves; leaflets finely appressed-serrate; rays filiform.

3. *S. floridanum*.

1. *Sium suave* Walt. Fl. Car. 115. 1788.

Sium cicutae-folium Schrank, Baier. Fl. 1: 558. 1789.

Sium lineare Michx. Fl. Bor. Am. 1: 167. 1803.

Cicuta daurica Fisch. Cat. Jard. Gorenki ed. 2. 45. 1812. (Nomen nudum.)

Sium tenuifolium Muhl. Cat. 31. 1813.

Critamus dauricus Hoffm. Gen. Umbell. ed. 2. 184. 1816.

Sium rugosum Raf. Med. Fl. 2: 264. 1830 (hyponym); Atl. Jour. 151. 1832.

Falcaria dahurica DC. Prodr. 4: 110. 1830.

Sium cicutarium W. Baxter in Loud. Hort. Brit. Suppl. 4: 639. 1850. (Hyponym.)

Apium cicutae-folium Benth. & Hook.; Forbes & Hemsl. Jour. Linn. Soc. 23: 328. 1887.

Sium cicutae-folium var. *brevis-folium* Peck, Ann. Rep. N. Y. State Mus. 43: 83. 1890.

Sium heterophyllum Greene, Pittonia 2: 102. 1890.

Sium cicutae-folium var. *heterophyllum* Jepson, Fl. W. Middle Calif. 353. 1901.

Drepanophyllum lineare K.-Pol. Bull. Soc. Nat. Mosc. II. 28: 181. 1915.

Sium cicutae-folium var. *lineare* H. Wolff in Engler, Pflanzenreich 90 (4228): 57. 1927.

Sium latifolium of American authors, not *S. latifolium* L. 1753.

Plants stout, 6-12 dm. high, from fusiform, fascicled roots; leaves oblong to ovate in general outline, excluding the petioles 6-25 cm. long, 7-18 cm. broad, pinnate, or rarely simple and serrate and incised, the leaflets lanceolate to linear, 1-4 cm. long, 3-15 mm. broad, distinct, remote, the lower frequently obsolete, finely serrate to coarsely serrate or incised; petioles

stout, often fistulose, 1-8 dm. long; peduncles stout, 4-10 cm. long; involucre of 6-10 lanceolate or linear bracts, 3-15 mm. long, acute, entire or incised, unequal, reflexed; involucre of 4-8 linear-lanceolate bractlets, 1-3 mm. long, acute, entire; rays 10-20, slender, subequal, 1.5-3 cm. long; pedicels 3-5 mm. long; calyx-teeth minute; halves of the carpophore adnate to the mericarps; fruit oval to orbicular, 2-3 mm. long, 2-2.5 mm. broad.

TYPE LOCALITY: Presumably "Carolina," *Walter*.

DISTRIBUTION: Swamps; Newfoundland to Virginia, west to British Columbia and central California (*Baker 902, Friesner 6415, 10,216*).

ILLUSTRATIONS: Bot. Gaz. 12: pl. 15, f. 89 (fr.); Britt. & Brown, Ill. Fl. 2: 532; ed. 2. 2: 656; Contr. U. S. Nat. Herb. 7: 114 (fr.); Clements & Clements, Rocky Mt. Fl. pl. 35, f. 18 (fr.); House, Wild Fl. N. Y. pl. 149; Madroño 1: 137; Jepson, Man. Fl. Pl. Calif. 712; Rydb. Fl. Pr. & Pl. 598; Muensch. Pois. Pl. f. 56; Fassett, Man. Aquat. Pl. 271, f. 58-60.

2. *Sium Carsonii* Durand; A. Gray, Man. ed. 5. 196. 1867.

Sium cicutaefolium var. *Carsonii* G. T. Stevens, Ill. Guide 442. 1910.

Drepanophyllum Carsonii K.-Pol. Bull. Soc. Nat. Mosc. II. 28: 183. 1915.

Sium suave f. *fasciculatum* Fassett, *Rhodora* 23: 111. 1921.

Sium suave f. *Carsonii* Fassett, *Rhodora* 23: 113. 1921.

Plants weak and slender, often submersed, 2-6 dm. high; leaves oblong to ovate in general outline, excluding the petioles 5-12 cm. long, 3-10 cm. broad, pinnate, the leaflets lanceolate to ovate, 1-6 cm. long, 5-15 mm. broad, distinct and remote, coarsely serrate, or dissected in the submerged leaves, often reduced to the terminal lanceolate to orbicular leaflet; petioles 5-25 cm. long; cauline leaves frequently reduced to the broad terminal leaflet, and bearing similar fascicled leaves in their axils from a corm; peduncles slender, 3-8 cm. long; involucre of 3-5 linear-lanceolate bracts, acute, unequal, 1-10 mm. long; involucre of acute linear bractlets, 1-3 mm. long; rays 5-11, slender, unequal, 1-2.5 cm. long; calyx-teeth minute; halves of the carpophore adnate to the mericarps; fruit oval to orbicular, 1.5-2 mm. long, 1.5-2 mm. broad.

TYPE LOCALITY: "Pennsylvania, around the Pocono Mountain," *Green*.

DISTRIBUTION: Maine to Pennsylvania; Minnesota. (*Fassett 131, Fernald & Long 14,241*.)

ILLUSTRATIONS: Bot. Gaz. 12: pl. 15, f. 91 (fr.); Britt. & Brown, Ill. Fl. 2: 532; ed. 2. 2: 656; *Rhodora* 23: 112; Fassett, Man. Aquat. Pl. 271, f. 61, 62.

3. *Sium floridanum* Small, Man. SE. Fl. 976. 1933.

Plants slender, about 3 dm. high; leaves ovate in general outline, excluding the petioles 8-15 cm. long, 7-14 cm. broad, pinnate, the leaflets broadly lanceolate, 2-7 cm. long, 1-2 cm. broad, distinct and remote, finely appressed-serrate, the terminal leaflet often ovate; petioles about 5 cm. long; peduncles slender, 1-4 cm. long; involucre of 2-5 linear, acute bracts, 2-5 mm. long; involucre of bractlets similar to the bracts, 1-2 mm. long; rays 6-10, filiform, 6-15 mm. long, unequal; calyx-teeth minute; immature fruit oval to orbicular.

TYPE LOCALITY: Swamps of the Chipola River, Florida, *Chapman*.

DISTRIBUTION: Known only from the type locality.

57. *SESELI* L. Sp. Pl. 259. 1753.

Slender to moderately stout, erect, caulescent, branching, glabrous to somewhat pubescent perennials or biennials, from fibrous root-crowns surmounting taproots. Leaves petiolate, membranaceous to subcoriaceous, 1-3-pinnate or pinnately decomposed, the leaflets few to many, linear to ovate, entire to pinnatifid. Petioles sheathing. Inflorescence of loose compound umbels, the peduncles terminal and lateral. Involucre of a few inconspicuous linear bracts, or wanting. Involucre usually of numerous, linear, entire bractlets. Rays numerous, spreading-ascending. Pedicels slender, spreading-ascending. Flowers usually white; petals ovate to obovate with a narrower inflexed apex; calyx-teeth prominent (in our species); styles slender or short, spreading or recurved, the stylopodium depressed-conic. Carpophore 2-cleft to the base. Fruit ovoid to oblong, slightly flattened laterally or subterete, pubescent (at least in our species); ribs prominent, unwinged; oil-tubes usually solitary in the intervals, 2 or more on the commissure, accessory oil-tubes occasionally present under the ribs; seed flattened dorsally or subterete in cross section, the face plane.

Type species, *Seseli pimpinelloides* L.

1. *Seseli Libanotis* (L.) Koch, Nova Acta Acad.

Leop.-Carol. 12: 111. 1825.

Athamanta Libanotis L. Sp. Pl. 244. 1753.*Bubon Libanotis* Dumort. Fl. Belg. 79. 1827.*Seseli libanotum* St. Lag. Ann. Soc. Bot. Lyon 7: 134. 1880.*Libanotis Libanotis* Karst. Deuts. Fl. 842. 1882.*Selinum Libanotis* E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 102. 1904.

Plants perennial, puberulent at the nodes and puberulent or pubescent in the inflorescence, 3-12 dm. high; leaves oblong to ovate in general outline, 1-3 dm. long, 5-20 cm. broad, 1-2-pinnate, the leaflets ovate to oblong, 1-2 cm. long, 1-1.5 cm. broad, pinnatifid or pinnately lobed; petioles 5-20 cm. long; cauline leaves narrower and often less divided than the basal; peduncles 5-20 cm. long; involucre of a few inconspicuous, linear, unequal, entire bracts, about 5 mm. long; bractlets of the involucre numerous, linear, 3-5 mm. long; rays 20-40, 2-5 cm. long; pedicels 2-5 mm. long; fruit ovoid, 3-4 mm. long, 1.5-2.5 mm. broad, densely pubescent.

TYPE LOCALITY: "In Sueciae, Germaniae pratis siccis apricis," collector unknown.

DISTRIBUTION: Northern and montane Europe; adventive in the Washington-Baltimore area.

ILLUSTRATIONS: Benth. Handb. Brit. Fl. ed. 2. f. 422; Coste, Fl. Fr. 2: 192; Fedch. & Fler. Fl. Eur. Ross. 693.

58. *CICUTA* L. Sp. Pl. 255. 1753.*Cicutaria* Lam. Fl. Fr. 3: 445. 1778.*Keraskomion* Raf. New Fl. 4: 21. 1838.

Stout or slender, erect, caulescent, branching, glabrous perennials, from a tuberous base bearing fibrous, fleshy-fibrous, or fleshy-tuberous roots. Leaves petiolate, membranaceous, 1-3-pinnate or ternate-pinnate, the leaflets serrate to incised. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral, exceeding the leaves. Involucre wanting, or of a few inconspicuous, narrow bracts. Involucre of several narrow bractlets longer or shorter than the flowers, or rarely wanting. Rays numerous, slender, spreading-ascending. Pedicels slender, spreading. Flowers white or greenish; petals obovate with a narrow inflexed apex; calyx-teeth evident; styles short, spreading, the stylopodium depressed or low-conic. Carpophore 2-cleft to the base, deciduous. Fruit oval or ovoid to orbicular or ellipsoid, flattened laterally and constricted at the commissure or not constricted, glabrous; ribs usually prominent, obtuse and corky, the adjacent laterals of the two carpels separated by an interval so that all the ribs are subequal in surface display, or the two adjacent laterals unseparated by an interval and thus much broader than the dorsals in surface display, as they always are in cross section; oil-tubes small or large, solitary in the intervals, 2 on the commissure; seed subterete in cross section, slightly to markedly oily, sulcate or plane under the tubes, the face plane to slightly concave.

Type species, *Cicuta virosa* L.

Axils of the leaves not bulbiferous.

Fruit constricted at the commissure; lateral ribs about equaling the dorsals in surface display.

Oil-tubes large; seed oily, evidently channeled under the oil-tubes.

Ribs narrower than the oil-tubes; Pacific Coast salt marshes.

Ribs broader than the oil-tubes; coastal eastern and southeastern United States and eastern Mexico.

Oil-tubes small; seed less oily, terete or only slightly sulcate under the oil-tubes.

Fruit oval to orbicular, at least as long as broad, 2-4 mm. long, 2-3 mm. broad; rays 12-20, 2-6 cm. long; pedicels 3-8 mm. long.

Fruit ellipsoid, conspicuously broader than long, 1.5-2.2 mm. long,

2-3 mm. broad; rays 7-14, 7-8 cm. long; pedicels 7-12 mm. long.

Fruit not constricted at the commissure; lateral ribs much broader than the dorsals in surface display.

Leaflets coarsely serrate to incised; fruit oval to orbicular, rounded at apex and base; lateral ribs prominent, about equaling the intervals.

Leaflets finely serrate; fruit ovoid, narrowed toward the apex, cordate at the base; lateral ribs obscure, much narrower than the intervals.

Axils of the leaves bulbiferous.

1. *C. Bolanderi*.2. *C. mexicana*.3. *C. Douglasii*.4. *C. mackenziana*.5. *C. maculata*.6. *C. Victorinii*.7. *C. bulbifera*.

1. *Cicuta Bolanderi* S. Wats. Proc. Am. Acad. 11: 139. 1876.

Stout, from a short tuberous base bearing fibrous or fleshy-fibrous roots, 1-3 m. high; leaves oblong to ovate in general outline, excluding the petioles 15-35 cm. long, 10-25 cm. broad, 1-2-pinnate, the leaflets linear- to oblong-lanceolate, acuminate, 5-9 cm. long, 8-35 mm. broad, finely to coarsely serrate; petioles 15-45 cm. long; peduncles 4-13 cm. long; involucre of 1-several narrow bracts, or wanting; involucre of several lanceolate, acute bractlets, 2-5 mm. long, shorter than the flowers; rays subequal to very unequal, 2-5 cm. long; pedicels about 4 mm. long; fruit oval, 3-4 mm. long, 2.5-3 mm. broad, constricted at the commissure, the ribs low and corky, subequal in surface display, narrower than the broad, darker-colored intervals, the lateral ribs of the two carpels separated by an interval; oil-tubes large; seed very oily, deeply sulcate under the tubes, the face concave.

TYPE LOCALITY: Suisun, Solano County, California, in salt marshes, *Bolander*.

DISTRIBUTION: Salt marshes of central and southern California (*Davy 6668*, *Heller 7541*).

2. *Cicuta mexicana* Coult. & Rose, Proc. Wash.

Acad. 1: 145. 8 Ja 1900.

Cicuta maculata sensu Hemsl. Biol. Centr. Am. Bot. 1: 566. 1880. Not *C. maculata* L. 1753.

Cicuta Curtissii Coult. & Rose, Contr. U. S. Nat. Herb. 7: 97. 31 D 1900.

Cicuta maculata var. *Curtissii* Fernald, *Rhodora* 41: 439. 1939.

Stout, from a usually erect tuberous base bearing fleshy-tuberous roots, 9-24 dm. high; leaves ovate-deltoid in general outline, excluding the petioles 15-35 cm. long, ternate-pinnate or 2-pinnate, the leaflets oblong-lanceolate, 4-10 cm. long, 1.5-4 cm. broad, finely to coarsely serrate, thick and strongly reticulate; petioles 2-3 dm. long; peduncles 5-9 cm. long; involucre of 1-several narrow bracts, or wanting; involucre of several lanceolate to linear, acute, scarious-margined bractlets 2-5 mm. long, shorter than or equaling the flowers; rays very unequal, 2-8 cm. long; pedicels 3-15 mm. long; fruit orbicular or nearly so, 2-3 mm. long, constricted at the commissure, the ribs low, broad and corky, subequal in surface display, broader than the intervals, the lateral ribs of the two carpels separated by an interval; oil-tubes large; seed very oily, deeply sulcate under the tubes, the face plane or concave.

TYPE LOCALITY: Coatzacoalcos, Isthmus of Tehuantepec, Vera Cruz, *Chas. L. Smith 1161*.

DISTRIBUTION: New Jersey to Florida, south and west to Tamaulipas, Nuevo León, and Vera Cruz (*Curtiss 6845*, *Heller 1165*, *Pringle 10,804*).

3. *Cicuta Douglasii* (DC.) Coult. & Rose, Contr. U. S. Nat.

Herb. 7: 95. 1900.

? *Sium* ? *Douglasii* DC. Prodr. 4: 125. 1830.

Cicuta maculata ? sensu H. & A. Bot. Beech. Voy. 142. 1832. Not *C. maculata* L. 1753.

? *Cicuta occidentalis* Dougl.; Heynh. Nom. 2: 144. 1840. (Nomen nudum.)

Cicuta californica A. Gray, Proc. Am. Acad. 7: 344. 1868.

Cicuta virosa var. *californica* Coult. & Rose, Rev. N. Am. Umbell. 130. 1888.

Cicuta occidentalis Greene, Pittonia 2: 7. 1889.

Cicuta occidentalis f. *frondosa* Greene, Pittonia 2: 7. 1889.

Cicuta purpurata Greene, Pittonia 2: 8. 1889.

Cicuta vagans Greene, Pittonia 2: 9. 1889.

Cicuta grandifolia Greene, Leaflets 2: 24. 1909.

Cicuta Douglasii var. *occidentalis* M. E. Jones, Bull. Univ. Mont. Biol. 15: 42. 1910.

Cicuta frondosa Greene, Leaflets 2: 236. 1912.

Cicuta subfalcata Greene, Leaflets 2: 237. 1912.

Cicuta valida Greene, Leaflets 2: 238. 1912.

Cicuta Sonnei Greene, Leaflets 2: 239. 1912.

Cicuta fimbriata Greene, Leaflets 2: 240. 1912.

Cicuta cinctula A. Nelson, Bot. Gaz. 54: 141. 1912.

Cicuta occidentalis f. *californica* H. Wolff in Engler, Pflanzenreich 90 (4228): 82. 1927.

Cicuta occidentalis f. *oregonensi-idahoensis* H. Wolff in Engler, Pflanzenreich 90 (4228): 82. 1927.

Cicuta occidentalis f. *arizonensis* H. Wolff in Engler, Pflanzenreich 90 (4228): 82. 1927.

Cicuta occidentalis f. *wyomingensis* H. Wolff in Engler, Pflanzenreich 90 (4228): 82. 1927.

Stout, from a vertical or horizontal, short or elongate, tuberous base bearing fibrous or fleshy-fibrous roots, 6-20 dm. high; leaves oblong to ovate in general outline, excluding the petioles 12-38 cm. long, 7-22 cm. broad, 1-3-pinnate, the leaflets linear-lanceolate to ovate-lanceolate, 3-10 cm. long, 6-35 mm. broad, remotely to coarsely serrate or incised; petioles

1-8 cm. long; peduncles 5-15 cm. long; involucre of 1-several narrow bracts, or wanting; involucre of several ovate-lanceolate to linear, acute or acuminate, scarious-margined bractlets, 2-15 mm. long, shorter or longer than the flowers; rays 2-6 cm. long; pedicels 3-8 mm. long; fruit ovoid to orbicular, 2-4 mm. long, 2-3 mm. broad, constricted at the commissure, the ribs low, broad, and corky, subequal in surface display, broader than the reddish-brown or homochromous intervals, the lateral ribs of the two carpels separated by an interval; oil-tubes small; seed not very oily, not sulcate under the tubes, the face plane.

TYPE LOCALITY: "In America boreali occid.," Douglas.

DISTRIBUTION: Alberta and Montana to western Alaska, south to California, New Mexico, Arizona, and Chihuahua (*Baker 655, Nelson & Macbride 1315*).

ILLUSTRATIONS: U. S. Dep. Agr. Farm. Bull. 86: 24; Bull. U. S. Dep. Agr. Bot. 20: 41; 26: pl. 7, 8; Pammel, Man. Pois. Pl. 48, pl. opp. 152, 655, 657; Bot. Gaz. 54: 141, f. 1; Bull. U. S. Dep. Agr. 69: pl. 1, 2; Bull. Calif. Exp. Sta. 249: 223; Bull. Colo. Exp. Sta. 211: 53; Madroño 1: 134; Jepson, Man. Fl. Pl. Calif. 710; Rydb. Fl. Pr. & Pl. 599; Sharples, Alaska Wild Fl. 30.

4. *Cicuta mackenzieana* Raup, Jour. Arnold Arb. 17: 279. 1936.

? *Cicuta maculata* var. *angustifolia* Hook. Fl. Bor. Am. 1: 259. 1832.

Stout, from an ovoid or short-oblong, erect, tuberous base bearing fibrous and fleshy-fibrous roots, 4-10 dm. high; leaves ovate in general outline, excluding the petioles 5-15 cm. long, 8-12 cm. broad, bipinnate, often imperfectly so, the leaflets narrowly lanceolate to narrowly elliptic, strict, those of the cauline leaves 2-6 cm. long, 1 mm. broad, saliently dentate; petioles 1-22 cm. long; peduncles 3-11 cm. long; involucre of a few narrowly lanceolate bracts, or wanting; involucre of a few narrowly lanceolate, acuminate bractlets; rays (7-14) 7-8 cm. long; pedicels 7-12 mm. long; fruit ellipsoid, 1.5-2.2 mm. long, 2-3 mm. broad, constricted at the commissure, the ribs low and corky, subequal in surface display, broader than the reddish-brown intervals, or the commissural interval homochromous; oil-tubes small; seed not very oily, not sulcate under the tubes, the face plane.

TYPE LOCALITY: Sandy margin of a lagoon near the south shore of Lake Athabaska about 1.5 miles west of Ennuyeux Creek, Canada, *Raup 6976*.

DISTRIBUTION: Hudson Bay to the Mackenzie Basin (*Raup 6764, Macoun 79,261*).

ILLUSTRATION: Jour. Arnold Arb. 17: pl. 197.

5. *Cicuta maculata* L., Sp. Pl. 256. 1753.

Cicutaria maculata Lam. Encyc. 2: 2. 1786.

Cicuta virosa var. *maculata* Coult. & Rose, Rev. N. Am. Umbell. 130. 1888.

Cicuta dakotica Greene, Leaflets 2: 237. 1912.

Cicuta arguta Greene, Leaflets 2: 238. 1912.

Cicuta ampla Greene, Leaflets 2: 241. 1912.

Cicuta dakotica var. *pseudovirosa* Lunell, Am. Midl. Nat. 4: 486. 1916.

Cicuta dakotica var. *pseudomaculata* Lunell, Am. Midl. Nat. 4: 486. 1916.

Stout, from a usually erect tuberous base bearing fleshy or fleshy-tuberous roots as well as often some fibrous roots above, 6-18 dm. high; leaves ovate in general outline, excluding the petioles 1-3 dm. long, 8-26 cm. broad, 2-3-pinnate, the leaflets lanceolate, acute to acuminate, 2-12 cm. long, 5-30 mm. broad, sharply and coarsely serrate or incised; petioles 1-3 dm. long; peduncles 2-10 cm. long; involucre of a few narrow bracts, or wanting; involucre of several linear to lanceolate, acute to acuminate, scarious-margined bractlets, 2-5 mm. long, entire or denticulate, shorter than the flowers; rays unequal to subequal, 1.5-6 cm. long; pedicels 3-10 mm. long; fruit oval to orbicular, 2-4 mm. long, 2-3 mm. broad, not constricted at the commissure, the ribs low and corky, about as broad as the usually reddish-brown intervals, the lateral ribs of the two carpels closely contiguous and forming a broad flat band, and with much greater surface display than the dorsal ribs; oil-tubes moderately large; seed not very oily, not sulcate or only very shallowly so under the tubes, the face plane to concave.

TYPE LOCALITY: "Virginia," Kalm.

DISTRIBUTION: Prince Edward Island and Quebec to North Carolina and Tennessee, west to North Dakota and Texas (*Heller 1002, Lindheimer 615*).

ILLUSTRATIONS: Bot. Gaz. 12: pl. 15, f. 97 (fr.); Contr. U. S. Nat. Herb. 7: 94 (fr.); Britt. & Brown, Ill. Fl. 2: 536; ed. 2: 658; Rhodora 41: pl. 561, f. 3 (fr.); Muensch. Pois. Pl. f. 54; Fasset, Man. Aquat. Pl. 273, f. 65, 67.

6. *Cicuta Victorinii* Fernald, *Rhodora* 41: 441. 1939.

Slender, from a fascicle of fleshy and fleshy-tuberous roots as well as often some fibrous roots above, 3.5–5.6 dm. high; leaves lanceolate to ovate-lanceolate in general outline, excluding the petioles 5–15 cm. long, 4–8 cm. broad, bipinnate or ternate-pinnate, the leaflets lanceolate, acuminate, 1–4 cm. long, 4–9 mm. broad, finely and somewhat remotely serrate; petioles 5–22 cm. long; involucre of one or more inconspicuous bracts, or wanting; involucre of several linear, scarious-margined, acute bractlets, 2–3 mm. long, shorter than the flowers; rays unequal, 15–35 mm. long; pedicels 5–8 mm. long; fruit ovoid, conspicuously narrowed below the apex, somewhat cordate at the base, the dorsal ribs obscure and not raised above the surface, much narrower and paler than the broad reddish-brown intervals, the lateral ribs of the two carpels closely contiguous and forming a narrow flat band, and with much greater surface display than the dorsal ribs; oil-tubes moderately large; seed not very oily, not sulcate or only very shallowly so under the tubes, the face plane to concave.

TYPE LOCALITY: Tidal flats of the St. Lawrence River, Quebec: grèves intercotidales, Cap Rouge près du Pont de Québec, *Victorin* 15,479.

DISTRIBUTION: Known only from the estuary of the St. Lawrence River, Quebec (*Fernald & Long* 24,249, *Victorin* 15,480).

ILLUSTRATION: *Rhodora* 41: pl. 561, f. 1, 2.

7. *Cicuta bulbifera* L. Sp. Pl. 255. 1753.

Cicutaria bulbifera Lam. Encyc. 2: 3. 1786.

Keraskomion bulbiferum Raf. New. Fl. 4: 21. 1838.

Slender, from a usually erect tuberous base bearing fleshy-tuberous and fibrous roots, 3–10 dm. high, the upper axils bearing clustered bulblets; leaves oblong to ovate in general outline, excluding the petioles 5–15 cm. long, 3–10 cm. broad, 2–3-pinnate, the leaflets linear to linear-lanceolate, acute, 1–8 cm. long, 1–5 mm. broad, sparsely toothed to incised; petioles 1–1.5 dm. long; peduncles 1–5 cm. long, exceeded by the lateral shoots when these are present; involucre of a few small filiform bracts, or wanting; involucre of a few linear to lanceolate, acuminate bractlets, 1–3 mm. long, or wanting; rays 15–25 mm. long; pedicels 2–5 mm. long; fruit rarely maturing, orbicular, 1.5–2 mm. long, constricted at the commissure, the ribs low and broad, subequal in surface display, broader than the narrow intervals, the lateral ribs of the two carpels separated by an interval; oil-tubes small.

TYPE LOCALITY: "Virginia, Canada," Clayton.

DISTRIBUTION: Newfoundland and Quebec to Virginia, west to British Columbia and Oregon (*Cusick* 2966, *Heller & Heller* 551).

ILLUSTRATIONS: Bot. Gaz. 12: pl. 15, f. 99; Pammel, Man. Pois. Pl. 658; Britt. & Brown, Ill. Fl. 2: 536; ed. 2. 2: 658; Fassett, Man. Aquat. Pl. 273, f. 70.

59. *OENANTHE* L. Sp. Pl. 254. 1753.

Phellandrium L. Sp. Pl. 255. 1753.

Phelandrium Neck. Delic. 149. 1768.

Actinanthus Ehrenb. Linnaea 4: 398. 1829.

Dasyloma DC. Prodr. 4: 140. 1830.

Cyssopetalum Turcz. Bull. Soc. Nat. Mosc. 22³: 25. 1849.

Oenosciadium Pomel, Nouv. Mat. Fl. Atl. 141. 1874.

Globocarpus Caruel in Parl. Fl. Ital. 8: 239. 1889.

Slender or stout, usually decumbent and ascending, or erect, herbaceous and often succulent, branching, glabrous perennials, from fascicled fibrous or tuberous roots, often rooting at the lower nodes. Leaves petiolate, membranaceous, pinnate to pinnately decomposed, the leaflets or ultimate divisions serrate to pinnatifid, or the leaves sometimes reduced to linear, fistulose petioles or phyllodes. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre wanting, or of a few or numerous narrow bracts. Involucre of numerous, narrow bractlets, shorter than the flowers. Rays numerous, spreading, subequal. Pedicels spreading. Flowers white; petals obovate with a narrower inflexed apex; calyx-teeth lanceolate, forming a persistent conspicuous corona on the fruit (in our species); styles erect, elongate and rigid after anthesis, rarely deciduous, the stylopodium conic, often somewhat hidden by the calyx-teeth. Carpophore wanting. Fruit oblong (in our species), terete, or very slightly flattened laterally, glabrous; ribs low, obtuse and subequal, very corky,

often more or less confluent over both dorsal and commissural faces of the mericarps; oil-tubes usually solitary in the intervals, 2 on the commissure; seed subterete in cross section and often sulcate under the tubes, the face plane; strengthening cells investing seed and oil-tubes.

Type species, *Oenanthe fistulosa* L.

Leaves bipinnate; styles 2-3 mm. long.

Leaflets 1-6 cm. long, 1-5 cm. broad, coarsely serrate or dentate, or incised or lobed toward the base, with mucronate teeth or lobes; bractlets 4-5 mm. long; fruit oblong, 1.5-2 mm. broad; Pacific Coast of the United States and British Columbia.

Leaflets 1-2 cm. long, 0.5-1 cm. broad, finely serrate, or incised or lobed toward the base, with spinulose teeth or lobes; bractlets 2-3 mm. long; fruit oblong-oval, 2-3 mm. broad; Oaxaca.

Leaves pinnately decomposed; styles about 1 mm. long.

1. *O. sarmentosa*.

2. *O. Pringlei*.

3. *O. aquatica*.

1. *Oenanthe sarmentosa* Presl; DC. Prodr. 4: 138. 1830.

Helosciadium californicum H. & A. Bot. Beech. Voy. 142. 1832.

Oenanthe californica S. Wats. Proc. Am. Acad. 11: 139. 1876.

Oenanthe sarmentosa var. *californica* Coult. & Rose, Rev. N. Am. Umbell. 92. 1888.

Cicuta californica Greene, Pittonia 1: 271. 1889. Not *C. californica* A. Gray, 1868.

Plants decumbent and ascending, 5-15 dm. high or long; leaves oblong to ovate in general outline, excluding the petioles 1-3 dm. long, 6-25 cm. broad, bipinnate, the leaflets ovate, 1-6 cm. long, 1-5 cm. broad, coarsely dentate or serrate, or incised or lobed toward the base; petioles 1-3.5 dm. long; peduncles 5-13 cm. long; involucre of a few linear, foliaceous, acute bracts, 5-15 mm. long, or wanting; involucre of numerous acute bractlets, 4-5 mm. long; rays 10-20, 1.5-3 cm. long; pedicels 2-6 mm. long; calyx-teeth lanceolate, 0.5-1 mm. long; styles 2-3 mm. long; fruit oblong, 2.5-3.5 mm. long, 1.5-2 mm. broad, often purplish, the ribs broader than the intervals, prominent.

TYPE LOCALITY: Nootka Sound, Vancouver Island, British Columbia, *Haenke*.

DISTRIBUTION: British Columbia to central California, chiefly in coastal marshes (*Elmer 4690*, *Jones 29,026*, *Parish 976*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 7: 121 (fr.); Madroño 1: 135; Jepson, Man. Fl. Pl. Calif. 711, f. 692.

2. *Oenanthe Pringlei* Coult. & Rose, Contr. U. S. Nat.

Herb. 3: 307. 1895.

Plants decumbent and ascending, 6-9 dm. high; leaves triangular-ovate in general outline, excluding the petioles 9-12 cm. long, 8-11 cm. broad, bipinnate, the leaflets ovate, 1-2 cm. long, 5-10 mm. broad, spinulose-serrate, incised and lobed toward the base; involucre wanting; involucre of several linear bractlets, 2-3 mm. long; rays 15-20, subequal, 15-25 mm. long; pedicels 2-3 mm. long; calyx-teeth lanceolate, up to 1 mm. long; styles about 2 mm. long; fruit oblong-oval, 3-3.5 mm. long, 2-3 mm. broad, somewhat flattened laterally, the ribs broader than the intervals, the lateral broader than the dorsal.

TYPE LOCALITY: "In cold bogs of the Sierra de Clavellinas," Oaxaca, 9000 feet, *Pringle 6009*.

DISTRIBUTION: Known only from the type locality.

3. *Oenanthe aquatica* (L.) Lam. Encyc. 4: 530. 1797.

Phellandrium aquaticum L. Sp. Pl. 255. 1753.

Ligusticum Phellandrium Crantz, Stirp. Austr. 3: 84. 1767.

Oenanthe Phellandrium Lam. Fl. Fr. 3: 432. 1778.

Selinum Phellandrium E. H. L. Krause in Sturm, Fl. Deuts. ed. 2. 12: 93. 1904.

Plants stout, decumbent, or floating and ascending, 5-15 dm. high; leaves ovate in general outline, pinnately decomposed, the leaflets ovate, 4-6 mm. long, pinnatifid into linear or oblong ultimate divisions 0.5-3 mm. long, or the ultimate divisions of submerged leaves filiform and elongate; peduncles 1-4 cm. long; involucre wanting, or of a few small bracts; involucre of numerous linear-lanceolate bractlets, 2-3 mm. long, shorter than the pedicels; rays 6-15, unequal, 1-2.5 cm. long; pedicels 3-5 mm. long; calyx-teeth lanceolate, unequal, up to 1 mm. long; styles about 1 mm. long; fruit oblong-oval, 3.5-5 mm. long, 1.5-2 mm. broad, narrowed at the apex, the ribs low and broad, broader than the intervals and the lateral broader than the dorsal.

TYPE LOCALITY: "In Europae fossis," collector unknown.

DISTRIBUTION: Eurasia; introduced at Washington, D. C.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: *pl.* 1896; Benth. Handb. Brit. Fl. ed. 2, *f.* 419; Baillon, Hist. Pl. 7: 109 (fr.); Karst. Fl. Deuts. 2: 405; Fiori & Paul. Ic. Fl. Ital. *f.* 2414; Coste, Fl. Fr. 2: 197.

60. AETHUSA L. Sp. Pl. 256. 1753.

Slender, erect, herbaceous, caulescent, branching, glabrous (or the inflorescence somewhat squamose-pubescent) annuals, from slender taproots. Leaves petiolate, membranaceous, pinnately or ternate-pinnately decomposed, the ultimate divisions linear. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary, spreading, mostly longer than the leaves. Involucre usually wanting. Involucel dimidiate, of several narrow, entire bractlets longer than the flowers. Rays rather numerous, spreading-ascending. Pedicels rather numerous, unequal. Flowers white; petals obovate, emarginate, with a narrower inflexed apex, the outer radiant; calyx-teeth obsolete; styles very short, the stylopodium conic. Carpophore 2-cleft to the base. Fruit ovoid, subterete to almost dorsally flattened, glabrous; ribs subequal, narrowly corky-winged; oil-tubes solitary in the intervals, 2 on the commissure; seed flattened dorsally in cross section, the face plane.

Type species, *Aethusa Cynapium* L.

1. *Aethusa Cynapium* L. Sp. Pl. 256. 1753.

Coriandrum Cynapium Crantz, Stirp. Austr. 3: 99. 1767.

Cicuta Cynapium Crantz, Class. Umbell. 98. 1767.

Selinum Cynapium E. H. L. Krause in Sturm, Fl. Deuts. ed. 2, 12: 110. 1964.

Erect, dichotomously branching, 1-8 dm. high, glabrous throughout; leaves broadly obovate in general outline, excluding the petioles up to 9 cm. long, the ultimate divisions linear, acute, 15 mm. long, 4 mm. broad; petioles about 5 cm. long; peduncles 3-15 cm. long; rays 10-20, spreading-ascending, 5-30 mm. long; pedicels 10-20, spreading, unequal, 1-6 mm. long; fruit ovoid, tapering to an acute apex, about 3 mm. long, 2 mm. broad, glabrous, the ribs corky-winged, prominent.

TYPE LOCALITY: "Inter Europae olera," collector unknown.

DISTRIBUTION: Eurasia; introduced in waste places in Nova Scotia and Massachusetts to Pennsylvania.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: *pl.* 1901; Britt. & Brown, Ill. Fl. 2: 520; ed. 2, 2: 645; Coste, Fl. Fr. 2: 196; Sturm, Fl. Deuts. ed. 2, 12: *pl.* 16; Pammel, Man. Pois. Pl. 660.

61. LILAEOPSIS Greene, Pittonia 2: 192. S 1891.

Crantzia Nutt. Gen. 1: 177. 1818. Not *Crantzia* Scopoli, 1777; Swartz, 1788; Schreber, 1789.

Crantzia F. Muell. Syst. Cens. Austral. Pl. 63, as syn. 1882.

Hallomuelleria Kuntze, Rev. Gen. 1: 267. N 1891.

Small, tufted, glabrous, caulescent perennials, from long creeping rhizomes. Leaves reduced to fistulose, transversely septate phyllodes borne at the nodes. Inflorescence of simple, loose, axillary, few-flowered umbels. Peduncles slender, shorter or longer than the leaves. Involucre of a few small bracts. Pedicels slender, ascending to reflexed and pendulous. Flowers white; petals orbicular with a narrower inflexed apex; calyx-teeth small; styles very short, the stylopodium depressed or obsolete. Carpophore wanting. Fruit globose or ovoid, slightly flattened laterally or nearly terete, glabrous; dorsal ribs filiform, the lateral very thick and corky next the commissure; oil-tubes usually solitary in the intervals, 2 on the commissure; seed terete in cross section, the face plane; ribs each with a small group of strengthening cells.

Type species, *Hydrocotyle chinensis* L. (*Lilaeopsis chinensis* Kuntze).

Peduncles longer than the leaves; dorsal ribs of the fruit acute.

1. *L. chinensis*.

Peduncles shorter than the leaves; dorsal ribs of the fruit angled or obscure.

Dorsal ribs of the fruit obscure; Pacific Coast.

2. *L. occidentalis*.

Dorsal ribs prominent, angled or rounded.

3. *L. Schaffneriana*.

Fruit orbicular; pedicels spreading to ascending; Mexico.

Fruit ovoid; pedicels spreading to recurved and pendulous.

Leaves broadened above into a spatulate or oblong blade; all the ribs angled.

4. *L. attenuata*.

Leaves linear to filiform, terete; all the ribs rounded; Arizona.

5. *L. recurva*.

1. *Lilaeopsis chinensis* (L.) Kuntze, Rev. Gen. 3³: 114. 1898.

- Hydrocotyle chinensis* L. Sp. Pl. 1: 234. 1753.
Hydrocotyle sinensis J. G. Gmel. Syst. Nat. 2: 468. 1791.
Hydrocotyle lineata Michx. Fl. Bor. Am. 1: 162. 1803.
Crantzia lineata Nutt. Gen. 1: 178. 1818.
Hydrocotyle ligulata Bosc; DC. Prodr. 4: 71, as syn. 1830.
Lilaeopsis lineata Greene, Pittonia 2: 192. 1891.
Hallomuelleria lineata Kuntze, Rev. Gen. 1: 267. 1891.
Crantzia lineata K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 125. 1916.

Leaves linear-spatulate, 1-6 cm. long, 1-3 mm. broad; peduncles 2.5-6 cm. long, longer than the leaves; umbels 4-9-flowered; pedicels spreading to ascending, 3-8 mm. long; fruit ovoid to turbinate, 1.5-2.5 mm. long, 2-2.5 mm. broad, the dorsal ribs acute, the lateral broad.

TYPE LOCALITY: "China," collector unknown.

- DISTRIBUTION: Nova Scotia to Florida and Mississippi (*Curtiss 993, 4915, Fernald & Long 252*).
 ILLUSTRATIONS: Hill, Veg. Syst. 5: pl. 11; Ann. Gén. Sci. Phys. 4: pl. 66, f. 38; Bot. Gaz. 12: pl. 15, . 95 (fr.); 24: 47 (fr.); E. & P. Nat. Pl. 3³: 205; Contr. U. S. Nat. Herb. 7: 123 (fr.); Britt. & Brown, Ill. Fl. ed. 2. 2: 648; Jour. Linn. Soc. 47: pl. 20, f. 8 (fr.).

2. *Lilaeopsis occidentalis* Coult. & Rose, Bot. Gaz. 24: 48. 1897.

- Crantzia occidentalis* K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 125. 1916.
Lilaeopsis lineata var. *occidentalis* Jepson, Madroño 1: 139. 1923.

Leaves linear, terete, 2.5-15 cm. long, 1-4 mm. broad; peduncles 5-45 mm. long, weak, shorter than the leaves; umbels 5-12-flowered; pedicels slender, ascending to recurved and pendulous, 2-8 mm. long; fruit ovoid, 2 mm. long, 1.25-2 mm. broad, the dorsal ribs obscure, the lateral broad.

TYPE LOCALITY: Salt marshes of Tillamook Bay, Oregon, *Howell*.

- DISTRIBUTION: Vancouver Island, British Columbia, to the coast of central California (*Elmer 2767, Hall 205, Macoun 307*).

- ILLUSTRATIONS: Bot. Gaz. 24: 48, f. 2 (fr.); Contr. U. S. Nat. Herb. 7: 124 (fr.); Jour. Linn. Soc. 47: 534; pl. 20, f. 4 (fr.); Madroño 1: 139.

3. *Lilaeopsis Schaffneriana* (Schlecht.) Coult. & Rose, Bot. Gaz. 24:

48, exclusive of specimens cited from Arizona and Chile. 1897.

- Crantzia Schaffneriana* Schlecht. Linnaea 26: 370. 1854.
Crantzia Schaffneriana f. *aquatica* Schlecht. Linnaea 26: 371. 1854.
Crantzia Schaffneriana f. *subterrestris* Schlecht. Linnaea 26: 371. 1854.
Crantzia lineata sensu Hemsl. Biol. Centr. Am. Bot. 1: 569, as to Mexican specimens. 1881. Not *C. lineata* Nutt. 1818.
Crantzia Schaffneriana K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 125. 1916.
Lilaeopsis Schaffneriana var. *aquatica* A. W. Hill, Jour. Linn. Soc. 47: 539. 1927.
Lilaeopsis Schaffneriana var. *subterrestris* A. W. Hill, Jour. Linn. Soc. 47: 539. 1927.

Leaves linear, terete, 2-20 cm. long, 0.5-4 mm. broad; peduncles slender, 1-3 cm. long, shorter than the leaves; umbels 5-8-flowered; pedicels very slender, spreading to ascending, 2-10 mm. long; fruit orbicular, 1.5-2 mm. long, 1.5-2 mm. broad, all the ribs rounded.

TYPE LOCALITY: "In lacu (laguna) ad urbem Mexico," *Schaffner*.

- DISTRIBUTION: Nuevo León, San Luis Potosí, and Jalisco to South America (*Parry & Palmer 287, Schaffner 543*).

- ILLUSTRATIONS: Bot. Gaz. 24: 48, f. 3 (fr.); Contr. U. S. Nat. Herb. 7: 125 (fr.); Jour. Linn. Soc. 47: 539, f. 5; pl. 19, f. 2.

4. *Lilaeopsis attenuata* (H. & A.) Fernald, Rhodora 26: 94. 1924.

- Crantzia attenuata* H. & A. Bot. Misc. 3: 346. 1833.
Lilaeopsis carolinensis Coult. & Rose, Bot. Gaz. 24: 48. 1897.
Crantzia brasiliensis Glaziov. Mém. Soc. Bot. Fr. 1³: 331. 1909.
Crantzia carolinensis K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 125. 1916.
Crantzia carolinensis Chodat, Bull. Soc. Bot. Genève II. 12: 31. 1920.
Lilaeopsis carolinensis var. *attenuata* A. W. Hill, Jour. Linn. Soc. 47: 537. 1927.

Leaves narrow and elongated below, broadened above into a spatulate or oblong blade, 2-30 cm. long, 1-10 mm. broad; peduncles 4-50 mm. long, shorter than the leaves; umbels 5-15-flowered; pedicels very slender, lax, spreading to recurved, 2-10 mm. long; fruit ovoid, 1.5-2.5 mm. long, 2 mm. broad, all the ribs angled and prominent.

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VOLUME 28B

PART 2

NORTH AMERICAN FLORA

UMBELLIFERAE (PARS)

MILDRED E. MATHIAS AND LINCOLN CONSTANCE

CORNALES

CORNACEAE, NYSSACEAE

HAROLD WILLIAM RICKETT

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Subscription Price, \$4.75

Separate Copies, \$6.35

PUBLISHED BY

THE NEW YORK BOTANICAL GARDEN

December 28, 1945

ANNOUNCEMENT

NORTH AMERICAN FLORA is designed to present in one work descriptions of all plants growing, independent of cultivation, in North America, here taken to include Greenland, Central America, the Republic of Panama, and the West Indies, except Trinidad, Tobago, and Curaçao and other islands off the north coast of Venezuela, whose flora is essentially South American.

The work will be published in parts at irregular intervals, by the New York Botanical Garden, through the aid of the income of the David Lydig Fund bequeathed by Charles P. Daly.

It is planned to issue parts as rapidly as they can be prepared, the extent of the work making it possible to commence publication at any number of points. The completed work will form a series of volumes with the following sequence:

- Volume 1. Myxomycetes, Schizophyta.
- Volumes 2 to 10. Fungi.
- Volumes 11 to 13. Algae.
- Volumes 14 and 15. Bryophyta.
- Volume 16. Pteridophyta and Gymnospermae.
- Volumes 17 to 19. Monocotyledones.
- Volumes 20 to 34. Dicotyledones.

The preparation of the work has been referred to a committee consisting of Dr. H. A. Gleason, Dr. H. W. Rickett, and Dr. Fred J. Seaver.

Dr. Francis W. Pennell, of the Academy of Natural Sciences of Philadelphia, and Dr. William R. Maxon, of the United States National Herbarium, have consented to act as an advisory committee.

Each author will be wholly responsible for his own contributions, being restricted only by the general style adopted for the work, which must vary somewhat in the treatment of diverse groups.

NORTH AMERICAN FLORA is published in parts of variable size; it is expected that four or more parts will be required for each volume. The subscription price for all parts published prior to 1936 is fixed at \$1.50 for each part; for later parts it is approximately two cents per page. A limited number of separate parts will be sold at an advance of a third above the subscription price.

THE NEW YORK BOTANICAL GARDEN
NEW YORK 58, N. Y.

TYPE LOCALITY: "Buenos Ayres," Argentina, *Tweedie*.

DISTRIBUTION: Virginia and North Carolina to Arkansas and Louisiana; South America. (*Palmer 29,702*.)

ILLUSTRATIONS: Bot. Gaz. 24: 49, f. 4 (fr.); Rep. Mo. Bot. Gard. 9: pl. 48; Contr. U. S. Nat. Herb. 7: 124 (fr.); Jour. Linn. Soc. 47: 536.

5. *Lilaopsis recurva* A. W. Hill, Jour. Linn. Soc. 47: 535. 1927.

Lilaopsis Schaffneriana Coult. & Rose, Bot. Gaz. 24: 48, as to Arizona specimens. 1897. Not *Crantzia Schaffneriana* Schlecht. 1854.

Leaves linear to filiform, terete, 2-24 cm. long, 0.5-3 mm. broad; peduncles 1.5-6 cm. long, shorter than the leaves; umbels 6-8-flowered; pedicels slender, recurved, pendulous, 5-15 mm. long; fruit ovoid, 2-2.5 mm. long, 1-1.5 mm. broad, all the ribs rounded.

TYPE LOCALITY: Santa Cruz Valley near Tucson, Arizona, *Pringle*.

DISTRIBUTION: Arizona (*Lemmon 2895*).

ILLUSTRATION: Jour. Linn. Soc. 47: pl. 19, f. 5, 6 (fr.).

62. *DAUCOSMA* Engelm. & Gray; A. Gray, Bost. Jour. Nat.

Hist. 6: 210. 1850.

Slender, erect, herbaceous, caulescent, branching, glabrous annuals, from slender taproots. Leaves petiolate, membranaceous, ternate-pinnately dissected, the ultimate divisions lanceolate, lacinate. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary, somewhat callous-roughened above, longer than the leaves. Involucre conspicuously pinnately parted, equaling or longer than the rays. Involucel of bractlets like the bracts, equaling or longer than the pedicels. Rays rather few, spreading-ascending. Pedicels spreading. Flowers white; petals obovate with an elongate, broad, 2-lobed, inflexed apex; calyx-teeth conspicuous, subulate; styles slender, reflexed, longer than the conic stylopodium. Carpophore 2-cleft to the base. Fruit ovoid-oblong, flattened laterally, glabrous; dorsal ribs broad and low, the lateral prominent, forming a prominent acute ridge around the fruit; oil-tubes solitary in the intervals, 2 on the commissure; seed subterete or slightly flattened dorsally, the face plane.

Type species, *Daucosma laciniatum* Engelm. & Gray.

1. *Daucosma laciniatum* Engelm. & Gray; A. Gray, Bost. Jour.

Nat. Hist. 6: 211. 1850.

Discopleura laciniata Benth. & Hook.; S. Wats. Bibl. Ind. 420. 1878.

Ptilimnium laciniatum Kuntze, Rev. Gen. 1: 269. 1891.

Plants 9-12 dm. high; leaves deltoid in general outline, excluding the petioles 4.5-10 cm. long; 4.5-11 cm. broad, the ultimate segments 1.5-3 cm. long, 5-12 mm. broad; petioles 1-1.5 cm. long; peduncles 1.5-10 cm. long; rays 14-17, 2-5 cm. long; pedicels about 20, 3-9 mm. long; fruit 3-4 mm. long, about 2 mm. broad.

TYPE LOCALITY: "High valleys near New Braunfels and on the Upper Guadalupe, Texas, covering large patches of moist prairie land, and along the margin of thickets," *Lindheimer 404*.

DISTRIBUTION: Western Texas (*Heller 1943*, *Lindheimer 854*).

63. *PTILIMNIUM* Raf. Am. Month. Mag. 4: 192. 1819

(hyponym); Neog. 1: 2. 1825.

Discopleura DC. Coll. Mém. 5: 38. 1829.

Harperia Rose, Proc. U. S. Nat. Mus. 29: 441. 1905. Not *Harperia* Fitzgerald, 1904.

Harperella Rose, Proc. Biol. Soc. Wash. 19: 96. 1906.

Slender, erect, herbaceous, caulescent, branching, glabrous annuals, from fascicles of fibrous roots. Leaves petiolate, membranaceous, pinnately decomposed with filiform ultimate divisions, or the leaves reduced to fistulose petioles. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary. Involucre of conspicuous or inconspicuous, entire or pinnatifid bracts. Involucel of conspicuous or inconspicuous, entire bractlets. Rays few to numerous, spreading-ascending to spreading. Pedicels spreading. Flowers white; petals obovate with a narrower inflexed apex; calyx-teeth small or prominent; styles spreading

to reflexed, the stylopodium conic. Carpophore bifid at the apex to 2-cleft about one-half of its length. Fruit ovoid to suborbicular, flattened laterally, glabrous; dorsal ribs filiform, rounded or acute, the lateral small to winged and corky, forming a band around the fruit; oil-tubes solitary in the intervals, 2 on the commissure; seed subterete in cross section, the face plane.

Type species, *Ammi capillaceum* Michx. (*Ptilimnium capillaceum* Raf.).

Leaves reduced to fistulose petioles; involucre and involucler inconspicuous.

Plants tall, 5.5–10.5 dm. high; umbels 6–15-rayed; pedicels 3–6 mm. long; Georgia.

Plants low, 1.5–4.5 dm. high; umbels 3–7-rayed; pedicels 1–3 mm. long.

Umbellets 6–15-flowered; lateral ribs inconspicuous; Alabama.

Umbellets 2–8-flowered; lateral ribs forming a conspicuous band about the fruit; Maryland and Virginia.

Leaves not reduced to fistulose petioles, the blades pinnately decomposed; involucre and involucler conspicuous.

Involucral bracts usually cleft; styles shorter than the stylopodium; calyx-teeth small, deltoid.

Involucral bracts mostly entire; styles equaling to greatly exceeding the stylopodium; calyx-teeth large, lanceolate-acuminate.

Leaf-segments verticillate, crowded; leaves always petiolate; lateral ribs forming a conspicuous band around the fruit.

Leaf-segments not verticillate, not crowded; leaves usually sessile or very short petiolate; lateral ribs inconspicuous.

1. *P. nodosum*.

2. *P. fluviatilis*.

3. *P. viviparum*.

4. *P. capillaceum*.

5. *P. costatum*.

6. *P. Nuttallii*.

1. *Ptilimnium nodosum* (Rose) Mathias, Brittonia 2: 244. 1936.

Harperia nodosa Rose, Proc. U. S. Nat. Mus. 29: 441. 1905.

Harperella nodosa Rose, Proc. Biol. Soc. Wash. 19: 96. 1906.

Carum nodosum K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 199. 1916.

Plants 5.5–10.5 dm. high, the stems fluted; leaves reduced to fistulose petioles, 18–38 cm. long, 5 mm. broad; peduncles 1–6.5 cm. long; involucre of a few small, lanceolate, entire bracts; involucler of bractlets similar to the bracts, much shorter than the pedicels; rays 6–15, spreading, subequal, 1–2.2 cm. long; pedicels 10–15, 3–6 mm. long; calyx-teeth conspicuous, lanceolate, acuminate; petals acuminate, anthers rose-colored; styles more than twice as long as the stylopodium; carpophore bifid at the apex; fruit ovoid, 1–1.5 mm. long, 1–2 mm. broad, the ribs subequal, the lateral with small corky appendages.

TYPE LOCALITY: "Shallow exsiccated pond near Ellaville, Schley County, Georgia," *Harper 1411*.

DISTRIBUTION: Georgia (*Harper 2220*).

ILLUSTRATION: Proc. U. S. Nat. Mus. 29: pl. 3.

2. *Ptilimnium fluviatilis* (Rose) Mathias, Brittonia 2: 244. 1936.

Harperella fluviatilis Rose, Contr. U. S. Nat. Herb. 13: 290. 1911.

Plants 3–4 dm. high; leaves reduced to fistulose petioles, 5–15 cm. long, 1–3 mm. broad; peduncles 1–2.5 cm. long; involucre of minute bracts, or wanting; involucler of minute bractlets; rays 5–7, spreading, subequal, 5–10 mm. long; pedicels 6–15, about 2 mm. long; calyx-teeth lanceolate, acuminate, exceeding the stylopodium; petals acuminate; anthers pale (?); styles more than twice as long as the stylopodium; carpophore bifid at the apex; fruit ovoid, 1.5 mm. long, 1 mm. broad, the ribs subequal, the lateral with a narrow corky appendage.

TYPE LOCALITY: "Town Creek, Sand Mountains, near Chavres, Dekalb County, Alabama," *Harper 8*.

DISTRIBUTION: Alabama (*Harper 14, 3097, 3100, 3530*).

3. *Ptilimnium viviparum* (Rose) Mathias, Brittonia 2: 244. 1936.

Harperella vivipara Rose, Contr. U. S. Nat. Herb. 13: 290. 1911.

Carum viviparum K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 199. 1916.

Plants 1.5–4.5 dm. high; leaves reduced to fistulose petioles, about 7 cm. long, about 2 mm. broad; peduncles 1–5 cm. long; involucre of very short, lanceolate, acute bracts; involucler of bractlets similar to the bracts; rays 3–7, spreading, subequal, 4–10 mm. long; pedicels 2–8, 1–3 mm. long; calyx-teeth conspicuous, deltoid; petals acuminate; anthers light brown (in dried specimens); styles longer than the stylopodium; carpophore 2-cleft to below the middle; fruit

ovoid, 1.5–2 mm. long, about 1.5 mm. broad, the lateral ribs corky-thickened, forming a rather conspicuous band around the fruit.

TYPE LOCALITY: "Near Hancock, Maryland," *Rose*.

DISTRIBUTION: Maryland and West Virginia to Virginia (*Shreve & Jones 746*).

4. *Ptilimnium capillaceum* (Michx.) Raf. Bull. Bot. Seringe 1: 217. 1830.

Ammi majus? Walt. Fl. Car. 113. 1788. Not *A. majus* L. 1753.

Ammi capillaceum Michx. Fl. Bor. Am. 1: 164. 1803.

Ammi rubricaulis Hornem. Hort. Hafn. 272. 1813.

Ammi junceum Raf. Neog. 1: 2. 1825. (Nomen nudum.)

Discopleura capillacea DC. Coll. Mém. 5: 38. 1829.

Ptilimnium junceum Raf. Bull. Bot. Seringe 217. 1830.

Aethusa capillacea Nutt.; DC. Prodr. 4: 106, as syn. 1830.

Discopleura juncea Steud. Nom. Bot. ed. 2. 1: 520. 1840.

Discopleura major B. S. P. Prel. Cat. 22. 1888.

Plants 1–8.5 dm. high; leaves verticillate at the nodes, polymorphic in submerged forms, broadly oblong in general outline, excluding the petioles 5–13 cm. long, 2–4 cm. broad, pinnately decomposed, the ultimate divisions filiform, 5–30 mm. long, 0.25–1 mm. broad; petioles obsolete to 1.5 cm. long, entirely winged-sheathing; peduncles 2.5–10.5 cm. long, exceeding the leaves; involucre of several pinnately cleft or rarely entire bracts about one-half as long as the rays; involucre of filiform entire bractlets shorter than the pedicels; rays 4–20, spreading, subequal, 1–3.5 cm. long; pedicels 5–20, 3–12 (usually 4–6) mm. long; petals acute; calyx-teeth small, deltoid, persistent; anthers purple; styles short, about equaling the stylopodium; fruit broadly ovoid, 1.5–3 mm. long, 1.5–2 mm. broad, the lateral ribs conspicuous.

TYPE LOCALITY: "In campestribus Carolinae," collector unknown.

DISTRIBUTION: Massachusetts to Florida, west to Missouri, Kansas, and Texas (*Curtiss 4341*, *Heller 1150*).

ILLUSTRATIONS: DC. Coll. Mém. 5: pl. 8; Reichenb. Ic. Fl. Germ. 21: pl. 1860; Bot. Gaz. 12: pl. 17, f. 107 (fr.); Contr. U. S. Nat. Herb. 7: 117 (fr.); Britt. & Brown, Ill. Fl. ed. 2: 2: 657.

5. *Ptilimnium costatum* (Ell.) Raf. Bull. Bot. Seringe 217. 1830.

Ammi costatum Ell. Bot. S. C. & Ga. 1: 350. 1817.

Discopleura capillacea var. *costata* DC. Coll. Mém. 5: 39. 1829.

Discopleura costata Steud. Nom. Bot. ed. 2. 1: 520. 1840.

Ptilimnium missouriense Coult. & Rose, Contr. U. S. Nat. Herb. 12: 444. 1909.

Plants 8–15 dm. high; leaves oblong in general outline, excluding the petioles 4.5–14 cm. long, 2–7 cm. broad, pinnately decomposed, the ultimate divisions filiform, acute, 3–8 mm. long, 0.2–1 mm. broad, crowded, appearing verticillate; petioles 0.5–3 cm. long, entirely sheathing, unwinged; peduncles 7–14 cm. long, exceeding the leaves; involucre of very short, usually entire bracts; involucre of entire bractlets shorter than the pedicels; rays about 20, spreading, subequal, 1.5–4 cm. long; pedicels 15–20, spreading, 4–5 mm. long; petals acuminate; calyx-teeth conspicuous, deltoid, acute to subacuminate, persistent; styles elongate, usually more than twice the length of the conic stylopodium; anthers rose-colored; fruit ovoid, 2–4 mm. long, 2–3 mm. broad.

TYPE LOCALITY: "Swamps along the margin of the Ogeechee River, Mount Prosper," *Elliott*?

DISTRIBUTION: North Carolina and Georgia, west to Missouri and Texas (*Harper 770*, *Palmer 8989*).

ILLUSTRATION: DC. Coll. Mém. 5: pl. 8, f. B (fr.).

6. *Ptilimnium Nuttallii* (DC.) Britton, Mem. Torrey Club 5: 244. 1894.

? *Peucedanum verticillatum* Raf. Fl. Ludov. 81. 1817.

Discopleura Nuttallii DC. Coll. Mém. 5: 39. 1829.

Cicuta capillacea Nutt.; DC. Coll. Mém. 5: 39, as syn. 1829.

Discopleura capillacea var. *Nuttallii* Coult. & Rose, Bot. Gaz. 12: 292. 1887.

Plants 3–6 dm. high; leaves oblong in general outline, 3–9 cm. long, 1.5–4 cm. broad, pinnately decomposed, the ultimate divisions filiform, acute, elongate, 10–60 mm. long, 0.5 mm. broad, not verticillate; petioles short, up to 1 cm. long; peduncles 4–12 cm. long; involucre of filiform, mostly entire bracts much shorter than the rays; involucre of filiform entire bractlets

shorter than the pedicels; rays 25-30, spreading, subequal, 1.5-3.5 cm. long; pedicels 25-30, spreading, 3-8 mm. long; petals acute; calyx-teeth conspicuous, linear-lanceolate, persistent; anthers purple or purplish-tinged; styles longer than the stylopodium; fruit ovoid, 1-1.5 mm. long, 1 mm. broad, the lateral ribs inconspicuous, only slightly corky-thickened.

TYPE LOCALITY: "In America boreali ad Red River," Nuttall.

DISTRIBUTION: Illinois to Louisiana, west to Kansas and Texas (Hall 248, Palmer 32,423).

ILLUSTRATIONS: DC. Coll. Mém. 5: pl. 9; Britt. & Brown, Ill. Fl. ed. 2: 2: 657.

Ptilimnium texense Coult. & Rose, Contr. U. S. Nat. Herb. 12: 445. 1909. Plants so described seem to be of hybrid origin, the parental stocks being *P. capillaceum* and *P. Nuttallii*. TYPE LOCALITY: Near Hockley, Texas, F. W. Thurow.

64. *CYNOSCIADIUM* DC. Coll. Mém. 5: 44. 1829.

Slender, erect, herbaceous, caulescent, more or less dichotomously branching in the inflorescence, glabrous annuals, from a fascicle of fibrous roots. Basal leaves petiolate, membranaceous, entire and septate; cauline leaves palmately parted with narrow, elongate divisions. Petioles sheathing. Inflorescence of loose compound umbels; peduncles axillary and terminal. Involucre wanting, or of a few linear bracts. Involucel wanting, or of a few linear bractlets shorter than the pedicels. Rays few, unequal, spreading-ascending. Pedicels few, spreading-ascending. Flowers white; petals obovate with a narrow inflexed apex; calyx-teeth prominent, ovate; styles very short with divergent tips, the stylopodium conic. Carpophore merely notched at the apex. Fruit ovoid, prominently beaked at the apex, rounded at the base, slightly flattened laterally or subterete, glabrous; dorsal ribs narrow, prominent, the lateral broadly corky-winged; oil-tubes solitary in the intervals, 2 on the commissure; seed slightly flattened dorsally in cross section, the face plane.

Type species, *Cynosciadium digitatum* DC.

1. *Cynosciadium digitatum* DC. Coll. Mém. 5: 45. 1829.

Oenanthe digitata Nutt.; DC. Coll. Mém. 5: 45, as syn. 1829.

Plants 15 cm. high; basal leaves linear-lanceolate, acute at the apex, tapering at the base, 5-12 cm. long, 2-5 mm. broad; petioles sheathing throughout, 5-15 mm. long; divisions of the cauline leaves 3-5, linear-lanceolate to linear, 3.5-12 cm. long, 1-6 mm. broad, acute, tapering at the base; peduncles 1.5-8 cm. long; rays 2-10, slender, 1-4 cm. long, or some umbellets frequently sessile or proliferating; pedicels 2-11, 5-20 mm. long; fruit 2-3 mm. long, 1.5-2.5 mm. broad.

TYPE LOCALITY: "Aux environs du fleuve Arkansa," Nuttall.

DISTRIBUTION: Southern Missouri to eastern Texas (Demaree 15,204, Hall 255, Reverchon 376).

ILLUSTRATIONS: DC. Coll. Mém. 5: pl. 11, f. A; Bot. Gaz. 12: pl. 15, f. 101.

65. *LIMNOSCIADIUM* Math. & Const. Am. Jour.

Bot. 28: 162. 1941.

Low and diffuse to erect, slender, herbaceous, caulescent, glabrous annuals, from a fascicle of fibrous roots. Leaves petiolate, membranaceous, entire and septate, or pinnate with narrow, elongate divisions. Petioles sheathing. Inflorescence more or less dichotomously branching, of loose compound umbels; peduncles axillary and terminal, or some umbels sessile. Involucre wanting, or of several narrow, entire bracts. Involucel of several narrow, entire bractlets shorter than the pedicels. Rays few, unequal, spreading-ascending. Pedicels few, spreading. Flowers white; petals oval to obovate, without an inflexed apex; calyx-teeth prominent, ovate-lanceolate; styles very short with divergent tips, the stylopodium conic. Carpophore shortly bifid at the apex. Fruit oblong-oval to orbicular, rounded at apex and base, slightly flattened dorsally, glabrous; dorsal ribs filiform, the laterals broadly corky-winged; oil-tubes solitary in the intervals, 2 on the commissure; seed flattened dorsally in cross section, the face plane.

Type species, *Cynosciadium pinnatum* DC. (*Limnosciadium pinnatum* Math. & Const.).

Plants erect or assurgent; calyx-teeth 0.5 mm. or less long, attached well below and shorter than the stylopodium; fruit oblong-oval, 2-4 mm. long, 1-2 mm. broad.

Plants low and diffuse; calyx-teeth up to 1.5 mm. long, attached shortly below and equaling the stylopodium; fruit oval to orbicular, 2-3 mm. long, 2 mm. broad.

1. *L. pinnatum*.

2. *L. pumilum*.

1. *Limnoscium pinnatum* (DC.) Math. & Const. Am.
 Jour. Bot. 28: 162. 1941.

Cynosciadium pinnatum DC./Coll. Mém. 5: 45. 1829.

Aethusa pinnata Nutt.; DC. Coll. Mém. 5: 45, as syn. 1829.

Oenanthe pinnata K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 130. 1916.

Plants erect or assurgent, 1-8 dm. high; basal leaves linear-lanceolate, acute at the apex, tapering at the base, 5-20 cm. long, 3-25 mm. broad, entire and septate, or pinnate, the terminal division elongate; petioles 1.5-10 cm. long; cauline leaves pinnate, or the lowest and uppermost entire, with 2-9 linear to linear-lanceolate divisions 3-10 cm. long, 1-6 mm. broad, acute at both ends; peduncles 1-8 cm. long, or some umbels sessile; involucre of several linear or linear-lanceolate, reflexed bracts, 2-6 mm. long; involucre of several linear bractlets 1-5 mm. long; rays 3-12, slender, 5-35 mm. long; pedicels 4-20, 2-8 mm. long; calyx-teeth 0.5 mm. or less long, attached well below and shorter than the stylopodium; fruit oblong-oval, 2-4 mm. long, 1-2 mm. broad, the dorsal ribs low, the lateral corky wings slightly broader.

TYPE LOCALITY: "Aux environs du fleuve Arkansa," Nuttall.

DISTRIBUTION: Southern Missouri and Kansas, south to northern and central-eastern Texas (Palmer 2406, Reverchon 1019).

ILLUSTRATIONS: DC. Coll. Mém. 5: pl. 11, f. B; Bot. Gaz. 12: pl. 15, f. 103 (fr.); Contr. U. S. Nat. Herb. 7: 120 (fr.); Britt. & Brown, Ill. Fl. ed. 2: 2: 646; Rydb. Fl. Pr. & Pl. 597.

2. *Limnoscium pumilum* (Engelm. & Gray) Math. & Const.
 Am. Jour. Bot. 28: 162. 1941.

Cynosciadium pinnatum var. *pumilum* Engelm. & Gray, Bost. Jour. Nat. Hist. 5: 218. 1845.

Cynosciadium pumilum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 121. 1900.

Oenanthe pumila K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 130. 1916.

Plants low and diffuse, 0.5-4 dm. high or long; basal leaves lanceolate to linear-lanceolate, acute at the apex, tapering at the base, 2-8 cm. long, 3-8 mm. broad, entire and septate, or pinnate, the terminal division elongate; petioles 2-7 cm. long; cauline leaves pinnate or entire, with 3-7 filiform to lanceolate divisions 3-7 cm. long, 1-8 mm. broad, acute at the apex, tapering at the base; peduncles 0.5-7.5 cm. long, or frequently some umbels sessile; involucre of a few minute linear bracts, or wanting; involucre of several linear to linear-lanceolate bractlets 2-4 mm. long; rays 3-8, slender, 1-5 cm. long; pedicels several, 2-4 mm. long; calyx-teeth up to 1.5 mm. long, attached shortly below and about equaling the stylopodium; fruit oval to orbicular, 2-3 mm. long, 2 mm. broad, the dorsal ribs filiform, the lateral wings broad and corky.

TYPE LOCALITY: Prairies, Galveston, Texas, Lindheimer.

DISTRIBUTION: Southeastern Texas (Heller 1409, Palmer 11,261).

66. *COAXANA* Coult. & Rose, Contr. U. S. Nat. Herb. 3: 297. 1895.

Slender, erect, herbaceous, caulescent, branching, glabrous and glaucous perennials. Leaves petiolate, membranaceous, ternately, ternate-pinnately, or pinnately compound with broad, serrate to incised leaflets. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary. Involucre of a single foliaceous bract, or wanting. Involucre of conspicuous toothed bractlets longer than the fruit, or wanting. Rays slender, spreading-ascending. Pedicels slender to obsolete, spreading-ascending. Flowers purplish; calyx-teeth obsolete; styles slender, recurved, the stylopodium conic. Fruit oblong-oval, flattened laterally, glabrous; one or two of the dorsal and the two lateral ribs conspicuously thin-winged; oil-tubes several in the intervals, 2 on the commissure; seed nearly terete in cross section, the face slightly concave.

Type species, *Coaxana purpurea* Coult. & Rose.

Involucre of conspicuous bractlets longer than the flowers; fertile pedicels 5 mm.

long.
 Involucre wanting; fertile pedicels very short or obsolete.

1. *C. purpurea*.
 2. *C. ebracteata*.

1. *Coaxana purpurea* Coult. & Rose, Contr. U. S. Nat.
 Herb. 3: 297. 1895.

Plants 3-18 dm. high, often more or less purplish throughout; leaves ovate in general outline, excluding the petioles 1-3 dm. long, 3-ternate or bipinnate, the leaflets sharply doubly

serrate with spinulose teeth and somewhat incised, paler and reticulate beneath; petioles slender, 1-3 dm. long; cauline leaves reduced upward, with conspicuously inflated sheaths; peduncles 5-20 cm. long; involucre of a leaflike bract 3-4 cm. long, or wanting; involucre of several oblanceolate, toothed bractlets, 10-25 mm. long; rays 8-20, subequal to unequal, 3-5 cm. long; fertile pedicels 5 mm. long; fruit oblong-oval, 4-7 mm. long, 2-4 mm. broad.

TYPE LOCALITY: On southwest side of summit of Mount Zempoaltepec, Oaxaca, 10,000-11,000 feet. *Nelson 646.*

DISTRIBUTION: Oaxaca to Guatemala (*Steyermark 34,691, 35,741*).

ILLUSTRATION: *Contr. U. S. Nat. Herb. 3: pl. 5.*

2. *Coaxana ebracteata* Rose, *Contr. U. S. Nat. Herb. 8: 337. 1905.**

Plants about 6 dm. high; cauline leaves 2-ternate, the leaflets ovate, sharply serrate and more or less cleft, with conspicuously inflated, scarious sheaths; peduncles 7-8 cm. long; involucre wanting; involucre wanting; rays 3-4 cm. long; fertile pedicels short or obsolete, the sterile slender.

TYPE LOCALITY: Between Hurtztan and Oxchuc, Chiapas, *C. & E. Seler 2148.*

DISTRIBUTION: Known only from the type locality.

67. *COULTEROPHYTUM* B. L. Robinson, *Proc. Am. Acad. 27: 168. 1892.*

Tall, erect, herbaceous or woody, caulescent, branching, pubescent perennials. Leaves petiolate, membranaceous, the upper opposite, ternately or pinnately compound, the leaflets ovate to lanceolate, crenate to serrate. Petioles sheathing, inflated. Inflorescence of loose compound umbels; peduncles terminal and axillary. Involucre wanting or inconspicuous. Involucre of several small, linear bractlets. Rays rather few, spreading to reflexed. Pedicels spreading. Flowers purple; calyx-teeth minute, deciduous; styles short, erect or spreading, the stylopodium conic. Carpophore 2- or 4-cleft to the base. Fruit clavate to obovoid, slightly flattened laterally or subterete, glabrous or puberulent, contracted below the seed to form a short, winged, stipe-like base; ribs filiform and prominent or short-winged; oil-tubes solitary in the intervals, about 4 on the commissure; seed nearly terete in cross section, sometimes sulcate under the tubes, the face concave.

Type species, *Coulterophytum laxum* B. L. Robinson.

Stems more or less woody; pedicels slender, 3-8 mm. long; carpophore 2-parted.

Leaves densely cinereous-puberulent beneath.

Leaves sparsely puberulent on the nerves and veins beneath.

Leaflets crenate-apiculate; peduncles 6-12 cm. long; umbellets 5-15-

flowered; mature fruit puberulent.

Leaflets serrate-apiculate; peduncles 1-6.5 cm. long; umbellets 15-20-

flowered; mature fruit glabrous.

Plants 9-12 dm. high; petioles 15-18 cm. long; fruit obovoid, 6-8

mm. long, about 2 mm. broad, the contracted base 1-2 mm. long.

Plants 15-30 dm. high; petioles 3-8 cm. long; fruit clavate, 8-12

mm. long, 2-3 mm. broad, the contracted base 3-5 mm. long.

Stems herbaceous; pedicels stout, 1-2 mm. long; carpophore 4-parted.

1. *C. Holwayi*.

2. *C. pubescens*.

3. *C. macrophyllum*.

4. *C. laxum*.

5. *C. brevipes*.

1. *Coulterophytum Holwayi* Rose, *Contr. U. S. Nat. Herb. 8: 336. 1905.*

Plants tall, woody and about 2 cm. thick at the base, glabrous; leaves ovate in general outline, excluding the petioles 3-4 dm. long, 3 dm. broad, ternate-bipinnate, the leaflets ovate to ovate-lanceolate, 5-12 cm. long, 2-5 cm. broad, long-acuminate at the apex, cuneate to broadly cordate at the base, serrate-apiculate, sparsely puberulent on the veins above and densely cinereous-puberulent below; peduncles 3.5-5 or 8 cm. long; involucre usually wanting, rarely of a solitary bract; involucre of several linear bractlets shorter than the pedicels; rays 11-17, spreading to somewhat reflexed, subequal, 12-40 mm. long, puberulent; fertile pedicels 5-15,

* As "Oaxacana"; corrected in *Contr. U. S. Nat. Herb. 10: 337. 1906.*

4-6 mm. long, puberulent; ovary puberulent; carpophore 2-parted; immature fruit 7 mm. long, 2 mm. broad, puberulent, the contracted base 2 mm. long.

TYPE LOCALITY: Near Tapotlan, Jalisco, *Holway 5138*.

DISTRIBUTION: Jalisco to Michoacán (*Leavenworth 566*).

2. *Coulterophytum pubescens* Coult. & Rose, Proc.

Wash. Acad. 1: 157. 1900.

Plants 12-18 dm. high, woody but weak, glabrous; leaves ovate-deltoid in general outline, excluding the petioles 3 dm. or more long, bipinnate, the leaflets ovate-lanceolate to lanceolate, 8-15 cm. long, 3-6 cm. broad, acuminate at the apex, oblique at the base, crenate-apiculate, sparsely puberulent on the veins above, more densely so beneath; peduncles 6-12 cm. long; involucre wanting; involucre of several linear bractlets shorter than the pedicels; rays 14-20, spreading, subequal, 12-40 mm. long, puberulent; fertile pedicels 1-9, puberulent; ovary densely puberulent; carpophore 2-parted; fruit clavate, 9-11 mm. long, 2-3 mm. broad, puberulent, the contracted base 3-4 mm. long.

TYPE LOCALITY: "On the tableland between Colotlan and Bolanos," Jalisco, *Rose 2863*.

DISTRIBUTION: Known only from the type locality.

3. *Coulterophytum macrophyllum* Coult. & Rose, Proc.

Wash. Acad. 1: 156. 1900.

Plants 9-12 dm. high, woody, the branches dying back annually, glabrous; leaves ovate in general outline, excluding the petioles 2.5-4 dm. or more long, about 3 dm. broad, 2- or 3-pinnate, the leaflets ovate to ovate-lanceolate, 4-15 cm. long, 2-7 cm. broad, acuminate at the apex, rounded to somewhat oblique at the base, irregularly serrate-apiculate, glabrous to sparsely hirtellous or granular-roughened on the veins; petioles scarious-winged, 15-18 cm. long; peduncles 1-6.5 cm. long; involucre of 1-2 linear, scarious-margined, acute, puberulent bracts, shorter than the rays; involucre of several bractlets like the bracts but usually glabrous, shorter than the pedicels; rays about 20, spreading to reflexed, subequal, 10-30 mm. long, glabrous to sparsely puberulent; fertile pedicels 3-8, 3-5 mm. long, usually glabrous; carpophore 2-parted; ovary glabrous; fruit obovoid, 6-8 mm. long, about 2 mm. broad, glabrous, the contracted base 1-2 mm. long.

TYPE LOCALITY: "In the foothills of the Sierra Madre between Acaponeta and Pedro Paulo," Tepic (Nayarit), *Rose 1937*.

DISTRIBUTION: Sinaloa to Nayarit (*Rose 1936*).

4. *Coulterophytum laxum* B. L. Robinson, Proc. Am.

Acad. 27: 169. 1892.

Plants 15-30 dm. high, woody and about 2.5 cm. thick at the base, glabrous; leaves ovate-deltoid in general outline, excluding the petioles 2.5-4 dm. long, 2.5-4.5 dm. broad, 2-3-pinnate, the leaflets ovate to ovate-lanceolate, 4-10 cm. long, 1.5-4.5 cm. broad, acute to acuminate at the apex, narrowed, rounded, or oblique at the base, serrate-apiculate, hirtellous on the veins; petioles scarious-winged, 3-8 cm. long; peduncles 1.5-6 cm. long; involucre wanting, or of 1-several short filiform bracts, shorter than the rays; involucre of several filiform, scarious-margined, hirtellous bractlets, shorter than the fertile flowers; rays 12-20, spreading to rarely reflexed, subequal, 15-30 mm. long, hirtellous; fertile pedicels 2-8, 3-5 mm. long, usually glabrous; ovary somewhat hirtellous; carpophore 2-parted; fruit clavate, 8-12 mm. long, 2-3 mm. broad, glabrous, the contracted base 3-5 mm. long.

TYPE LOCALITY: "Bluffs of barranca near Guadalajara," Jalisco, *Pringle 3831*.

DISTRIBUTION: Jalisco (*Pringle 9810*).

ILLUSTRATION: E. & P. Nat. Fl. 3*: 216 (fr.).

5. *Coulterophytum brevipes* Coult. & Rose, Proc.

Wash. Acad. 1: 157. 1900.

Plants herbaceous, 9-15 dm. high, pubescent in the foliage; leaves ovate in general outline, excluding the petioles 4-6 dm. long, about 4 dm. broad, 2-3-pinnate, the leaflets ovate-lanceolate

to lanceolate, acuminate, cuneate at the base, serrate-apiculate, sparsely puberulent on the veins and finely ciliate; peduncles 6-9 cm. long; involucre usually wanting; involucre usually wanting; rays 17-24, spreading to reflexed, subequal, 25-45 mm. long, glabrous; fertile pedicels 2-8, stout, 1-2 mm. long, glabrous; ovary glabrous; carpophore 4-parted; fruit 10-13 mm. long, 2-3 mm. broad, glabrous, the contracted base 2-3 mm. long.

TYPE LOCALITY: "Bluffs of barranca above Cuernavaca," Morelos, *Pringle 6390*.

DISTRIBUTION: Morelos (*Lyonnet 998, Pringle 6857, 11,997*).

68. *OREOXIS* Raf. Bull. Bot. Seringe 1: 217. 1830.

Low, caespitose, herbaceous, acaulescent, glabrous to pubescent perennials, from slender, elongate roots. Leaves petiolate, membranaceous, pinnate or bipinnate, the ultimate divisions linear, acute, 1-30 mm. long, 0.5-4 mm. broad. Petioles sheathing. Inflorescence of subcompact compound umbels; peduncles terminal, often spreading, exceeding the leaves. Involucre usually wanting. Involucre usually dimidiate, the bractlets linear to obovate, membranaceous, entire or toothed, usually equaling or exceeding the flowers. Rays few, short, spreading. Pedicels spreading, short to obsolete. Flowers yellow or whitish; petals spatulate to obovate with a narrower inflexed apex; calyx-teeth prominent; styles slender, the stylopodium lacking. Carpophore wanting. Fruit oblong to ovoid-oblong, slightly flattened laterally, slightly pubescent or glabrous, the ribs subequal or the lateral broader than the dorsal, corky-winged, the wings broadly linear to subovate in cross section, narrower than the body; oil-tubes small, solitary to several in the intervals, 2-several on the commissure; seed slightly flattened dorsally in cross section, the face plane or slightly concave; strengthening cells at the base of the wings.

Type species, *Oreoxis humilis* Raf.

Bractlets linear, entire, green.

Plants puberulent; wings of the fruit subovate in cross section.

Plants glabrous or nearly so; wings of the fruit broadly linear in cross section.

Bractlets obovate, toothed at the apex, usually purplish.

1. *O. alpina*.

2. *O. humilis*.

3. *O. Bakeri*.

1. *Oreoxis alpina* (A. Gray) Coult. & Rose, Contr.

U. S. Nat. Herb. 7: 144. 1900.

Cymopterus alpinus A. Gray, Am. Jour. Sci. II. 33: 408. 1862.

Plants 1-17 cm. high, puberulent; leaves oblong in general outline, excluding the petioles 5-50 mm. long, 3-15 mm. broad, 1-2-pinnate, the ultimate divisions mostly distinct, 2-30 mm. long, 1-2 mm. broad; petioles 1-7 cm. long; peduncles 0.5-15 cm. long; involucre occasionally of an inconspicuous linear bract; involucre dimidiate, the bractlets linear, 2-5 mm. long, usually ciliate; rays 3-6, 2-7 mm. long; flowers yellow; fruit oblong, boat-shaped, 3-6 mm. long, 2-4 mm. broad, glabrous when mature but pubescent when young, the wings obovate, narrowed at the base, acuminate to obtuse at the apex in cross section; oil-tubes usually solitary in the intervals, 2-4 on the commissure.

TYPE LOCALITY: "From the head-waters of Clear Creek, and the alpine ridges lying east of 'Middle Park,'" Colorado, *Parry 158*.

DISTRIBUTION: Mountains, Wyoming and central Colorado to northern New Mexico and eastern Utah to northeastern Arizona (*Baker 847, Hall & Harbour 213*).

ILLUSTRATIONS: Clements & Clements, Rocky Mt. Fl. pl. 35, f. 11 (fr.); Ann. Mo. Bot. Gard. 17: pl. 22, f. 6; pl. 29, f. 1.

2. *Oreoxis humilis* Raf. Bull. Bot. Seringe, 1: 217. 1830.

Cymopterus humilis Tidestrom in Tidestrom & Kittell, Fl. Ariz. N. Mex. 325. 1941.

Plants 2-15 cm. high, the base of the umbel and the inflorescence occasionally puberulent; leaves oblong in general outline, excluding the petioles 5-45 mm. long, 5-10 mm. broad, 1-2-pinnate, the ultimate divisions mostly distinct, 2-10 mm. long, 1-2 mm. broad; petioles 1-4.5 cm. long; peduncles 1-13 cm. long; involucre rarely of an inconspicuous linear bract; involucre dimidiate, the bractlets linear, 3-5 mm. long; rays 3-9, 2-5 mm. long; flowers yellow; fruit oblong, somewhat boat-shaped, 3-5 mm. long, 1.5-3 mm. broad, glabrous, the wings broadly

linear, usually rounded at the apex in cross section, the lateral broader than the dorsal; oil-tubes 1-3, usually 3, in the intervals, 3-6 on the commissure.

TYPE LOCALITY: Rocky Mountains, Colorado, James.

DISTRIBUTION: Alpine, region of Pikes Peak, Colorado (*Clements & Clements 435, Letterman 177*).

ILLUSTRATION: Contr. U. S. Nat. Herb. 7: 143 (fr.).

3. *Oreoxis Bakeri* Coult. & Rose, Contr. U. S. Nat.

Herb. 7: 144. 1900.

Cymopterus Bakeri M. E. Jones, Contr. W. Bot. 12: 28. 1908.

Plants 1-12.5 cm. high, the base of the umbels and the rays slightly puberulent; leaves narrowly oblong in general outline, excluding the petioles 5-50 mm. long, 3-20 mm. broad, usually 2-pinnate, the ultimate divisions more or less distinct, sometimes mucronulate, 1-7 mm. long, 0.5-2 mm. broad; petioles 0.5-4 cm. long; peduncles 1-11 cm. long; involucre dimidiate, the bractlets obovate, usually 3-toothed at the apex, 3-5 mm. long, greenish or purplish; rays 3-8, 3-5 mm. long; flowers yellow or whitish; fruit ovoid-oblong, 3-4 mm. long, 2-3.5 mm. broad, usually purplish, the wings mostly linear, rounded to subacute at the apex in cross section; oil-tubes 3-4 in the intervals, 5-10 on the commissure.

TYPE LOCALITY: "High, bald summits, mountains near Pagosa Peak, Colorado," *C. F. Baker 12*.

DISTRIBUTION: Mountains, southern Colorado and adjacent Utah and New Mexico (*Baker 505, Payson 414*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 7: 144 (fr.); Ann. Mo. Bot. Gard. 17: pl. 29, f. 2.

69. *GLEHNNIA* F. Schmidt; Miq. Ann. Mus. Bot.

Lugd.-Bat. 3: 61. Ja-Jl 1867.

Phellopterus Benth. in Benth. & Hook. Gen. Pl. 1: 905. S 1867. Not *Phellopterus* Nutt. 1840.

Low, spreading or prostrate, herbaceous, subcaulescent, often branching, pubescent perennials, from stout taproots. Leaves petiolate, coriaceous, 1-2-ternate or ternate-pinnate, the leaflets oblong-obovate or cuneate with cartilaginous crenate-dentate margins. Petioles sheathing. Inflorescence of subcompact compound umbels; peduncles terminal, spreading, shorter than or equaling the leaves. Involucre of a few narrow bracts, or wanting. Involucre of several conspicuous, lanceolate-attenuate bractlets. Rays few to numerous, spreading. Umbellets capitate, the pedicels hence obsolete. Flowers white; petals ovate-lanceolate with a narrower inflexed apex; calyx-teeth inconspicuous; styles short, the stylopodium lacking. Carpophore 2-cleft to the base. Fruit ovoid-oblong to glabrous, somewhat flattened dorsally, pubescent or glabrate; ribs all broadly corky-winged, subequal or the dorsal broader than the lateral, lanceolate in cross section, broadest at the base; oil-tubes large, several in the intervals, 2-6 on the commissure; seed flattened dorsally in cross section, the face concave; strengthening cells wanting.

Type species, *Glehnnia littoralis* F. Schmidt.

1. *Glehnnia leiocarpa* Mathias, Ann. Mo. Bot. Gard. 15: 95. 1928.

Cymopterus ? littoralis A. Gray, Mem. Am. Acad. II. 6: 391, 428, as to American specimens. 1859. (Nomen nudum.)

Glehnnia littoralis of American authors, not *G. littoralis* F. Schmidt, 1867.

Phellopterus littoralis of American authors, not *P. littoralis* Benth. 1867.

Plants low, prostrate or spreading; leaves broadly ovate in general outline, excluding the petioles 2.5-15 cm. long, the leaflets 5-50 mm. long, 4-30 mm. broad, rounded to acute at the apex, hirtellous on the rachis and nerves above, mostly densely tomentose beneath; petioles 2.5-14 cm. long, hirtellous; inflorescence densely villous; peduncles sometimes branched, usually shorter than the leaves; umbel globose to spreading; rays 5-13, 5-45 mm. long; fruit 4-12 mm. long, essentially glabrous, the lateral wings sometimes broader than the dorsal.

TYPE LOCALITY: "Sandy shores, Shoal Water Bay, Washington Territory," *J. G. Cooper*.

DISTRIBUTION: On sandy sea-coasts from Alaska to Mendocino County, California (*Abrams 6140, Zeller & Zeller 963, Mathias 773*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 7: 165 (fr.); Ann. Mo. Bot. Gard. 15: pl. 17, f. 1-4; pl. 19, f. 2.

70. CYMPTERUS Raf. Jour. de Phys. 89: 100. 1819.

Coloptera Coult. & Rose, Rev. N. Am. Umbell. 20, 49. 1888.
Phellopterus Nutt.; Coult. & Rose, Contr. U. S. Nat. Herb. 7: 166. 1900. Not *Phellopterus* Benth. 1867.

Aulospermum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 174. 1900.

Coriophyllus Rydb. Bull. Torrey Club 49: 69. 1913.

Epallageiton K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 121. 1916.

Low, herbaceous, acaulescent or subcaulescent, glabrous or pubescent perennials, from long, slender, thickened or fusiform taproots. Leaves petiolate, membranaceous to subcoriaceous or somewhat fleshy, green to pallid and glaucescent, ternate, digitate, pinnate, or bipinnate to pinnately or ternate-pinnately decompound, the leaflets or ultimate divisions variously toothed or lobed to entire, usually narrow. Petioles sheathing. Inflorescence of spreading, subcompact or globose, compound umbels; peduncles terminal, longer or shorter than the leaves. Involucre wanting or present, the bracts scarious or foliaceous. Involucel usually conspicuous, dimidiate, the bractlets foliaceous to scarious, obscure in those species with a capitate inflorescence. Rays few, spreading, or abortive. Pedicels spreading, slender to abortive. Flowers white, yellow or purple; petals oval to obovate with a narrower inflexed apex; calyx-teeth small or obsolete; styles slender, spreading, the stylopodium lacking. Carpophore 2-cleft to the base. Fruit ovoid to oblong, flattened dorsally, glabrous to pubescent; the lateral and usually one or more of the dorsal ribs broadly winged, the wings membranaceous to spongy-corky, broader or narrower than the body; oil-tubes 1-numerous in the intervals, 2-numerous on the commissure and sometimes solitary at the base of the wings; seed flattened dorsally in cross section, the face concave to sulcate; strengthening cells absent or present.

Type species, *Selinum acaule* Pursh (*Cymopterus acaulis* Raf.).

Rays obsolete, the umbels hence discoid; bractlets paleaceous.

Pseudoscape absent; oil-tubes 2-numerous in the intervals.

Foliage pubescent; fruit glabrous.

Foliage glabrous; fruit pubescent.

Leaves ternate, the leaflets ternately lobed; fruit densely pubescent.

Leaves ternate-bipinnate, the leaflets entire to pinnately lobed;

fruit pubescent only on the commissure and wing-tips.

Flowers white; fruit 7-10 mm. long, 6-8 mm. broad, the commissural surface glabrous to puberulent; Arizona deserts.

Flowers purple; fruit 5-7 mm. long, 3-6 mm. broad, the commissural surface scaly-tomentose; Mohave Desert, California.

Pseudoscape present; oil-tubes usually solitary in the intervals.

Rays developed, 0.2-9 cm. long, the umbels hence subcompact to spreading,

not discoid; bractlets not paleaceous.

Bracts usually wanting, never scarious; bractlets conspicuous or inconspicuous, occasionally scarious-margined.

Leaves somewhat fleshy or coriaceous (membranaceous in *C. duchesnensis*), pallid and glaucescent.

Pseudoscape inconspicuous or absent, never fleshy, up to 2 cm. long.

Leaves pinnate, ternate, or digitate, the leaflets lobed.

Leaves orbicular-reniform to cordate-oblong, ternate or digitate.

Leaflets shallowly lobed, the lobes trilobulate; fruit sessile; Utah.

Leaflets deeply laciniately lobed, the lobes spinulose-dentate; fruit pedicellate; Death Valley region, California, and southern Nevada.

Leaves ovate-oblong to broadly elliptic, pinnate, or sometimes ternate in *C. duchesnensis*.

Bractlets green or purple, usually exceeding the flowers; fruit 4-12 mm. long, 3-8 mm. broad; wings not corrugated.

Pedicels obsolete; fruit-wings corky, constricted at the base, narrower than the body.

Pedicels evident; fruit-wings thin or spongy, not constricted, broader than the body.

Umbels somewhat spreading, the rays 5-35 mm. long; flowers yellow or purple; oil-tubes 3-7 in the intervals.

Plants more or less scaberulous; leaflets coriaceous, shallowly dentate, the teeth 1-2 mm. long; fertile rays 3-4, 5-20 mm. long; pedicels 3-6 mm. long.

1. *C. cinerarius*.

2. *C. Ripleyi*.

3. *C. megacephalus*.

4. *C. deserticola*.

5. *C. globosus*.

6. *C. basalticus*.

7. *C. Gilmani*.

27. *C. Newberryi*.

8. *C. Rosei*.

- Plants glabrous; leaflets membranaceous, deeply dentate, the teeth 4-8 mm. long; fertile rays 6-10, 15-35 mm. long; pedicels 2-4 mm. long.
- Umbels subcompact, the rays 2-10 mm. long; flowers white; oil-tubes solitary in the intervals.
- Bractlets whitish, shorter than the flowers; fruit 3-5 mm. long, 2 mm. broad; wings corrugated.
- Leaves ternate-pinnate or ternate-bipinnate, the leaflets dentate.
- Plants 3-8 cm. high, scabrous-puberulent throughout; flowers white; fruit 4-5 mm. long, about 3 mm. broad; Cedar Breaks, Utah.
- Plants 10-50 cm. high, glabrous or sparsely scaberulous on the leaves and peduncles; flowers yellow or purple; fruit 6-12 mm. long, 5-14 mm. broad.
- Flowers yellow or greenish-yellow; fruit ovoid-oblong or oblong, 6-12 mm. long, 5-10 mm. broad; wings slightly or not at all inflated at the base, equaling or a little broader than the body; seed-face concave.
- Flowers purple; fruit broadly ovoid to ellipsoid, 10-12 mm. long, 10-14 mm. broad; wings conspicuously inflated at the base, several times the width of the body; seed-face deeply sulcate.
- Pseudoscape conspicuous, usually fleshy, up to 16 cm. long.
- Umbels subcompact; bractlets conspicuous.
- Peduncles shorter than or equaling the leaves; bracts usually wanting; flowers white; central umbellet pedicellate.
- Peduncles exceeding the leaves; bracts present; flowers yellow; central umbellet sterile or sessile.
- Umbels spreading; bractlets inconspicuous, or if conspicuous, the involucre present.
- Bracts usually absent; bractlets short, inconspicuous.
- Plants essentially glabrous.
- Flowers purple; pedicels 2-3 mm. long; fruit oblong, 5-7 mm. long, 2-3 mm. broad; lateral wings equaling or narrower than the body; northwestern Colorado.
- Flowers white or yellow; pedicels 3-8 mm. long; fruit oblong to ovoid-oblong, 4-10 mm. long, 3-6 mm. broad; lateral wings equaling or broader than the body.
- Mature pseudoscape 1-7 cm. long; dried leaves finely wrinkled, appearing granulate-pubescent; flowers white; lateral wings about equaling the body; western Utah and eastern Nevada.
- Mature pseudoscape 5-16 cm. long; dried leaves smooth; flowers yellow, rarely white; lateral wings broader than the body; central Utah, adjacent Wyoming, Idaho, and Colorado.
- Plants scabrous-puberulent.
- Bracts present; bractlets conspicuous, linear-acuminate, elongate.
- Leaves neither fleshy nor coriaceous, green to gray-green, not glaucescent.
- Plants not cespitose; bractlets conspicuously foliaceous; pedicels obsolete or less than 1 mm. long; fruit-wings corky-spongy.
- Pseudoscape present; leaflets usually longer than broad.
- Peduncles shorter than or equaling the leaves; bracts usually wanting; flowers usually white; central umbellet pedicellate.
- Peduncles exceeding the leaves; bracts present; flowers usually yellow; central umbellet sterile and sessile.
- Pseudoscape absent; leaflets usually broader than long.
- Plants cespitose; bractlets not foliaceous; fruiting pedicels evident, 2-13 mm. long; fruit-wings membranaceous.
- Plants glabrous.
- Leaves ovate-oblong to obovate, 1-14 cm. long, 1-8 cm. broad, ternate-pinnately decomposed; rays 10-65 mm. long; fruit 6-10 mm. long, 3-8 mm. broad; California.
- Leaf-divisions not remote, the ultimate divisions 1-5 mm. long; montane in the Death Valley region.
- Leaf-divisions remote, the ultimate divisions 3-20 mm. long; Mohave Desert.
9. *C. duchesnensis*.
10. *C. Coulteri*.
11. *C. corrugatus*.
12. *C. minimus*.
13. *C. purpureus*.
14. *C. Jonesii*.
15. *C. planosus*.
16. *C. ibapensis*.
17. *C. longipes*.
18. *C. Watsoni*.
19. *C. glaucus*.
25. *C. acaulis*.
26. *C. Fendleri*.
27. *C. Newberryi*.
28. *C. panamintensis*
- 28a. *C. panamintensis*
var. *acutifolius*.

- Leaves narrowly oblong, 1-2.5 cm. long, about 1 cm. broad, 1-2-pinnate; rays less than 5 mm. long; fruit 4-5 mm. long, 3-4 mm. broad.
- Plants hirtellous or rough-puberulent, at least in foliage. 31. *C. humboldtensis*.
- Leaves oblong, 10-15 mm. broad; fruit ovoid to oblong, 6-11 mm. long, 5-8 mm. broad, the wings about twice the width of the body. 29. *C. aboriginum*.
- Leaves narrowly oblong, 5-15 mm. broad; fruit ovoid, 3-6 mm. long and broad, the wings narrower than the body.
- Leaves 2-3-pinnate, the leaflets crowded; rays 1-17 mm. long. 30. *C. bipinnatus*.
- Leaves 1-2-pinnate, the leaflets not crowded; rays less than 5 mm. long. 32. *C. nivalis*.
- Bracts scarious, united, or sometimes absent; bractlets conspicuous, scarious, usually prominently nerved and sometimes united.
- Mature peduncles shorter than or equaling the leaves; fruit-wings conspicuously enlarged at the base; Great Plains, South Dakota, and Wyoming to northern Texas and New Mexico. 20. *C. montanus*.
- Mature peduncles equaling or exceeding the leaves; fruit-wings not conspicuously enlarged at the base. 21. *C. macrorhizus*.
- Bractlets lacerate-fringed at the apex; Texas.
- Bractlets entire or obtusely lobed; Rocky Mountain region and southern Great Basin.
- Bractlets white or whitish, few-nerved; pedicels 3-12 mm. long. Umbels somewhat spreading, the rays 10-50 mm. long; fruit ovoid-oblong, the wings usually narrower than the body. 21. *C. bulbosus*.
- Umbels densely globose, the rays 4-10 mm. long; fruit ovoid, the wings twice to thrice the width of the body. 23. *C. purpurascens*.
- Bractlets purple or greenish-white, conspicuously many-nerved; pedicels less than 1 mm. long to obsolete. 24. *C. multinervatus*.

1. *Cymopterus cinerarius* A. Gray, Proc. Am. Acad. 6: 535. 1866.

Aulospermum cinerarium Coult. & Rose, Contr. U. S. Nat. Herb. 7: 178. 1900.

Plants acaulescent, 7-8 cm. high, a pseudoscape never developed; leaves oblong-ovate in general outline, excluding the petioles 1.5-2.5 cm. long, 1-2.5 cm. broad, bipinnate, glaucous, hirtellous to sparsely scaberulous, the leaflets entire to pinnately lobed, apiculate, mostly distinct, 1-3 mm. long, about 1 mm. broad; petioles 3-5 cm. long; peduncles exceeding the leaves; involucre conspicuous, dimidiate, the bracts connate below the middle, frequently tridentate toward the apex, scarious-margined; involucre obscure; umbels compact, discoid, the rays and pedicels obsolete; fruit narrowly cuneate, about 6 mm. long, 3 mm. broad, the wings barely constricted at the base in cross section, subacute at the apex, narrower than the body, the dorsal wings 3, similar to the lateral; oil-tubes small, 5-8 in the intervals, 6-10 on the commissure.

TYPE LOCALITY: "Dry hill, Sonora Pass, California, 10,100 feet alt.," Brewer 1899.

DISTRIBUTION: High mountains in the region of Mono Lake, and the Sweetwater Mountains, California and Nevada (Ferris 6735, Hoover 5545).

ILLUSTRATIONS: Ann. Mo. Bot. Gard. 17: pl. 23, f. 1; pl. 24, f. 15; pl. 45.

2. *Cymopterus Ripleyi* Barneby, Leaf. W. Bot. 3: 81. 1941.

Cymopterus Ripleyi var. *saniculoides* Barneby, Leaf. W. Bot. 3: 82. 1941.

Plants acaulescent, 10-15 cm. high, a pseudoscape never developed; leaves orbicular to deltoid in general outline, excluding the petioles 2-5 cm. long, 2-5 cm. broad, ternate, the leaflets ternately lobed to near the base, cuneate, 15-20 mm. long, 20-25 mm. broad, the lobes trilobulate to occasionally incised, apiculate; petioles 3-9.5 cm. long; peduncles exceeding the leaves; involucre wanting; involucre dimidiate, of small, paleaceous bractlets; umbels compact, discoid, the rays and pedicels obsolete; flowers white or purple; fruit obovoid to cuneate, 6-7 mm. long, 3.5-5 mm. broad, scaly-tomentose on the commissural surface, pubescent with translucent, multicellular hairs on the dorsal surface, the wings somewhat constricted at the base, narrower than the body, the dorsal wings reduced to three inconspicuous ridges; oil-tubes minute, 2 in the intervals, 4 on the commissure.

TYPE LOCALITY: "In deep sand-dunes seven miles south of Callaway, in northeast Nye County," Nevada, 5150 feet, Ripley & Barneby 3626.

DISTRIBUTION: Lincoln and Nye counties, southern Nevada (Ripley & Barneby 3429, 3728).

3. *Cymopterus megacephalus* M. E. Jones, *Zoe* 2: 14. 1891.

Plants acaulescent, 10–15 cm. high, glabrous, a pseudoscape never developed; leaves oblong-ovate in general outline, excluding the petioles 3–4 cm. long, 1.5–3 cm. broad, ternate-bipinnate, coriaceous, the leaflets entire to pinnately lobed, the lobes spinulose, confluent, 0.5–2 mm. long, 0.5–1 mm. broad; petioles 5–7 cm. long; peduncles exceeding the leaves; involucre wanting; involucre obscure; umbels compact, discoid, the rays and pedicels obsolete; flowers white; fruit obovoid 7–10 mm. long, 6–8 mm. broad, glabrous to puberulent on the commissural surface, the wings somewhat constricted at the base, broader than the body, pubescent with multicellular hairs at the tips, the dorsal wing usually 1, similar to the lateral; oil-tubes 4–7 in the intervals, 8 on the commissure.

TYPE LOCALITY: Little Colorado, northern Arizona, *M. E. Jones*.

DISTRIBUTION: Northern Arizona (*Peebles 11,807*).

ILLUSTRATIONS: *Ann. Mo. Bot. Gard.* 17: *pl. 23, f. 4; pl. 24, f. 17; pl. 46, f. 1.*

4. *Cymopterus deserticola* Brand.; H. M. Hall, Univ. Calif.

Publ. Bot. 6: 168. 1915.

Plants acaulescent, about 15 cm. high, glabrous, a pseudoscape never developed; leaves broadly oblong-ovate in general outline, excluding the petioles 2–6.5 cm. long, 2–9 cm. broad, ternate-bipinnate, the leaflets entire to pinnately lobed, the lobes spinulose, apiculate, mostly distinct, 1–4 mm. long, about 1 mm. broad; petioles 4–10 cm. long; peduncles exceeding the leaves; involucre wanting; involucre of paleaceous bractlets, or usually obsolete; umbels compact, discoid, the rays and pedicels obsolete; flowers purple; fruit oblong-ovoid to cuneate, 5–7 mm. long, 3–6 mm. broad, densely scaly-tomentose on the commissural surface, the wings barely constricted at the base, pubescent with multicellular hairs at the tips, narrower than the body, the dorsal wings reduced to 3 inconspicuous ridges or obsolete; oil-tubes 3–5 in the intervals, 12–17 on the commissure.

TYPE LOCALITY: Kramer, Mohave Desert, California, *K. Brandegee*.

DISTRIBUTION: Mohave Desert, California (*Johnston 2304, Parish 9742*).

ILLUSTRATIONS: *Ann. Mo. Bot. Gard.* 17: *pl. 23, f. 3; pl. 24, f. 18; pl. 46, f. 2; E. Jaeger, Des. Wild Fl.* 179.

5. *Cymopterus globosus* S. Wats. *Proc. Am. Acad.* 11: 141. 1876.

Cymopterus montanus var. *globosus* S. Wats. *Bot. King's Expl.* 124, in part. 1871.

Plants subcaulescent with the development of a pseudoscape, 3–20 cm. high, glabrous; leaves oblong-ovate in general outline, excluding the petioles 1–7 cm. long, 0.5–6 cm. broad, ternate-bipinnate or bipinnate, glaucous and somewhat coriaceous, the leaflets pinnately incised or lobed, the lobes minutely apiculate, confluent, 0.5–6 mm. long, 0.5–4 mm. broad; petioles 1–10 cm. long; peduncles equaling or exceeding the leaves; involucre wanting; involucre of scarious, linear, paleaceous, entire bractlets shorter than the flowers; umbels compact, discoid, the rays and pedicels obsolete; flowers white or purple; fruit narrowly cuneate or abruptly constricted below the middle, 6–11 mm. long, 3–7 mm. broad, the wings occasionally somewhat constricted at the base, usually acute at the apex, narrower than the body, the dorsal wings usually 3, similar to the lateral; oil-tubes large, usually solitary in the intervals, 2–4 on the commissure, sometimes solitary in each wing.

TYPE LOCALITY: Carson City, northern Nevada, 5000 feet, *Watson 449*.

DISTRIBUTION: Western Utah and Nevada to eastern California (*Jones 3885, Mathias 1248*).

ILLUSTRATIONS: *Ann. Mo. Bot. Gard.* 17: *pl. 23, f. 2; pl. 24, f. 16; pl. 47, f. 1.*

6. *Cymopterus basalticus* M. E. Jones, *Contr.*

W. Bot. 12: 16. 1908.

Coriophyllus basalticus Rydb. *Fl. Rocky Mts.* 620, 1064. 1917.

Aulospermum basalticum Tidestrom, *Contr. U. S. Nat. Herb.* 25: 397. 1925.

Plants acaulescent or subcaulescent with the development of an inconspicuous pseudoscape, 6–12 cm. high, glabrous, bluish-glaucous throughout; leaves ovate-oblong in general

outline, excluding the petioles 0.5–3 cm. long, 1.5–3.5 cm. broad, reniform to cordate-oblong, ternate or digitate, the leaflets shallowly lobed, cuneate to obovate, more or less confluent, the lobes trilobulate; petioles 1–5 cm. long; peduncles usually exceeding the leaves, 3–10 cm. long; involucre wanting, or of 1 or 2 linear-attenuate, subsclerous bracts; involucre conspicuous, dimidiate, of several linear to obovate, attenuate, subsclerous bractlets, entire or lacinate toward the apex, usually equaling or exceeding the flowers; fertile rays 7–14, spreading to reflexed, stout, 5–17 mm. long; pedicels obsolete; flowers yellow or purplish; fruit ovoid, 3–5 mm. long, 3–4 mm. broad, the wings slightly enlarged toward the base, the dorsal wing usually one; oil-tubes 6–8 in the intervals, 8–10 on the commissure, usually 1 in the wing-base; seed-face slightly concave.

TYPE LOCALITY: "Half-way station west of WaWa, Utah, 7000 feet alt.," *M. E. Jones*.
DISTRIBUTION: Western Utah and adjacent Nevada (*Harrison 6370*).

7. *Cymopterus Gilmani* Morton, Jour. Wash. Acad. 25: 309. 1935.

Plants subcaulescent from a fibrous base, with the development of an inconspicuous pseudoscape, 12–23 cm. high, glabrous, pallid and glaucescent; leaves orbicular-reniform in general outline, excluding the petioles 2.5–4.5 cm. long, 3.5–6 cm. broad, reniform to cordate-oblong, ternate, the leaflets deeply laciniately lobed, obovate, distinct, the lobes spinulose-dentate; petioles 8–18 cm. long; peduncles exceeding the leaves; involucre wanting; involucre conspicuous, dimidiate, of several linear to lanceolate, attenuate, foliaceous bractlets about equaling the flowers; rays about 8, spreading, stout, 10–20 mm. long; pedicels 2–5 mm. long; flowers purplish-white or purple; fruit broadly oval, 7–8 mm. long, 6–7 mm. broad, the wings either narrowed or broadened at the base, broader than the body, the dorsal wings 1 or 2, similar to the lateral; oil-tubes 4–7 in the intervals, about 10 on the commissure, none in the wing-base.

TYPE LOCALITY: "On cliffs along a north fork of Echo Canyon, Funeral Mountains, alt. 1200 m., California, *Coville & Gilman 116*."

DISTRIBUTION: Mountains about Death Valley, California to southern Nevada (*Gilman 3558, 3871, Clokey 8720*).

ILLUSTRATION: E. Jaeger, Des. Wild Fl. 179.

8. *Cymopterus Rosei* M. E. Jones, Contr. W. Bot. 12: 17. 1908.

Aulospermum Rosei M. E. Jones; Coult. & Rose, Contr. U. S. Nat. Herb. 7: 179. 1900.
Coriophyllus Rosei Rydb. Bull. Torrey Club 40: 70. 1913.

Plants acaulescent or subcaulescent with the development of a pseudoscape, 7–15 cm. high; leaves ovate-oblong in general outline, excluding the petioles 1–4.5 cm. long, 1.5–4.5 cm. broad, pinnate, the leaflets usually remote, subcuneate, 10–25 mm. long, 20–25 mm. broad, entire to pinnately lobed, the lobes shallowly dentate, the teeth 1–2 mm. long, mucronulate, coriaceous, pallid, confluent, slightly roughened on the margins; petioles 1.5–5 cm. long, purplish; peduncles equaling or exceeding the leaves, 3–12 cm. long, more or less scaberulous; involucre wanting; involucre of triangular to linear, acuminate, green or purplish bractlets, about equaling the flowers; fertile rays 3–4, spreading, unequal, 5–20 mm. long, more or less scaberulous; pedicels 3–6 mm. long; flowers yellow or purple; fruit ovoid-oblong, 5–10 mm. long, 5–7 mm. broad, the wings not enlarged at the base, about twice as wide as the body; oil-tubes 3–7 in the intervals, 4–7 on the commissure; seed-face slightly to deeply concave.

TYPE LOCALITY: Richfield, Utah, *M. E. Jones 30*.

DISTRIBUTION: South-central Utah (*Jones 5422 g, 6338, Maguire 19, 131*).

ILLUSTRATIONS: Ann. Mo. Bot. Gard. 17: pl. 25, f. 36; pl. 42, f. 2.

9. *Cymopterus duchesnensis* M. E. Jones, Contr. W. Bot. 13: 12. 1910.

Aulospermum duchesnense Tidestrom, Contr. U. S. Nat. Herb. 25: 397. 1925.

Plants acaulescent or subcaulescent with the development of an inconspicuous pseudoscape, 10–25 cm. high, glabrous; leaves broadly ovate-oblong in general outline, excluding the petioles 3–9 cm. long, 3–6.5 cm. broad, pinnate or occasionally ternate, the leaflets membranaceous, pallid, glaucescent, cuneate to obovate, 15–40 mm. long, 10–45 mm. broad, ternately or

quinately lobed and deeply dentate at the apex, the teeth lanceolate to ovate, acute, mucronate, 4–8 mm. long, 2–5 mm. broad, distinct to confluent; petioles 3–10 cm. long; peduncles exceeding the leaves, 5–20 cm. long; involucre wanting; involucre of several conspicuous, distinct, linear bractlets, usually exceeding the flowers; fertile rays 6–10, spreading, 15–35 mm. long; pedicels 2–4 mm. long; flowers yellow; fruit ovoid-oblong, 8–10 mm. long, 5–8 mm. broad, the wings narrow at the base, about twice as wide as the body; oil-tubes 3–7 in the intervals, 5–6 on the commissure; seed-face slightly concave.

TYPE LOCALITY: "Among loose rocks on southern slopes of mesas," Myton, Utah, 5000 feet, *M. E. Jones*.

DISTRIBUTION: Uinta Basin, Utah (*Graham 7637, 7732, 8872*).

ILLUSTRATIONS: *Ann. Mo. Bot. Gard.* 17: *pl. 25, f. 34; pl. 42, f. 1.*

10. *Cymopterus Coulteri* (M. E. Jones) Mathias, *Ann. Mo. Bot. Gard.* 17: 382. 1930.

Rhysopteris Jonesii Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 186. 1900. Not *Cymopterus Jonesii* Coult. & Rose, 1888.

Cymopterus corrugatus var. *Coulteri* M. E. Jones, *Contr. W. Bot.* 12: 19. 1908.

Cymopterus corrugatus var. *scopolicola* M. E. Jones, *Contr. W. Bot.* 14: 39. 1912.

Phellopteris Jonesii Rydb. *Fl. Rocky Mts.* 619, 1064. 1917.

Plants acaulescent or subcaulescent with the development of a pseudoscape, 4–10 cm. high, glabrous; leaves ovate in general outline, excluding the petioles 1.5–4 cm. long, pinnate, the leaflets shallowly pinnately lobed, the lobes obtuse, 2–3-lobulate, apiculate, pallid, fleshy or coriaceous; peduncles usually slightly exceeding the leaves; involucre wanting; involucre of subscariosus, purple, linear, entire bractlets, acute at the apex, usually exceeding the flowers; umbels subcompact, the rays several, unequal, 2–10 mm. long; flowers white; fruit ovoid-oblong, 5–7 mm. long, 3–4 mm. broad, the wings not constricted at the base, tapering gradually toward the apex, broader than the body, the dorsal wings 3, similar to the lateral; oil-tubes solitary in the intervals, 2 on the commissure; seed-face concave.

TYPE LOCALITY: Juab, Utah, 4000 feet, *M. E. Jones 1691*.

DISTRIBUTION: Western Utah.

ILLUSTRATIONS: *Ann. Mo. Bot. Gard.* 17: *pl. 23, f. 6; pl. 24, f. 19; pl. 48.*

11. *Cymopterus corrugatus* M. E. Jones, *Am. Nat.* 17: 973. 1883.

Rhysopteris corrugatus Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 187. 1900.

Plants acaulescent or subcaulescent with the development of a pseudoscape, glabrous, 3–10.5 cm. high; leaves oblong-ovate in general outline, excluding the petioles 0.5–4 cm. long, about as broad, pinnate, pallid, coriaceous or somewhat fleshy, the leaflets pinnately lobed, the lobes 2–3-lobulate, obtuse, apiculate; petioles 1–4 cm. long; peduncles shorter than or equaling the leaves; involucre wanting; involucre of scarious to submembranaceous, entire bractlets, acute at the apex, shorter than the flowers; fertile rays 4–10, somewhat spreading, 2–10 mm. long; pedicels 2–3 mm. long; flowers white; fruit ovoid-oblong, 3–5 mm. long, about 2 mm. broad, the wings constricted at the base, thin and corrugated, narrower than the body; dorsal wings 3, similar to the lateral; oil-tubes solitary in the intervals, 2–4 on the commissure; seed-face concave.

TYPE LOCALITY: Humboldt Lake (near Rose Creek), Nevada, *M. E. Jones 3886*.

DISTRIBUTION: Western Nevada and adjacent Oregon (*Kennedy 872, Mason 4604, Mathias 1244*).

ILLUSTRATIONS: *Ann. Mo. Bot. Gard.* 17: *pl. 23, f. 5; pl. 24, f. 20; pl. 49.*

12. *Cymopterus minimus* Mathias, *Brittonia* 2: 245. 1936.

Aulospermum minimum Mathias, *Ann. Mo. Bot. Gard.* 17: 353. 1930.

Plants acaulescent or subcaulescent with the development of a short pseudoscape, 3–8 cm. high, scabrous-puberulent; leaves ovate-oblong in general outline, excluding the petioles 1–3 cm. long, 1–2 cm. broad, ternate-bipinnate, the leaflets entire or pinnately lobed, the lobes mucronulate, pallid, coriaceous, acute, incurved, 1–3 mm. long, about 1 mm. broad, confluent; petioles 0.5–3 cm. long, purplish; peduncles equaling or exceeding the leaves, 3–6 cm. long; involucre wanting; involucre dimidiate, of several distinct, linear, acute, green or purplish

bractlets, equaling or exceeding the flowers; umbels compact, the fertile rays 2-4, unequal, 2-6 mm. long; pedicels 2-3 mm. long; flowers white; fruit oblong, 4-5 mm. long, about 3 mm. broad, the wings somewhat enlarged at the base, narrower than or equaling the body; dorsal wings 3, similar to or shorter than the lateral; oil-tubes 4-6 in the intervals, 4-6 on the commissure, occasionally solitary in the wing-base; seed-face slightly concave.

TYPE LOCALITY: "On the upper part of the 'Breaks' [Cedar Breaks]" near Cedar City, Iron County, Utah, about 10,500 feet, *Mathias 723*.

DISTRIBUTION: Known only from the type locality (*Goodman & Hitchcock 1591, Mathias 795*).

ILLUSTRATIONS: *Ann. Mo. Bot. Gard. 17: pl. 25, f. 35; pl. 41, f. 2.*

13. *Cymopterus purpureus* S. Wats. *Am. Nat.* 7: 300. 1873.

Aulospermum purpureum Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 178. 1900.

Aulospermum Betheli Osterhout, *Muhlenbergia* 6: 46. 1910.

Coriophyllus purpureus Rydb. *Bull. Torrey Club* 40: 70. 1913.

Coriophyllus Betheli Rydb. *Bull. Torrey Club* 40: 70. 1913.

Plants acaulescent or subcaulescent with the development of an inconspicuous pseudoscape, 10-50 cm. high, glabrous to sparsely scaberulous; leaves ovate to broadly ovate-oblong in general outline, excluding the petioles 2-13.5 cm. long, 2-10 cm. broad, ternate-pinnate or ternate-bipinnate, or rarely bipinnate, the leaflets pallid, glaucescent, subcuneate, somewhat remote, spinulose-dentate, the teeth or lobes triangular, acute, mucronate, 1-5 mm. long, 1-4 mm. broad, distinct to slightly confluent; petioles 3-12 cm. long; peduncles exceeding the leaves, 5-34 cm. long; involucre wanting; involucre dimidiate, of several distinct, linear, acuminate bractlets, shorter than the flowers; fertile rays 5-12, spreading or spreading-ascending, 15-45 mm. long; pedicels 4-11 mm. long; flowers purple or yellow; fruit oblong to ovoid-oblong, 6-12 mm. long, 5-10 mm. broad, the wings narrow at the base, a little broader than the body; oil-tubes 1-8 in the intervals, 3-11 on the commissure; seed-face concave.

TYPE LOCALITY: New Mexico, *E. Palmer*.

DISTRIBUTION: Southwestern Colorado and northeastern Utah; southwestern Utah to New Mexico and Arizona. (*Baker 18, Payson 255*.)

14. *Cymopterus Jonesii* Coult. & Rose, *Rev. N. Am. Umbell.* 80. 1888.

Aulospermum Jonesii Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 178. 1900.

Coriophyllus Jonesii Rydb. *Bull. Torrey Club* 40: 70. 1913.

Plants acaulescent or rarely subcaulescent with the development of a short pseudoscape, 10-30 cm. high, glabrous; leaves ovate-oblong in general outline, excluding the petioles 2-7 cm. long, 1.5-5 cm. broad, ternate-pinnate or ternate-bipinnate, glaucous, the leaflets entire or pinnately lobed, the lobes triangular, acute, mucronulate, 1-5 mm. long, 1-2 mm. broad, distinct to slightly confluent; petioles 2.5-10 cm. long; peduncles exceeding the leaves, 3-17 cm. long; involucre wanting; involucre dimidiate, of several triangular to linear, acuminate bractlets, about equaling the flowers; rays several, spreading, 8-35 mm. long; flowers purple; fruit broadly ovoid, 7-12 mm. long, 10-14 mm. broad, the wings conspicuously inflated at the base, several times as wide as the body; dorsal wings 3, similar to the lateral; oil-tubes solitary in the intervals, 2 on the commissure; seed-face deeply concave.

TYPE LOCALITY: Frisco, Utah, 8000 feet, *M. E. Jones 1808*.

DISTRIBUTION: Southwestern Utah and adjacent Nevada (*Parry 80*).

ILLUSTRATIONS: *Ann. Mo. Bot. Gard. 17: pl. 22, f. 11; pl. 44, f. 1.*

15. *Cymopterus planosus* (Osterhout) Mathias, *Brittonia* 2: 245. 1936.

Aulospermum planosum Osterhout, *Bull. Torrey Club* 30: 236. 1903.

Plants subcaulescent with the development of a conspicuous pseudoscape, 10-30 cm. high, the mature pseudoscape 5-15 cm. long; leaves usually oblong in general outline, excluding the petioles 1-6 cm. long, 1-3 cm. broad, sometimes minutely roughened, bipinnate, somewhat fleshy, pallid, glaucescent, the leaflets remote, entire to pinnately lobed, the lobes acute, incurved, 1-4 mm. long, about 1 mm. broad, confluent; petioles 1-6 cm. long; peduncles exceeding

the leaves, 4–17 cm. long; involucre wanting; involucl of several linear, acute bractlets, about equaling the flowers; fertile rays 3–4, spreading, 4–45 mm. long, slightly roughened; pedicels 2–3 mm. long; flowers purple; fruit oblong, 5–7 mm. long, 2–3 mm. broad, the wings narrow at the base, equaling or narrower than the body; oil-tubes 3 or 4 in the intervals, about 6 on the commissure; seed-face deeply concave.

TYPE LOCALITY: "Along the Eagle River at Minturn," Eagle County, Colorado, *Osterhout 2572*.

DISTRIBUTION: Northwestern Colorado (*Osterhout 2744*, *Purpus 83*).

ILLUSTRATION: *Ann. Mo. Bot. Gard.* 17: *pl. 41, f. 1*.

16. *Cymopterus ibapensis* M. E. Jones, *Zoe* 3: 302. 1893.

Aulospermum ibapense Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 176. 1900.

Plants subcaulescent with the development of a conspicuous pseudoscape, 5–20 cm. high, the mature pseudoscape 4–7 cm. long, glabrous (leaves in dried specimens appearing roughened through irregular wrinkling of the epidermis); leaves oblong to ovate-oblong in general outline, excluding the petioles 1–9 cm. long, 0.5–4 cm. broad, bipinnate, usually glaucous, somewhat fleshy, pallid, the leaflets remote, pinnately lobed, the lobes rounded to acute, 1–8 mm. long, 1–2 mm. broad, confluent; petioles 1–6 cm. long; peduncles exceeding the leaves, 4–16 cm. long; involucre wanting; involucl of a few inconspicuous, linear, bractlets, about equaling the flowers; fertile rays 5–10, spreading, 5–20 mm. long; pedicels 5–7 mm. long; flowers white; fruit ovoid-oblong, 4–10 mm. long, 4–5 mm. broad, the wings narrow at the base, the lateral about equaling the body; oil-tubes 3–7 in the intervals, 4–6 on the commissure; seed-face deeply concave.

TYPE LOCALITY: Deep Creek Valley, Utah, *M. E. Jones*.

DISTRIBUTION: Western Utah to eastern Nevada.

ILLUSTRATION: *Ann. Mo. Bot. Gard.* 17: *pl. 40, f. 1*.

17. *Cymopterus longipes* S. Wats. *Bot. King's Expl.* 124. 1871.

Pucedanum lapidosum M. E. Jones, *Zoe* 2: 246. 1891.

Cymopterus lapidosus M. E. Jones, *Contr. W. Bot.* 8: 31. 1898.

Aulospermum longipes Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 175. 1900.

Aulospermum angustum Osterhout, *Bull. Torrey Club* 31: 358. 1904.

Cymopterus lapidosus var. *deserti* M. E. Jones, *Contr. W. Bot.* 12: 21. 1908.

Cogsuella lapidosa Rydb. *Fl. Rocky Mts.* 627, 1064. 1917.

Lomatium lapidosum Garrett, *Spr. Fl. Wasatch* ed. 4. 110. 1927.

Plants subcaulescent with the development of a conspicuous pseudoscape, 3–35 cm. high, glabrous, the mature pseudoscape 5–16 cm. long, usually fleshy; leaves ovate-oblong in general outline, excluding the petioles 1.5–8 cm. long, 1–7.5 cm. broad, somewhat fleshy, pallid, glaucescent, bipinnate, the leaflets sometimes confluent with a winged rachis, pinnately lobed, the lobes usually acute, mucronulate, 1–7 mm. long, 1–4 mm. broad, closely confluent; petioles 1–14 cm. long; peduncles equaling or exceeding the leaves, 3–26 cm. long; involucre wanting; involucl of several linear, acute to acuminate bractlets about equaling the flowers; fertile rays 3–8, spreading, 3–30 mm. long; pedicels 3–8 mm. long; flowers yellow; fruit oblong to ovoid-oblong, 5–9 mm. long, 3–6 mm. broad, the wings narrow at the base, the lateral broader than the body, the dorsal more or less obsolete; oil-tubes 3–7 in the intervals, 4–9 on the commissure; seed-face deeply concave.

TYPE LOCALITY: Wahsatch Mountains near Salt Lake City, and on Antelope Island, Utah, 5000 feet, *Watson 451*.

DISTRIBUTION: Colorado and central Utah to western Wyoming and adjacent Idaho (*Nelson 4575*, *Payson & Payson 2132*).

ILLUSTRATIONS: *Contr. U. S. Nat. Herb.* 7: 174 (fr.); *Ann. Mo. Bot. Gard.* 17: *pl. 22, f. 9*; *pl. 25, f. 1*; *pl. 39*.

18. *Cymopterus Watsoni* (Coult. & Rose) M. E.

Jones, *Contr. W. Bot.* 12: 25. 1908.

Cymopterus glaucus sensu S. Wats. *Bot. King's Expl.* 124. 1871. Not *C. glaucus* Nutt. 1834.

Aulospermum Watsoni Coult. & Rose, *Contr. U. S. Nat. Herb.* 7: 176. 1900.

Plants subcaulescent with the development of a conspicuous pseudoscape, 5–25 cm. high, scabrous-puberulent; leaves ovate-oblong in general outline, excluding the petioles 3–8 cm.

long, 2-4 cm. broad, bipinnate, somewhat fleshy, pallid, glaucescent, the leaflets pinnately lobed, the lobes linear, obtuse, mostly incurved, 1-2 mm. long, about 1 mm. broad, confluent; petioles 1.5-4 cm. long; peduncles exceeding the leaves, 6-14 cm. long; involucre wanting; involucre of several linear, acute bractlets, about equaling the flowers; fertile rays several, spreading, 10-30 mm. long; flowers white; fruit ovoid to ovoid-oblong, 4-6 mm. long, 3-6 mm. broad, the wings narrow at the base; oil-tubes 4 in the intervals, 8 on the commissure; seed-face deeply concave.

TYPE LOCALITY: Battle Mountains, Nevada, 7500 feet, *Watson 450*.

DISTRIBUTION: Mountains, northern Nevada to southeastern Oregon (*Jones 1688, Peck 21,725*).

ILLUSTRATION: *Ann. Mo. Bot. Gard. 17: pl. 40, f. 2.*

19. *Cymopterus glaucus* Nutt. *Jour. Acad. Phila. 7: 28. 1834.*

Aulospermum glaucum Coult. & Rose, *Contr. U. S. Nat. Herb. 7: 176. 1900.*

Plants subcaulescent with the development of a conspicuous pseudoscape, 3-30 cm. high, glabrous, the mature pseudoscape 2.5-15 cm. long; leaves oblong to ovate-oblong in general outline, excluding the petioles 1.5-9 cm. long, 1-7 cm. broad, bipinnate, somewhat fleshy, pallid, sometimes conspicuously glaucous, the leaflets remote, pinnately lobed, the lobes obtuse to acute, often mucronulate, 1 mm. long, about as broad, closely confluent; petioles 0.5-7 cm. long; peduncles exceeding the leaves, 1-14 cm. long; involucre of 1-several conspicuous, linear-acuminate bracts; involucre similar to the involucre, equaling or exceeding the flowers; fertile rays 1-4, slightly spreading, 2-30 mm. long; pedicels 2-7 mm. long; flowers yellow; fruit oblong, 5-7 mm. long, about 3 mm. broad, the wings narrow at the base, the lateral equaling or narrower than the body; oil-tubes 3 or 4 in the intervals, about 6 on the commissure; seed-face deeply concave.

TYPE LOCALITY: "On the borders of Flat-Head River towards the sources of the Columbia," Montana, *Nuttall*.

DISTRIBUTION: Western Montana and adjacent Idaho (*Kirkwood 1222, Macbride & Payson 3548*).

ILLUSTRATION: *Ann. Mo. Bot. Gard. 17: pl. 40, f. 2.*

20. *Cymopterus montanus* (Nutt.) T. & G. Fl.

N. Am. 1: 624. 1840.

Phellopterus montanus Nutt.; T. & G. Fl. *N. Am. 1: 624, as syn. 1840.*

Leptocnemis campestris Nutt.; T. & G. Fl. *N. Am. 1: 624, as syn. 1840.*

Cymopterus campestris T. & G. Fl. *N. Am. 1: 624. 1840.*

Phellopterus macrocarpus Osterhout, *Muhlenbergia 6: 59. 1910.*

Plants acaulescent or subcaulescent with the development of a pseudoscape, 5-30 cm. high, from long fusiform or subfusiform roots; leaves ovate-oblong in general outline, excluding the petioles 1.5-8 cm. long, 1-6 cm. broad, pinnate, bipinnate, or occasionally ternate-bipinnate, somewhat fleshy, pallid, the leaflets entire to pinnately lobed, the lobes usually obtuse, mucronate, 1-2 mm. long, 0.5-1 mm. broad, confluent, roughened on the margins and veins; petioles 1-14 cm. long; peduncles shorter than or equaling the leaves, 0.5-10 cm. long, minutely roughened throughout or only at the base of the umbel; involucre of a low inconspicuous sheath, or of conspicuous linear-oblong bracts, or wanting; involucre of conspicuous, ovate-oblong, mostly acute bractlets, sometimes lacerate toward the apex, white with a conspicuous green central nerve, usually shorter than the flowers, the umbels subcompact; fertile rays 3-6, slightly spreading, 0.5-20 mm. long, glabrous or minutely hirtellous, the secondary rays short; pedicels 2-5 mm. long; flowers white or purple; fruit ovoid to ovoid-oblong, 5-12 mm. long, 4-10 mm. broad, the wings conspicuously enlarged at the base, narrowed toward the apex, twice as broad as the body; oil-tubes 1-4 in the intervals, 2-6 on the commissure, accessory oil-tubes occasionally present in the wings; strengthening cells present in the wing-base, or wanting.

TYPE LOCALITY: "High bare plains of the Platte, towards the Rocky Mountains," *Nuttall*.

DISTRIBUTION: South Dakota and central Colorado to northwestern Texas and northern New Mexico (*Nelson 9, 7022, Patterson 3937*).

ILLUSTRATION: *Ann. Mo. Bot. Gard. 17: pl. 22, f. 7.*

21. *Cymopterus macrorhizus* Buckl. Proc. Acad.

Phila. 1861: 455. 1862.

Cymopterus montanus var. *pedunculatus* M. E. Jones, Proc. Calif. Acad. II. 5: 686. 1895.
Phellopterus macrorhizus Coult. & Rose, Contr. U. S. Nat. Herb. 7: 167. 1900.

Plants acaulescent or subcaulescent with the development of a pseudoscape, 5–25 cm. high, from fusiform to subglobose roots; leaves ovate-oblong in general outline, excluding the petioles 1.5–6.5 cm. long, 1–3 cm. broad, pinnate to bipinnate, pallid, somewhat fleshy, the leaflets entire to pinnately lobed, the lobes obtuse, usually mucronate, 1–3 mm. long, 1–2 mm. broad, confluent, sometimes minutely roughened on the margins; petioles 1.5–3 cm. long; peduncles longer than the leaves, 2.5–17 cm. long, usually minutely roughened at the base of the umbel; involucre wanting, or of one or more linear bracts; involucre of conspicuous, subcuneate bractlets which are lacerate-fringed at the apex, white with a dark central nerve, usually shorter than the flowers; fertile rays 1–6, spreading, 5–30 mm. long, glabrous or slightly roughened, the inner umbellets usually subsessile, sterile, the secondary rays 5–10 mm. long, the inner flowers sessile, sterile; pedicels 2 mm. long; flowers pinkish; fruit ovoid to ovoid-oblong, 4–9 mm. long, 3–8 mm. broad, the wings linear, about equaling the body; oil-tubes 3–8 in the intervals, 4–10 on the commissure, accessory tubes occasionally present in the wing-base; seed-face slightly concave.

TYPE LOCALITY: Prairies north of Austin, Texas, *Buckley*.

DISTRIBUTION: Central Texas (*Curtiss 1031, Reverchon 2008, Ruth 2*).

ILLUSTRATION: Ann. Mo. Bot. Gard. 17: pl. 22, f. 8.

22. *Cymopterus bulbosus* A. Nelson, Bull. Torrey Club 26: 241. 1899.

Cymopterus utahensis var. *Eastwoodae* M. E. Jones, Proc. Calif. Acad. II. 5: 685. 1895.
Phellopterus bulbosus Coult. & Rose, Contr. U. S. Nat. Herb. 7: 168. 1900.
Phellopterus purpurascens var. *Eastwoodae* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 169. 1900;
Phellopterus camporum Rydb. Bull. Torrey Club 31: 574. 1904.

Plants acaulescent or subcaulescent with the development of a pseudoscape, 5–35 cm. high, from long, slender to clavate taproots, glabrous; leaves ovate-oblong in general outline, excluding the petioles 1–9 cm. long, 0.6–7 cm. broad, pinnate to bipinnate, pallid, somewhat fleshy, the leaflets entire to pinnately lobed, the lobes obtuse, linear, 1–10 mm. long, 1–5 mm. broad, confluent; petioles 1.5–9 cm. long; peduncles usually several and exceeding the leaves, 1.5–26 cm. long; involucre conspicuous, varying from a low sheath to conspicuous, connate, whitish, 1–3-nerved bracts; involucre similar to the involucre, equaling or exceeding the flowers; fertile rays 3–8, spreading, 5–50 mm. long, the secondary rays short; pedicels 3–12 mm. long; flowers purplish; fruit ovoid-oblong to oblong, 7–17 mm. long, 4–12 mm. broad, the wings narrow or slightly enlarged at the base, narrower to broader than the body, acute; oil-tubes 1–9 in the intervals, 3–10 on the commissure.

TYPE LOCALITY: Green River, Wyoming, *A. Nelson 4709*.

DISTRIBUTION: Central Colorado and southwestern Wyoming to western Texas and central New Mexico (*Baker 59, Payson & Payson 2579*).

ILLUSTRATION: Ann. Mo. Bot. Gard. 17: pl. 31.

23. *Cymopterus purpurascens* (A. Gray) M. E. Jones, Zoe 4: 277.1893. Not *C. purpurascens* M. E. Jones, 1895.

Cymopterus montanus var. *purpurascens* A. Gray, Colo. Expl. Exp. 4: 15. 1860.
Cymopterus utahensis M. E. Jones, Proc. Calif. Acad. II. 5: 684. 1895.
Cymopterus utahensis var. *monocephalus* M. E. Jones, Proc. Calif. Acad. II. 5: 685. 1895.
Phellopterus purpurascens Coult. & Rose, Contr. U. S. Nat. Herb. 7: 168. 1900.
Phellopterus utahensis Wootton & Standley, Contr. U. S. Nat. Herb. 10: 158. 1913.

Plants acaulescent or subcaulescent with the development of a pseudoscape, 3–15 cm. high, from long slender tap-roots crowned with persistent leaf-bases, glabrous; leaves ovate-oblong in general outline, excluding the petioles 1.2–5 cm. long, 1–4 cm. broad, bipinnate or pinnate or occasionally ternate-pinnate, pallid, somewhat fleshy, the leaflets entire to pinnately lobed, the lobes rounded to acute, mostly incurved, 1–8 mm. long, about 1 mm. broad, confluent; petioles

1-4 cm. long; peduncles solitary to few, equaling or exceeding the leaves, 1.5-7 cm. long; involucre of conspicuous white bracts, usually connate below the middle, sometimes lobed at the apex; involucre of conspicuous bractlets similar to the bracts, usually rounded, white with 1-5 conspicuous green or white nerves, equaling or exceeding the flowers; the umbels compact, densely globose, the fertile rays 3-5, 4-10 mm. long, the secondary rays short; pedicels 5-8 mm. long; flowers purplish; fruit usually broadly ovoid, 8-18 mm. long, 8-16 mm. broad, the wings thin, twice or thrice as broad as the body, narrow or slightly enlarged at the base, acute; oil-tubes 3 or 4 in the intervals, 4-7 on the commissure.

TYPE LOCALITY: Oryaba, New Mexico (Yampai Valley to San Francisco Mountains, Arizona), Newberry.

DISTRIBUTION: Southern Idaho through Utah and Nevada to southeastern California and central Arizona (*Purpus 5866, Ward 25*).

ILLUSTRATIONS: Ann. Mo. Bot. Gard. 17: pl. 31; E. Jaeger, Des. Wild Fl. 178.

24. *Cymopterus multinervatus* (Coul. & Rose) Tidestrom,

Proc. Biol. Soc. Wash. 48: 41. 1935.

Cymopterus purpurascens M. E. Jones, Proc. Calif. Acad. II. 5: 687. 1895. Not *C. purpurascens* M. E. Jones, 1893.

Phellopterus multinervatus Coul. & Rose, Contr. U. S. Nat. Herb. 7: 169. 1900.

Plants acaulescent or subcaulescent with the development of a pseudoscape, 4-20 cm. high, from long, slender or subfusiform tap-roots; leaves ovate-oblong in general outline, excluding the petioles 1-8.5 cm. long, 0.5-6 cm. broad, pinnate, bipinnate, or occasionally ternate-pinnate, somewhat fleshy, pallid, the leaflets entire to pinnately lobed, the lobes acute or obtuse, mucronulate, 0.5-6 mm. long, 0.5-2 mm. broad, usually confluent, glabrate; petioles 2-7 cm. long; peduncles equaling or exceeding the leaves, 2-14 cm. long, glabrous; involucre a low scarious sheath or of 1 or 2 conspicuous, nerved bracts, or a conspicuous, purplish, connate cup with irregular many-nerved lobes; involucre of conspicuous, ovate to ovate-oblong, subconnate, many-nerved, greenish or purple bractlets, usually with a whitish margin, about equaling the flowers; umbels compact, the fertile rays usually 1-5, 5-25 mm. long, glabrous, the inner rays shorter and the umbellets usually sterile, the secondary rays short; pedicels less than 1 mm. long; flowers purplish; fruit ovoid to ovoid-oblong, 8-17 mm. long, 8-17 mm. broad, frequently purplish-tinged, the wings long and slender, slightly enlarged at the base, twice to thrice as broad as the body; oil-tubes 3-9 in the intervals, 5-12 on the commissure, accessory tubes occasionally present in the wings; strengthening cells present or absent in the wing-base.

TYPE LOCALITY: Peach Springs, Arizona, *Lemmon & Lemmon*.

DISTRIBUTION: Southern Utah and New Mexico to Texas, northern Mexico, southern Nevada, and southeastern California (*Eastwood 8188, Jones 5002, Metcalfe 3*).

ILLUSTRATIONS: Ann. Mo. Bot. Gard. 17: pl. 30, f. 2; E. Jaeger, Des. Wild Fl. 179.

25. *Cymopterus acaulis* (Pursh) Raf. Herb. Raf. 40. 1833.

Selinum acaule Pursh, Fl. Am. Sept. 732. 1814.

Thapsia glomerata Nutt. Gen. 1: 184. 1818.

Cymopterus glomeratus DC. Prodr. 4: 204. 1830.

Ferula ? *Palmella* Hook. Fl. Bor. Am. 1: 268. 1832.

Coloptera Parryi Coul. & Rose, Rev. N. Am. Umbell. 50. 1888.

Cymopterus Parryi M. E. Jones, Zoe 4: 48. 1893.

Cymopterus glomeratus var. *Parryi* M. E. Jones, Proc. Calif. Acad. II. 5: 688. 1895.

Cymopterus Leibergii Coul. & Rose, Contr. U. S. Nat. Herb. 7: 182. 1900.

Cymopterus glomeratus var. *Leibergii* M. E. Jones, Contr. W. Bot. 12: 25. 1908.

Cymopterus lucidus Osterhout, Muhlenbergia 6: 59. 1910.

Plants acaulescent or subcaulescent, not caespitose, with the development of a pseudoscape 3-30 cm. high, the mature pseudoscape 1.5-7 cm. long, glabrous; leaves ovate to oblong-obovate in general outline, excluding the petioles 1-9 cm. long, 0.5-7 cm. broad, bipinnate, green, the leaflets entire to pinnately lobed, the lobes acute or somewhat obtuse, 0.5-30 mm. long, 0.5-5 mm. broad; petioles 1-14 cm. long; peduncles usually shorter than or equaling the leaves; involucre wanting, or rarely vestigial; involucre of usually linear, entire, obtuse, often membranaceous bractlets, occasionally scarious-margined, equaling or exceeding the flowers; umbels

compact, the fertile rays 3-5, 2-10 mm. long; pedicels about 1 mm. long; flowers white; fruit ovoid to ovoid-oblong, 5-10 mm. long, 3-8 mm. broad, the wings constricted at the base and sometimes acuminate at the apex, narrower than or equaling the body, the dorsal wings 1-3, similar to the lateral; oil-tubes 3-17 in the intervals, 5-13 on the commissure, sometimes solitary at the wing-base; strengthening cells present or wanting.

TYPE LOCALITY: "On the alluvion of the Missouri, from the river Naduet to the Mahas, in upper Louisiana," *Bradbury*.

DISTRIBUTION: Central Saskatchewan and western Minnesota to southern Colorado and eastern Oregon (*Carr 6, Nelson 4623, 6978, Stevens 232*).

ILLUSTRATIONS: Coult. & Rose, *Rev. N. Am. Umbell. f. 33*; *Zoe 4: pl. 25 (fr.)*; Britt. & Brown, *Ill. Fl. 2: 517*; ed. 2: 644; *Bull. U. S. Dep. Agr. Bot. 26: pl. 24*; *Contr. U. S. Nat. Herb. 7: 180 (fr.)*; Clements & Clements, *Rocky Mt. Fl. pl. 35, f. 27*; *Ann. Mo. Bot. Gard. 17: pl. 24, f. 21; pl. 50; pl. 51, f. 1*.

26. *Cymopterus Fendleri* A. Gray, *Mem. Am. Acad. II. 4: 56. 1849.*

Cymopterus decipiens M. E. Jones, *Zoe 2: 246. 1891.*

Plants acaulescent or subcaulescent, not caespitose, with the development of a pseudoscape 4-30 cm. high, the mature pseudoscape 1-3 cm. long, glabrous; leaves ovate to oblong-obovate in general outline, excluding the petioles 1-7.5 cm. long, 0.5-6 cm. broad, pinnate to bipinnate, green, the leaflets longer than broad, entire to pinnately lobed, the lobes obtuse or occasionally acute, 0.5-5 mm. long, 0.5-4 mm. broad, frequently confluent; petioles 1.2-12 cm. long; peduncles usually equaling or exceeding the leaves; involucre usually a low sheath, sometimes with 1-3 linear bracts; involucre of subscarious to foliaceous, linear to ovate-oblong, acute, and frequently 3-toothed bractlets, equaling or exceeding the flowers; umbels compact, the fertile rays usually 3-5, 2-25 mm. long, the central umbellet sessile, sterile; pedicels obsolete; flowers yellow; fruit ovoid to ovoid-oblong, 5-13 mm. long 4-10 mm. broad, the wings narrowed at the base and sometimes acuminate at the apex, about half as wide as the body, the dorsal wings 1-3, similar to the lateral; oil-tubes 3-16 in the intervals, 6-12 on the commissure, sometimes solitary at the wing-base; strengthening cells present or absent.

TYPE LOCALITY: Gravelly hills, Santa Fe, New Mexico, *Fendler 274*.

DISTRIBUTION: Northern Utah to New Mexico, Arizona, and northern Chihuahua (*Heller & Heller 3539, Payson 274*).

ILLUSTRATIONS: *Ann. Mo. Bot. Gard. 17: pl. 23, f. 7; pl. 24, f. 1-14; pl. 51.*

27. *Cymopterus Newberryi* (S. Wats.) M. E. Jones, *Zoe 4: 47. 1893.*

Peucedanum Newberryi S. Wats. *Am. Nat. 7: 301. 1873.*

Coloptera Newberryi Coult. & Rose, *Rev. N. Am. Umbell. 49. 1888.*

Coloptera Jonesii Coult. & Rose, *Rev. N. Am. Umbell. 50. 1888.*

Cymopterus Newberryi var. *alatus* M. E. Jones, *Zoe 4: 47. 1893.*

Cymopterus Newberryi var. *Jonesii* M. E. Jones, *Proc. Calif. Acad. II. 5: 684. 1895.*

Cymopterus Fendleri var. *Newberryi* M. E. Jones, *Contr. W. Bot. 12: 19. 1908.*

Plants acaulescent or subcaulescent, 4-20 cm. high, glabrous, a pseudoscape never developed; leaves ovate to oblong-obovate in general outline, excluding the petioles 1-4 cm. long, 1.5-4 cm. broad, pinnate, green, the leaflets pinnately lobed, about as broad as long, the lobes obtuse, about 1 mm. long, 1-5 mm. broad, confluent; petioles 8-10 cm. long; peduncles usually exceeding the leaves; involucre usually of a low sheath, or sometimes with 1-3 linear bracts; involucre of linear, acute, usually foliaceous bractlets, equaling or exceeding the flowers; fertile rays several, 5-30 mm. long, the central umbellet frequently sessile, sterile; pedicels obsolete; flowers yellow; fruit ovoid-oblong, 4-12 mm. long, 3-8 mm. broad, the wings broad and corky, somewhat narrowed at the base, narrower than the body, the dorsal 0 or 2, smaller and less corky or similar to the lateral; oil-tubes 5-9 in the intervals (18-23 on the dorsal surface when the dorsal wings absent), 6-12 on the commissure, sometimes solitary at the base of the wing; seed-face slightly concave; strengthening cells present or absent.

TYPE LOCALITY: "Little Colorado or Flax River, Long. 111°," Arizona, *Newberry*.

DISTRIBUTION: Southern Utah and northern Arizona (*Jones 1792, Parry 83*).

ILLUSTRATIONS: Coult. & Rose, *Rev. N. Am. Umbell. f. 31; Zoe 4: pl. 25 (fr.)*; *Ann. Mo. Bot. Gard. 17: pl. 23, f. 8; pl. 24, f. 22, 23; pl. 25, f. 2, 3; pl. 47, f. 2.*

28. *Cymopterus panamintensis* Coult. & Rose; Coville,
 Contr. U. S. Nat. Herb. 4: 116. 1893.

Aulospermum panamintense Coult. & Rose, Contr. U. S. Nat. Herb. 7: 177. 1900.

Plants acaulescent, 5–40 cm. high, glabrous; leaves ovate-oblong to obovate in general outline, excluding the petioles 1–14 cm. long, 1–8 cm. broad, ternate-2–3-pinnate, the ultimate divisions linear, acute and somewhat spinulose, 1–5 mm. long, about 1 mm. broad, mostly distinct; petioles 1–10 cm. long; peduncles exceeding the leaves, 3–25 cm. long; involucre wanting; involucre dimidiate, of several conspicuous, linear, acuminate, more or less united bractlets, equaling or exceeding the flowers; fertile rays 5–15, spreading, 10–65 mm. long; pedicels 4–13 mm. long; flowers greenish-yellow; fruit ovoid-oblong, 6–10 mm. long, 3–8 mm. broad, the wings enlarged at the base, equaling or slightly exceeding the body, membranaceous; oil-tubes 1–5 in the intervals, 4–7 on the commissure; seed-face concave.

TYPE LOCALITY: "Near Pete's garden, in Johnson Canyon, Panamint Mountains," Inyo County, California, 1740 m., Coville & Funston 508.

DISTRIBUTION: Mountains bordering Death Valley, eastern California (Coville & Funston 545, Purpus 5393).

ILLUSTRATIONS: Ann. Mo. Bot. Gard. 17: pl. 25, f. 33; pl. 44, f. 2; Munz, Man. S. Calif. Bot. 357; E. Jaeger, Des. Wild Fl. 179.

28a. *Cymopterus panamintensis* var. *acutifolius* (Coult &
 Rose) Munz, Man. S. Calif. Bot. 357. 1935.

Aulospermum panamintense var. *acutifolium* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 177. 1900.

Leaf-divisions more remote, the ultimate divisions acute, not conspicuously spinulose, 3–20 mm. long.

TYPE LOCALITY: Newberry's Springs, Mojave Desert, California, Lemmon & Lemmon.

DISTRIBUTION: Mohave Desert, California (Munz & Keck 7854, Parish & Parish 1294, Mathias 1379).

ILLUSTRATION: Ann. Mo. Bot. Gard. 17: pl. 25, f. 32.

29. *Cymopterus aboriginum* M. E. Jones, Contr.
 W. Bot. 12: 22. 1908.

Cymopterus aboriginum var. *ovalis* M. E. Jones, Contr. W. Bot. 12: 22. 1908.

Cymopterus aboriginum var. *subternatus* M. E. Jones, Contr. W. Bot. 12: 23. 1908.

Cymopterus aboriginum var. *oblongus* M. E. Jones, Contr. W. Bot. 12: 23. 1908.

Aulospermum aboriginum Mathias, Ann. Mo. Bot. Gard. 17: 352. 1930.

Plants acaulescent, 9–35 cm. high, a pseudoscape never developed; leaves oblong in general outline, excluding the petioles 3–10 cm. long, 1–4.5 cm. broad, ternate-bipinnate or tripinnate, gray-green, hirtellous, the leaflets entire to pinnately lobed, the lobes linear, acute, 2–8 mm. long, 0.5–2 mm. broad, distinct to slightly confluent; petioles 2–13 cm. long; peduncles equaling or exceeding the leaves, 8–30 cm. long, glabrous; involucre wanting, or of a few linear bracts; involucre of several linear, subscarios, acute to acuminate, puberulent bractlets shorter than or equaling the flowers; umbels subcompact, the fertile rays 3–10, spreading, 4–20 mm. long, usually glabrous, the central umbellets sterile; pedicels 3–7 mm. long; flowers white; fruit ovoid to oblong, 6–11 mm. long, 5–8 mm. broad, the wings linear, about twice as wide as the body; oil-tubes 2–8 in the intervals, 6–22 on the commissure; seed-face slightly concave.

TYPE LOCALITY: Indian Spring, Charleston Mountains, Nevada, 4000 feet, M. E. Jones.

DISTRIBUTION: Eastern California, in the Death Valley region, and adjacent Nevada (Clokey 8447, Duran 2733, Gilman 3849).

ILLUSTRATIONS: Ann. Mo. Bot. Gard. 17: pl. 25, f. 37; pl. 43, f. 2; pl. 45, f. 1; E. Jaeger, Des. Wild Fl. 179.

30. *Cymopterus bipinnatus* S. Wats. Proc. Am. Acad. 20: 368. 1885.

Pseudocymopterus bipinnatus Coult. & Rose, Rev. N. Am. Umbell. 75. 1888.

Cynomarathrum Macbridei A. Nelson, Bot. Gaz. 54: 142. 1912.

Pseudoreoxis bipinnatus Rydb. Bull. Torrey Club 40: 73. 1913.

Plants acaulescent, 2–26 cm. high, cespitose from long, slender tap-roots; leaves narrowly oblong in general outline, excluding the petioles 1.5–6.5 cm. long, 0.5–1.5 cm. broad, bipinnate,

gray-green, rough-puberulent, the leaflets entire to pinnately lobed, the lobes crowded, obtuse, 1-4 mm. long, 0.5-1 mm. broad; petioles 2-9 cm. long; peduncles greatly exceeding the leaves; involucre wanting; bractlets of the involucre linear, acute, scarious with a prominent mid-vein, occasionally purplish-tinged, more or less confluent at the base, about equaling the flowers; umbels subcompact, the fertile rays 3-5, 1-17 mm. long; pedicels 2-4 mm. long; flowers white; fruit ovoid-oblong, 3-6 mm. long, 3-6 mm. broad, the wings oblong-linear to subdeltoid, narrower than the body, the dorsal wings 3, similar to the lateral; oil-tubes 1-7 in the intervals, 4-8 on the commissure; seed-face concave; strengthening cells absent.

TYPE LOCALITY: "Rocky Mountains south of Virginia City," Montana, *Hayden 14*.

DISTRIBUTION: Western Montana and adjacent Idaho to Oregon, northeastern Nevada, and Utah (*Blankinship 225, Canby 148, Nelson & Nelson 5411*).

ILLUSTRATIONS: Coult. & Rose, *Rev. N. Am. Umbell. f. 74*; *Ann. Mo. Bot. Gard. 17: pl. 22, f. 10; pl. 34, f. 2*.

31. *Cymopterus humboldtensis* M. E. Jones, Contr.

W. Bot. 12: 21. 1908.

Pseudocymopterus humboldtensis Mathias, *Ann. Mo. Bot. Gard. 17: 325*. 1930.

Plants acaulescent, 4-10 cm. high, caespitose from a long slender taproot, glabrous; leaves narrowly oblong in general outline, excluding the petioles 1-2.5 cm. long, about 1 cm. broad, bipinnate, gray-green, the leaflets entire to pinnately lobed, the lobes linear, obtuse, 1-2 mm. long, about 1 mm. broad; petioles less than 1 cm. long; peduncles exceeding the leaves, 2-7 cm. long; involucre wanting; involucre of linear, acute, sometimes purplish-tinged bractlets (occasionally appearing as bracts through shortening of the rays); umbels compact, the fertile rays 2-4, less than 5 mm. long; pedicels 0.5-2 mm. long; fruit oblong, 4-6 mm. long, 3-4 mm. broad, the wings linear, narrower than the body, the dorsal wings 3, similar to the lateral; oil-tubes 5-6 in the intervals, about 10 on the commissure; seed-face slightly concave.

TYPE LOCALITY: "Above Clover Valley, East Humboldt Mountains," Nevada, about 11,000 feet, *M. E. Jones*.

DISTRIBUTION: Southern Idaho and northeastern Nevada (*Davis 188, Rollins & Chambers 2481*).

ILLUSTRATIONS: *Ann. Mo. Bot. Gard. 17: pl. 25, f. 19; pl. 36, f. 1*.

32. *Cymopterus nivalis* S. Wats. Bot. King's Expl. 123. 1871.

Pseudoreoxis nivalis Rydb. *Bull. Torrey Club 40: 73*. 1913.

Pseudocymopterus nivalis Mathias, *Ann. Mo. Bot. Gard. 17: 327*. 1930.

Plants acaulescent, 5-15 cm. high, caespitose from a long slender taproot; leaves narrowly oblong in general outline, excluding the petioles 1.5-5 cm. long, 0.5-1.5 cm. broad, pinnate, rough-puberulent, the leaflets entire to pinnately lobed, remote, the lobes linear to ovate, acute, 1-10 mm. long, 1-4 mm. broad, distinct; petioles 1-8 cm. long; peduncles exceeding the leaves, 4-10 cm. long; involucre wanting; involucre dimidiate, of linear, acute, subconnate bractlets about equaling the flowers; umbels compact, the rays several, less than 5 mm. long; flowers white or pinkish; mature fruit unknown, the immature ovoid-oblong, about 1.5 mm. long, about 1 mm. broad, the wings thin; oil-tubes inconspicuous.

TYPE LOCALITY: "East Humboldt Mountains," Nevada, 9000 feet, *Watson 448*.

DISTRIBUTION: Central Idaho to northeastern Nevada (*Davis 2018*).

ILLUSTRATION: *Ann. Mo. Bot. Gard. 17: pl. 36, f. 2*.

71. *PTERYXIA* Nutt.; Coult. & Rose, Contr. U. S.

Nat. Herb. 7: 170. 1900.

Cymopterus § *Pteryxia* Nutt.; T. & G. Fl. N. Am. 1: 624. 1840.

Pseudopteryxia Rydb. *Bull. Torrey Club 40: 71*. 1913.

Pseudoreoxis Rydb. *Bull. Torrey Club 40: 73*. 1913.

Low, erect, caespitose, herbaceous, acaulescent or caulescent, essentially glabrous perennials, from long slender taproots crowned with persistent leaf-bases. Leaves petiolate, membranaceous, bipinnate to pinnately or ternate-pinnately decomposed, the ultimate divisions rigid or herbaceous, linear, oblong, or subcuneate. Petioles sheathing. Inflorescence of loose to subcompact compound umbels; peduncles terminal and sometimes axillary, longer than or

only equaling the leaves. Involucre usually wanting. Involucel usually dimidiate, the bractlets linear to lanceolate, entire or occasionally toothed, sometimes scarious, equaling or exceeding the flowers. Rays few to rather numerous, spreading to ascending, usually unequal. Pedicels spreading, slender to nearly obsolete. Flowers yellow, whitish, or purple; petals oblong to obovate with a narrower inflexed apex; calyx-teeth prominent, often unequal; styles slender, the stylopodium lacking. Carpophore 2-cleft to the base. Fruit narrowly oblong to ovoid, flattened dorsally, glabrous or pubescent when immature; lateral ribs winged, the wings membranaceous, linear in cross section, longer or shorter than the body; some or all of the dorsal ribs like the lateral or shorter; oil-tubes small, solitary to several in the intervals, several on the commissure, accessory oil-tubes rarely present in the wings; seed flattened dorsally in cross section, the face somewhat concave to plane; strengthening cells present or absent.

Type species, *Selinum terebinthinum* Hook. (*Pteryxia terebinthina* Coult. & Rose).

Plants unbranched or with few branches below, with few or no cauline leaves; peduncles glabrous below the umbels; young fruit glabrous.

Leaves broadly ovate to ovate-oblong, pinnately or ternate-pinnately decomposed.

Flowers yellow; fruit 5-11 mm. long.

Wings of the fruit undulate-crisped; Columbia Plateau of Washington and Oregon.

Wings of the fruit plane, or nearly so.

Leaves green; ultimate divisions narrow; dorsal wings usually reduced.

Leaves gray-green; ultimate divisions broader; dorsal wings usually well developed.

Rays short; fruit 3-5 mm. broad; northern Rocky Mountains to Idaho and Utah.

Rays longer, up to 8 cm. long; fruit 5-10 mm. broad; California and Nevada.

Flowers whitish; fruit 3-5 mm. long.

Leaves narrowly oblong, ternate-bipinnate or 2-3-pinnate. Plants caulescent; leaves ternate-bipinnate or 3-pinnate; bractlets inconspicuous, 1-3 mm. long.

Plants acaulescent; leaves bipinnate; bractlets conspicuous, 2-15 mm. long.

Rays conspicuously unequal, ascending, up to 6 cm. long; dorsal wings obsolete.

Rays only slightly unequal, spreading, up to 3 cm. long; dorsal wings well developed.

Plants branching freely above, with several to many cauline leaves; peduncles hirtellous at the base of the umbels; young fruit puberulent.

1. *P. terebinthina*.

1a. *P. terebinthina* var. *foeniculacea*.

1b. *P. terebinthina* var. *calcareae*.

1c. *P. terebinthina* var. *californica*.

1d. *P. terebinthina* var. *albiflora*.

2. *P. petraea*.

3. *P. anisata*.

4. *P. Hendersoni*.

5. *P. Davidsoni*.

1. *Pteryxia terebinthina* (Hook.) Coult. & Rose,

Contr. U. S. Nat. Herb. 7: 171. 1900.

Selinum terebinthinum Hook. Fl. Bor. Am. 1: 266. 1832.

Laserpiliun terebinthinum Dougl.; Hook. Fl. Bor. Am. 1: 266, as syn. 1832.

Cymopterus terebinthinus T. & G. Fl. N. Am. 1: 624. 1840.

Pteryxia terebinthacea Nutt.; T. & G. Fl. N. Am. 1: 624, as syn. 1840.

Plants caulescent to subcaulescent, 10-60 cm. high; leaves gray-green, ovate-oblong to broadly ovate in general outline, excluding the petioles 3-18 cm. long, 3-12 cm. broad, pinnately or ternate-pinnately decomposed, the ultimate divisions linear to subcuneate, rigid, acute, 1-4 mm. long, about 1 mm. broad, more or less confluent; petioles 2-16 cm. long; peduncles 10-35 cm. long; involucre dimidiate, the bractlets linear to rarely obovate, acute, entire or rarely toothed, 2-6 mm. long; rays 7-24, unequal, 5-70 mm. long; pedicels 1-8 mm. long; flowers yellow; fruit ovoid to ovoid-oblong, 7-11 mm. long, 7-11 mm. broad, the wings undulate-crisped, equaling or exceeding the body, the dorsal equaling the lateral or rarely shorter; oil-tubes 3-12 in the intervals, 6-20 on the commissure and sometimes at the base of the wings.

TYPE LOCALITY: "Common on the sandy grounds of the Wallahwallah [Walla Walla] River, North-West coast of America," Washington, Douglas.

DISTRIBUTION: Columbia Plateau of eastern Washington and Oregon (Cotton 1080, Constance & Beetle 2688, Thompson 4778).

ILLUSTRATIONS: Hook. Fl. Bor. Am. 1: pl. 95; Contr. U. S. Nat. Herb. 7: 170 (fr.); Ann. Mo. Bot. Gard. 17: pl. 25, f. 20, 21; pl. 37, f. 1.

1a. *Pteryxia terebinthina* var. *foeniculacea* (T. & G.)

Mathias, Ann. Mo. Bot. Gard. 17: 332. 1930.

- Cymopterus foeniculaceus* T. & G. Fl. N. Am. 1: 624. 1840.
Pteryxia foeniculacea Nutt.; T. & G. Fl. N. Am. 1: 624, as syn. 1840.
Cymopterus thapsoides T. & G. Fl. N. Am. 1: 625. 1840.
Pteryxia thapsoides Nutt.; T. & G. Fl. N. Am. 1: 625, as syn. 1840.
Cymopterus Elrodi M. E. Jones, Bull. Univ. Mont. Biol. 15: 41. 1910.
Pteryxia Elrodi Rydb. Fl. Rocky Mts. 621, 1064. 1917.

Plants usually more slender; leaves green, the divisions longer and less rigid; umbels more compact, the rays usually shorter, subequal; fruit 5–10 mm. long, 3–4 mm. broad, the wings plane, the dorsal usually much shorter than the lateral.

TYPE LOCALITY: "On rocks, Blue Mountains of Oregon," Nuttall.

DISTRIBUTION: Western Montana and eastern Washington to southern Idaho and central Oregon (*Cusick 1657, 2085, Elmer 770*).

ILLUSTRATIONS: Ann. Mo. Bot. Gard. 17: pl. 25, f. 24–26 (fr.).

1b. *Pteryxia terebinthina* var. *calcareo* (M. E. Jones) Mathias,

Ann. Mo. Bot. Gard. 17: 334. 1930.

- Cymopterus calcareus* M. E. Jones, Contr. W. Bot. 8: 32. 1898.
Pteryxia calcareo Coult. & Rose, Contr. U. S. Nat. Herb. 7: 173. 1900.

Plants usually lower, acaulescent or shortly caulescent; leaves gray-green, the divisions somewhat broader; umbels more compact, the rays usually shorter, subequal; fruit 5–8 mm. long, 3–5 mm. broad, the wings plane, the dorsal equaling or shorter than the lateral.

TYPE LOCALITY: Green River, Wyoming, 6000 feet, M. E. Jones.

DISTRIBUTION: Montana and Colorado to southern Idaho, Utah, and Nevada (*Blankinship 226, Merrill & Wilcox 477, Nelson 3083*).

ILLUSTRATIONS: Ann. Mo. Bot. Gard. 17: pl. 25, figs. 28, 29; pl. 38, f. 1.

1c. *Pteryxia terebinthina* var. *californica* (Coult. & Rose)

Mathias, Ann. Mo. Bot. Gard. 17: 337. 1930

- Pteryxia californica* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 172. 1900.
Cymopterus californicus M. E. Jones, Contr. W. Bot. 12: 27. 1908.
Cymopterus terebinthinus var. *californicus* Jepson, Man. Fl. Pl. Calif. 730. 1925.

Often stouter, shortly caulescent; leaves gray-green, the divisions not rigid; umbels spreading, the rays 10–80 mm. long; fruit 5–10 mm. long, about as broad, the wings plane, thicker, the dorsal usually equaling the lateral.

TYPE LOCALITY: Sisson, Siskiyou County, California, H. E. Brown.

DISTRIBUTION: Northern to central California in the Coast Ranges and Sierra Nevada, and northern Nevada (*Baker 1369, Heller 7070, Mathias 1386*).

ILLUSTRATIONS: Armstrong, Field Book W. Wild Fl. 335; Ann. Mo. Bot. Gard. 17: pl. 25, f. 22, 23; pl. 37, f. 2.

1d. *Pteryxia terebinthina* var. *albiflora* (T. & G.) Mathias,

Ann. Mo. Bot. Gard. 17: 339. 1930.

- Cymopterus albiflorus* T. & G. Fl. N. Am. 1: 625. 1840.
Pteryxia albiflora Nutt.; T. & G. Fl. N. Am. 1: 625, as syn. 1840.
Cymopterus terebinthinus var. *albiflorus* M. E. Jones, Contr. W. Bot. 10: 56, as to synonymy. 1902

Usually lower, acaulescent or shortly caulescent; leaves gray-green; umbels more compact, the rays 5–15 mm. long; fruit 3–5 mm. long, 3–5 mm. broad, the wings plane, shorter and thicker.

TYPE LOCALITY: "Hills of Bear River in the Rocky Mountain range," Nuttall.

DISTRIBUTION: Northwestern Wyoming and adjacent Montana to Idaho (*Rose #8, 533*).

ILLUSTRATION: Ann. Mo. Bot. Gard. 17: pl. 25, f. 27 (fr.).

2. *Pteryxia petraea* (M. E. Jones) Coult. & Rose, Contr. U. S.
Nat. Herb. 7: 172. 1900.

Cymopterus petraeus M. E. Jones, Contr. W. Bot. 8: 32. 1898.

Plants caulescent, 15–45 cm. high; leaves narrowly oblong in general outline, excluding the petioles 3.5–17 cm. long, 0.5–5 cm. broad, ternate-bipinnate to tripinnate, the ultimate divisions linear, acute, 1–8 mm. long, 0.5–1 mm. broad, distinct; petioles 5–12 cm. long; peduncles slender, 9–25 cm. long; involucre dimidiate, the bractlets linear, 1–3 mm. long; rays 3–7, very unequal, 1–55 mm. long, the inner shortened or obsolete; pedicels 1–6 mm. long; flowers yellow; fruit ovoid to ovoid-oblong, 4.5–7 mm. long, 2–4 mm. broad, the wings plane, narrower than or equaling the body, 1–3 of the dorsal ribs winged, these dorsal wings equaling or shorter than the lateral wings; oil-tubes 1–3 (usually 3) in the intervals, 5–15 on the commissure; accessory oil-tubes usually wanting; strengthening cells inconspicuous.

TYPE LOCALITY: Palisade, Nevada, M. E. Jones.

DISTRIBUTION: Southern Idaho and central Nevada to southeastern Oregon, eastern California, and northern Arizona (*Cusick 1995, Macbride & Payson 3053*).

ILLUSTRATIONS: Ann. Mo. Bot. Gard. 17: pl. 25, f. 30, 31; pl. 38, f. 2.

3. *Pteryxia anisata* (A. Gray) Math. & Const. Bull.
Torrey Club 69: 248. 1942.

Cymopterus ? anisatus A. Gray, Proc. Acad. Phila. 1863: 63. 1864.

Pseudocymopterus anisatus Coult. & Rose, Rev. N. Am. Umbell. 75. 1888.

Pseudocymopterus aletifolius Rydb. Bull. Torrey Club 31: 574. 1904.

Pseudopteryxia anisata Rydb. Bull. Torrey Club 40: 71. 1913.

Pseudopteryxia aletifolia Rydb. Bull. Torrey Club 40: 72. 1913.

Plants acaulescent, 10–35 cm. high; leaves narrowly oblong in general outline, excluding the petioles 3.5–14 cm. long, 1.5–3.5 cm. broad, bipinnate, the ultimate divisions rigid, acute, 1–6 mm. long, 1–1.5 mm. broad, mostly confluent, appearing as lobes of a subcuneate leaflet; petioles 3–11 cm. long; peduncles 8–25 cm. long; involucre dimidiate, the bractlets conspicuous, linear-lanceolate, entire, 3–15 mm. long, much longer than the flowers; rays 6–9, ascending, conspicuously unequal, 5–60 mm. long; pedicels unequal, 1–10 mm. long; flowers yellow; fruit narrowly oblong, 4–6 mm. long, 2–3 mm. broad, the wings plane, narrower than the body, the dorsal shorter than the lateral or obsolete; oil-tubes 1–3 in the intervals, 2–4 on the commissure; strengthening cells present or absent.

TYPE LOCALITY: "Dry hills in the middle mountains, Rocky Mountains, Colorado, Lat. 39–41°," *Hall & Harbour 222*.

DISTRIBUTION: Central Colorado (*Clements & Clements 94, Rydberg & Vreeland 5815*).

ILLUSTRATIONS: Coult. & Rose, Rev. N. Am. Umbell. f. 75, 76; Clements & Clements, Rocky Mt. Fl. pl. 35, f. 24 (fr.); Ann. Mo. Bot. Gard. 17: pl. 25, f. 15, 16; pl. 35.

4. *Pteryxia Hendersonii* (Coult. & Rose) Math. &
Const. Bull. Torrey Club 69: 248. 1942.

Pseudocymopterus Hendersonii Coult. & Rose, Contr. U. S. Nat. Herb. 7: 190. 1900.

Pseudopteryxia longiloba Rydb. Bull. Torrey Club 40: 72. 1913.

Pseudopteryxia Hendersonii Rydb. Fl. Rocky Mts. 624, 1064. 1917.

Pseudocymopterus anisatus var. *longilobus* Tidestrom, Contr. U. S. Nat. Herb. 25: 399. 1925.

Plants acaulescent, 5–40 cm. high; leaves narrowly oblong in general outline, excluding the petioles 1.3–9.5 cm. long, 1–2.5 cm. broad, bipinnate, the ultimate divisions linear, acute, 1–15 mm. long, 0.5–2 mm. broad, usually distinct; petioles 1–11 cm. long; peduncles 6–30 cm. long; involucre rarely of 1 or 2 linear bracts; involucre dimidiate, the bractlets conspicuous, linear-lanceolate, entire or bifid, 2–12 mm. long, occasionally fused with the pedicels for a portion of their length; rays 4–8, spreading, slightly unequal, 3–30 mm. long; pedicels 1–3 mm. long; flowers yellow; fruit ovoid-oblong, 4–7 mm. long, 2–4 mm. broad, the wings plane, shorter than the body, the dorsal 1–3, equaling or shorter than the lateral; oil-tubes 1–5 in the intervals, 3–8 on the commissure; accessory oil-tubes rarely present in the wings; strengthening cells present or absent.

TYPE LOCALITY: "Summit of peak, source of Mill Creek, Idaho, 12,800 ft. alt.," *L. F. Henderson* 4068.

DISTRIBUTION: Montana to northern New Mexico, west to southern Idaho and eastern Nevada. (*Nelson* 4803, *Nelson & Nelson* 6507, *Parry* 157).

ILLUSTRATIONS: *Ann. Mo. Bot. Gard.* 17: pl. 25, f. 17, 18; pl. 35, f. 1.

5. *Pteryxia Davidsoni* (Coul. & Rose) Math. & Const.

Bull. Torrey Club 69: 248. 1942.

Aletes ? Davidsoni Coul. & Rose, *Contr. U. S. Nat. Herb.* 7: 107. 1900.

Pseudocymopterus filicinus Wooton & Standley, *Contr. U. S. Nat. Herb.* 16: 158. 1913.

Pseudocymopterus Davidsoni Mathias, *Ann. Mo. Bot. Gard.* 17: 282, 316. 1930.

Plants caulescent, branching above, 15-35 cm. high, the nodes sometimes scaberulous; leaves oblong to ovate-oblong in general outline, excluding the petioles 1.5-14 cm. long, 1-9 cm. broad, usually tripinnate, the ultimate divisions usually linear, acute, mucronate, 1-30 mm. long, 1-3 mm. broad, slightly confluent; petioles 1-7 cm. long; peduncles 4-14 cm. long, hirtellous at the base of the umbels; involucre dimidiate, the bractlets conspicuous, linear, acute, entire, 2-7 mm. long; rays 5-9, spreading, slightly unequal, 5-30 mm. long, scaberulous; pedicels 1-5 mm. long; flowers yellow or purple; fruit oblong, 3-4 mm. long, 1-2 mm. broad, puberulent when immature, but glabrous at maturity, the wings plane, shorter than the body, the dorsal 1-3, equaling or shorter than the lateral; oil-tubes 3-8 in the intervals, 3-8 on the commissure.

TYPE LOCALITY: "Among rocks in moist creek, near Coronado Mine, Clifton, Arizona," *Davidson* 161a.

DISTRIBUTION: Southeastern Arizona and adjacent New Mexico (*Kearney & Peebles* 2240, 2241, *Metcalf* 165).

ILLUSTRATIONS: *Ann. Mo. Bot. Gard.* 17: pl. 25, f. 14; pl. 34, f. 1.

72. *THASPIUM* Nutt. *Gen.* 1: 196. 1818.

Upopion Raf. *New Fl.* 4: 29. 1838.

Slender, erect, herbaceous, caulescent, branching, glabrous or pubescent perennials, from a fascicle of fibrous roots. Leaves petiolate, membranaceous, simple, ternate or ternate-pinnately compound or dissected, the divisions serrate, dentate, or lobed and incised. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral, longer than the leaves. Involucre wanting. Involucre of small, narrow, entire bractlets shorter than the flowers. Rays rather few, spreading-ascending. Pedicels short, spreading, all the flowers of each umbellet pedicellate. Flowers yellow or purple; petals obovate with a narrower inflexed apex; calyx-teeth small or obsolete; styles slender, the stylopodium lacking. Carpophore wanting. Fruit ovoid to oblong, slightly flattened dorsally or subterete, glabrous or puberulent; several or all of the ribs prominently winged; oil-tubes solitary in the intervals, 2 on the commissure; seed subterete or somewhat dorsally flattened in cross section, sulcate beneath the intervals, the face plane.

Type species, *Ligusticum (?) barbinode* Michx. (*Thaspium barbinode* Nutt.).

Basal leaves simple or ternate; rays 6-10, unequal.

Flowers dark purple.

Flowers yellow.

Basal leaves twice or more ternate or pinnate; rays 8-16, subequal.

Leaflets ovate to lanceolate, serrate to incised; petioles 5-10 cm. long; bractlets acute, 1-4 mm. long.

Leaflets pinnately divided, the lobes linear to oblong; petioles 15-20 cm. long; bractlets attenuate, 3-6 mm. long.

1. *T. trifoliatum*.

1a. *T. trifoliatum* var. *flavum*.

2. *T. barbinode*.

3. *T. pinnatifidum*.

1. *Thaspium trifoliatum* (L.) A. Gray, *Man. ed.* 2: 156. 1856.

Thapsia trifoliata L. *Sp. Pl.* 262. 1753.

Smyrniium cordatum Walt. *Fl. Car.* 114. 1788.

Smyrniium atropurpureum Desr. in *Lam. Encyc.* 3: 667. 1791.

Thaspium atropurpureum Nutt. *Gen.* 1: 196. 1818.

Cnidium atropurpureum Spreng. in *R. & S. Syst. Veg.* 6: 418. 1820.

Upopion trifoliatum Raf. *New Fl.* 4: 30. 1838.

Upopion pinnatum Raf. *New Fl.* 4: 30. 1838.

Upopion lobatum Raf. *New Fl.* 4: 30. 1838.

Upopion lobatum var. *rigida* Raf. *New Fl.* 4: 30. 1838.

Upopion heterophyllum Raf. New Fl. 4: 31. 1838.

Upopion cordatum Raf. New Fl. 4: 31. 1838.

Thaspium cordatum T. & G. Fl. N. Am. 1: 615. 1840.

Thaspium trifoliatum var. *atropurpureum* T. & G.; A. Gray, Man. ed. 2. 156. 1856

Thaspium aureum var. *atropurpureum* Coult. & Rose, Bot. Gaz. 12: 136. 1887.

Thaspium aureum var. *cordatum* B.S.P. Prel. Cat. N. Y. 22. 1888.

Thaspium ziziopsis Daniels, Univ. Mo. Stud. Sci. 1: 329. 1907.

Plants 2-7 dm. high, glabrous; basal leaves cordate to reniform in general outline, excluding the petioles 3-6 cm. long, 4-7 cm. broad, crenate-dentate, simple, or ternate with ovate leaflets 25-45 mm. long, 20-35 mm. broad; petioles 6-10 cm. long; cauline leaves ternate, the divisions lanceolate, serrate or toothed; peduncles 3-10 cm. long; involucre of 4-8 inconspicuous, linear to lanceolate bractlets, 2-4 mm. long; rays 6-10, spreading-ascending, unequal, 1-3 cm. long; pedicels 1-3 mm. long; flowers purple; fruit oval, 3-4 mm. long, 2.5-3 mm. broad, all or several of the ribs broadly winged; seed-face plane.

TYPE LOCALITY: "Virginia," collector unknown.

DISTRIBUTION: Rhode Island to Georgia, west to Manitoba, Kansas, and Louisiana (*Rydberg 9193*, *Svenson 7274*).

ILLUSTRATIONS: Torr. Fl. N. Y. 1: pl. 34; Britt. & Brown, Ill. Fl. 2: 518; ed. 2. 2: 639; Contr. U. S. Nat. Herb. 7: 145 (fr.); Rydb. Fl. Pr. & Pl. 600.

1a. *Thaspium trifoliatum* var. *flavum* Blake, *Rhodora* 20: 53. 1918.*

?*Zizia parvifolia* Raf. New Fl. 4: 31. 1838.

Thaspium aureum var. *trifoliatum* Coult. & Rose, Bot. Gaz. 12: 136. 1887.

Thaspium trifoliatum var. *aureum* Britton, Mem. Torrey Club 5: 240. 1894. Not *Smyrniolum aureum* L. 1753; nor *Thaspium aureum* Nutt. 1818.

Zizia sylvatica Benke, *Rhodora* 35: 45. 1933.

Thaspium aureum of authors, not *T. aureum* Nutt. 1818.

Thaspium sylvaticum G. N. Jones, Fl. Ill. 197. 1945.

Flowers yellow.

TYPE LOCALITY: Peoria, Illinois, *F. E. McDonald*.

DISTRIBUTION: Pennsylvania and North Carolina, west to Ontario and Arkansas (*Demaree 12,233*, *16,536*).

ILLUSTRATIONS: Bot. Gaz. 12: pl. 5, f. 57 (fr.); Mem. Torrey Club 2: pl. 11, f. 69 (veg.); Georgia, Man. Weeds 304.

2. *Thaspium barbinode* (Michx.) Nutt. Gen. 1: 196. 1818.

Ligusticum (?) *barbinode* Michx. Fl. Bor. Am. 1: 167. 1803.

Smyrniolum barbinode Muhl. Cat. 32. 1813.

Thaspium barbinode var. *angustifolium* Coult. & Rose, Bot. Gaz. 12: 137. 1887.

Thaspium barbinode var. *pinnatifidum* Coult. & Rose, Rev. N. Am. Umbell. 84. 1888. Not *Zizia*

pinnatifida Buckl. 1843.

Thaspium barbinode var. *Chapmani* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 148. 1900.

Thaspium barbinode var. *Garmani* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 148. 1900.

Plants 5-9 dm. high, glabrous or pubescent at the nodes; basal leaves ovate to orbicular in general outline, excluding the petioles 6-12 cm. long, ternate-pinnate, the leaflets ovate or ovate-lanceolate, 5-15 mm. long, 10-25 mm. broad, distinct, coarsely serrate or incised; petioles 5-10 cm. long; cauline leaves like the basal, the upper sessile; peduncles 4-8 cm. long; involucre of inconspicuous, linear, acute bractlets, 1-4 mm. long; rays 8-15, spreading-ascending, subequal, 1-3 cm. long; pedicels 2-5 mm. long; flowers yellow; fruit oval or oblong, glabrous or puberulent, 3-6 mm. long, 2-4 mm. broad; several of the ribs prominently winged; seed-face plane.

TYPE LOCALITY: "In Carolina superiore," *Michaux* ?

DISTRIBUTION: New York to Florida, west to Ontario and Oklahoma (*Curtiss 1022*, *Friesner 5577*, *Palmer 12,636*).

ILLUSTRATIONS: Bot. Gaz. 12: pl. 5, f. 59 (fr.); Mem. Torrey Club 2: pl. 11, f. 66-68 (veg.); Britt. & Brown, Ill. Fl. 2: 518; ed. 2. 2: 640.

3. *Thaspium pinnatifidum* (Buckl.) A. Gray, Man. ed. 2. 155. 1856.

Zizia pinnatifida Buckl. Am. Jour. Sci. 45: 175. 1843.

Thaspium Walleri Shuttl.; A. Gray, Pl. Wright. 1: 79, as syn. 1852.

* Strict adherence to the International Rules of Botanical Nomenclature would appear to necessitate retention of the epithet *trifoliatum* for this variety. The authors feel that such procedure, since the variety is not based upon the type of the species, would result in confusion. The combination *Thaspium trifoliatum* (L.) A. Gray var. *trifoliatum* (Coult. & Rose) is therefore rejected as a *nomen ambiguum*.

Plants 6 dm. high, puberulent; basal leaves deltoid in general outline, excluding the petioles 8–15 cm. long, ternate-pinnately dissected, the leaflets pinnately divided, the ultimate divisions linear-oblong to cuneate, 5–15 mm. long, 1–5 mm. broad, the margins entire; petioles slender, 1.5–2 dm. long; cauline leaves like the basal, the upper sessile; peduncles 1–6 cm. long; involucre of 1–several, linear, attenuate bractlets 3–6 mm. long, exceeding the pedicels; rays 13–16, subequal, 1.5–2 cm. long; pedicels 2–4 mm. long; fruit oblong-oval, 3–4 mm. long, 2–3 mm. broad, the ribs equally narrow-winged.

TYPE LOCALITY: "Banks of the French Broad River near the Warm Springs, and near Sugar Town Falls," Macon County, North Carolina, Buckley.

DISTRIBUTION: North Carolina to Kentucky and Tennessee (Beardslee & Kofoed 23).

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. 2: 518; ed. 2, 2: 640.

73. PSEUDOCYOPTERUS Coult. & Rose, N. Am.

Umbell. 20, 74. 1888.

Slender or low, erect, herbaceous, subcaulescent to caulescent, glabrous to somewhat scaberulous, ciliate or hirtellous-pubescent perennials, from long slender taproots. Leaves petiolate, membranaceous, 1–3-pinnate, the leaflets or ultimate divisions lanceolate to filiform. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and sometimes axillary, longer than the leaves, conspicuously hirtellous-pubescent at the base of the umbel. Involucre usually wanting. Involucel dimidiate, of oval to filiform bractlets connate at the base, longer or shorter than the flowers. Rays few, spreading-ascending or spreading, subequal to unequal. Pedicels spreading. Flowers yellow or purple; petals ovate to obovate with a narrower inflexed apex; calyx-teeth evident, ovate; styles slender, the stylopodium lacking. Carpophore 2-cleft to the base. Fruit ovoid to ovoid-oblong, flattened dorsally, glabrous; lateral ribs broadly winged, the wings spongy, linear to triangular in cross section, almost equaling the body; one or more of the dorsal ribs similarly winged, or reduced to conspicuous ribs, or obsolete; oil-tubes solitary to several in the intervals, several on the commissure, rarely also at the base of the wings; seed flattened dorsally in cross section, the face plane; strengthening cells absent or present.

Type species, *Thaspium* ? *montanum* A. Gray (*Pseudocymopterus montanus* Coult. & Rose).

1. *Pseudocymopterus montanus* (A. Gray) Coult. & Rose,

Rev. N. Am. Umbell. 74. 1888.

- Thaspium* ? *montanum* A. Gray, Mem. Am. Acad. II. 4: 57. 1849.
Thaspium montanum var. *tenuifolium* A. Gray, Pl. Wright. 2: 65. 1853.
Ligusticum montanum var. *tenuifolium* S. Wats. Bibl. Ind. 426. 1878.
Pseudocymopterus montanus var. *tenuifolius* Coult. & Rose, Rev. N. Am. Umbell. 75. 1888.
Pseudocymopterus montanus var. *purpureus* Coult. & Rose, Rev. N. Am. Umbell. 75. 1888.
Peucedanum Lemmoni Coult. & Rose, Bot. Gaz. 14: 277. 1889.
Lomatium Lemmoni Coult. & Rose, Contr. U. S. Nat. Herb. 7: 231. 1900.
Pseudocymopterus sylvaticus A. Nelson, Bull. Torrey Club 28: 224. 1901.
Pseudocymopterus montanus var. *multifidus* Rydb. Bull. Torrey Club 31: 574. 1904.
Pseudocymopterus multifidus Rydb. Bull. Torrey Club 33: 147. 1906.
Pseudocymopterus purpureus Rydb. Bull. Torrey Club 33: 147. 1906.
Pseudocymopterus tenuifolius Rydb. Bull. Torrey Club 33: 147. 1906.
Cymopterus ligusticoides M. E. Jones, Contr. W. Bot. 12: 29. 1908.
Cymopterus ligusticoides var. *tenuifolius* M. E. Jones, Contr. W. Bot. 12: 29. 1908.
Cogswellia Lemmoni M. E. Jones, Contr. W. Bot. 12: 33. 1908.
Pseudocymopterus Tidestromii Coult. & Rose, Contr. U. S. Nat. Herb. 12: 447. 1909.
Pseudocymopterus versicolor Rydb. Fl. Rocky Mts. 623. 1917.
Cymopterus ligusticoides puniceus Tidestrom, Proc. Biol. Soc. Wash. 48: 42. 1935.
Pseudocymopterus Tidestromii Tidestrom, Proc. Biol. Soc. Wash. 48: 42. 1935.
Cymopterus Grayanus Tidestrom in Tidestrom & Kittell, Fl. Ariz. N. Mex. 324. 1941.
Cymopterus Grayanus purpureus Tidestrom in Tidestrom & Kittell, Fl. Ariz. N. Mex. 324. 1941.
Cymopterus Grayanus tenuifolius Tidestrom in Tidestrom & Kittell, Fl. Ariz. N. Mex. 324. 1941.
Cymopterus Grayanus filicinus Tidestrom in Tidestrom & Kittell, Fl. Ariz. N. Mex. 324. 1941.
Cymopterus Grayanus multifidus Tidestrom in Tidestrom & Kittell, Fl. Ariz. N. Mex. 325. 1941.

Plants 5–85 cm. high; leaves ovate-oblong to broadly ovate in general outline, excluding the petioles 1–17 cm. long, 1–14 cm. broad, the ultimate divisions filiform to broadly lanceolate, acute, 0.1–11 cm. long, 0.5–11 mm. broad, remote or more or less confluent. Petioles 1–24 cm. long, occasionally with scarios or purple margins; peduncles 0.5–5 dm. long; involucre rarely of 1 or 2 lanceolate bracts; involucre of several acute bractlets, 2–8 mm. long, connate at the base; rays 5–25, 3–55 mm. long, often scaberulous; pedicels 1–5 mm. long; fruit 3–7 mm. long,

2-4 mm. broad; oil-tubes 1-5 in the intervals (about 15 on the dorsal surface when the dorsal ribs are obsolete), 2-6 (usually 4) on the commissure.

TYPE LOCALITY: "Sunny declivities at the foot of mountains, along Santa Fe Creek," New Mexico, *Fendler 276*.

DISTRIBUTION: Mountains of southern Wyoming to western Utah, south through western Texas, New Mexico, and Arizona to Durango (*Baker 508, 739, Metcalfe 180, Nelson 1238, Mathias 569, 574*).

ILLUSTRATIONS: Coult. & Rose, Rev. N. Am. Umbell. f. 73 (fr.); Contr. U. S. Nat. Herb. 7: 187 (fr.); 12: pl. 83; Clements & Clements, Rocky Mt. Fl. pl. 35, f. 23; pl. 36, f. 7; Ann. Mo. Bot. Gard. 17: pl. 25, f. 4-13; pl. 32, 33.

74. *CNIDIUM* Cusson, Mém. Soc. Méd. Par. 280. 1782.

Pinasgelon Raf. Good Book 51. 1840.

Katapsuxis Raf. Good Book 58. 1840.

Slender, erect, herbaceous, caulescent, branching, glabrous to pubescent annuals or perennials, from slender taproots. Leaves petiolate, membranaceous, pinnately dissected. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre usually wanting. Involucre of several narrow bractlets. Rays numerous, spreading-ascending. Pedicels slender, spreading. Flowers white; petals obovate with a narrower inflexed apex; calyx-teeth obsolete or minute; styles slender, reflexed, the stylopodium conic. Carpophore 2-cleft to the base. Fruit ovoid, slightly flattened dorsally, glabrous; ribs prominently corky-winged, the lateral a little broader than the dorsal; oil-tubes solitary in the intervals, 2-4 on the commissure; seed flattened dorsally in cross section, the face plane; secondary oil-tubes sometimes present in the ribs.

Type species: *Selinum Monnieri* L. (*Cnidium Monnieri* Cusson).

1. *Cnidium Monnieri* (L.) Cusson, Mém. Soc. Méd. Par. 280. 1782.

Selinum Monnieri L. Cent. Pl. 1: 9. 1755.

Cicuta Monnieri Crantz, Class. Umbell. 98. 1767.

Pinasgelon monnieri Raf. Good Book 52. 1840.

Ligusticum Monnieri Calest. Webbiana 1: 211. 1905.

Annual, glabrous to puberulent or scaberulous, 3-5 dm. high; basal leaves ovate in general outline, excluding the petioles 6-9 cm. long, pinnately or ternate-pinnately decompound, the ultimate divisions linear-lanceolate, acute, 2-10 mm. long, 1-3 mm. broad; petioles 1-2 cm. long; cauline leaves like the basal; peduncles 3-7 cm. long; involucre of 8-10 linear, acuminate bracts, marginally ciliate, 2-5 mm. long; involucre of several linear to filiform, ciliate bractlets, 2-4 mm. long; rays 20-30, unequal, 5-20 cm. long; pedicels 3-5 mm. long; calyx-teeth obsolete; fruit oblong-oval, 2.5-3 mm. long, 1.5-2 mm. broad, glabrous, slightly compressed dorsally; ribs conspicuously corky-winged, the lateral wings slightly broader than the dorsal; oil-tubes solitary in the intervals, 2-4 on the commissure; seed-face slightly concave.

TYPE LOCALITY: "In Gallia australi," collector unknown.

DISTRIBUTION: Northern Asia; adventive in southern Europe, and at Portland, Oregon, on ballast.

ILLUSTRATIONS: Nova Acta Acad. Leop.-Carol. 12: pl. 10, f. 48; Mutel, Fl. Fr. pl. 23; Peterm. Deuts. Fl. pl. 35, f. 272 (fl.); Fiori & Paol. Ic. Fl. Ital. f. 2307.

75. *CONIOSELINUM* Hoffm. Gen. Umbell. xxviii. 1814.

Kreidion Raf. Good Book 57. 1840.

Stout or slender, erect, caulescent, usually branching, glabrous except for the puberulent inflorescence, perennials, from a taproot or cluster of fleshy roots. Leaves petiolate, membranaceous, ternate-pinnately decompound, the leaflets lobed or dissected. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal, or terminal and lateral. Involucre of a few narrow or foliaceous bracts, or wanting. Involucre of narrow, scarious or scarious-margined, entire bractlets, shorter or longer than the pedicels. Rays rather numerous, spreading-ascending. Pedicels slender, spreading-ascending. Flowers white; petals oval to obovate with a narrower inflexed apex; calyx-teeth obsolete; styles short, spreading or recurved, the stylopodium conic. Carpophore 2-cleft to the base, or nearly so. Fruit oblong-oval to oval, flattened dorsally, glabrous; dorsal ribs low and corky or narrowly winged, the lateral

ribs more broadly thin-winged; oil-tubes small, 1 or 2 in the intervals, 2-4 on the commissure; seed flattened dorsally in cross section, the face plane or slightly concave.

Type species *Conioselinum tataricum* Hoffm.

Bractlets of the involucre not scarious or only scarious-margined, not aristate; dorsal ribs of the fruit more narrowly winged than the lateral.

Leaves 6-14 cm. long; leaflets coarsely pinnatifid and toothed; peduncles slender; bractlets of the involucre 2-5 mm. long; rays 5-11; fruit 3 mm. long, 2 mm. broad; southern Arizona and adjacent Chihuahua.

1. *C. mexicanum*.

Leaves 8-20 cm. long; leaflets laciniately pinnatifid; peduncles stout; bractlets of the involucre 2-8 mm. long; rays 7-20; fruit 4-6 mm. long, 2-3.5 mm. broad.

2. *C. chinense*.

Leaves ovate to deltoid; leaflets finely dissected; fruit 3-3.5 mm. broad; northeastern and northwestern North America.

Leaves lanceolate to ovate; leaflets more coarsely lobed; fruit 2-3 mm. broad; Rocky Mountains.

3. *C. scopulorum*.

Bractlets of the involucre scarious, aristate; dorsal ribs of the fruit almost as broadly winged as the lateral.

4. *C. cnidiifolium*.

1. *Conioselinum mexicanum* Coult. & Rose, Proc.

Wash. Acad. 1: 147. 1900.

Slender, simple or sparingly branched, 3-9 dm. high; leaves ovate in general outline, excluding the petioles 6-14 cm. long, 3-10 cm. broad, 1-2-pinnate or 1-2-ternate-pinnate, the leaflets ovate to ovate-lanceolate, 10-25 mm. long, 10-15 mm. broad, coarsely pinnatifid and toothed, the lobes and teeth obtuse or acute; petioles 5-15 cm. long; cauline leaves with narrow sheaths and linear-oblong, elongate divisions; peduncles 7-17 cm. long; involucre wanting; involucre of 1-several filiform bractlets, 2-5 mm. long, or wanting; rays 5-11, subequal, 15-35 mm. long; pedicels 5-8 mm. long; fruit oval, 3 mm. long, 2 mm. broad, the dorsal ribs acute, unwinged, the laterals corky-winged; seed much flattened dorsally in cross section, the face plane to slightly concave.

TYPE LOCALITY: "Sierra Madre, 65 miles east of Batopilas, Chihuahua," Goldman 191.

DISTRIBUTION: Arizona to Chihuahua (Gentry 1942, Kearney & Peebles 10,497).

2. *Conioselinum chinense* (L.) B.S.P. Prel. Cat. N. Y. 22. 1888.

Athamanta chinensis L. Sp. Pl. 245. 1753.

Apium bipinnatum Walt. Fl. Car. 115. 1788.

Selinum canadense Michx. Fl. Bor. Am. 1: 165. 1803.

Cnidium canadense Spreng. in R. & S. Syst. Veg. 6: 415. 1820.

Ligusticum Gmelini Cham. & Schlecht. Linnaea 1: 391. 1826.

Laserpitium hirsutum [H. & A. in] Hook. Fl. Bor. Am. 1: 270. 1832. Not *L. hirsutum* Lam. 1778.

Cnidium chinense Spreng.; Steud. Nom. Bot. ed. 2. 1: 389, as syn. 1840.

Kreidion chinensis Raf. Good Book 57. 1840.

Conioselinum ? canadense T. & G. Fl. N. Am. 1: 619. 1840.

Conioselinum Fischeri Hook. and other authors. Not *C. Fischeri* Ledeb. 1844.

Conioselinum kamtschaticum Rupr. Beitr. Pfl. Russ. Reich. 11: 22. 1859.

Selinum pacificum S. Wats. Proc. Am. Acad. 11: 140. 1876.

Selinum Benthani S. Wats. Bibl. Ind. 432. 1878.

Conioselinum bipinnatum Britton; J. Northrop, Bull. Torrey Club 14: 233. 1887.

Selinum Hookeri S. Wats.; Coult. & Rose, Rev. N. Am. Umbell. 45. 1888.

Conioselinum Gmelini Coult. & Rose, Contr. U. S. Nat. Herb. 7: 150. 1900. Not *C. Gmelini* Steud. 1840.

Conioselinum pacificum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 152. 1900.

Conioselinum punilum Rose; Rydb. Torreyana 12: 9. 1912.

Conioselinum Benthani Fernald, Rhodora 28: 221. 1926.

Conioselinum Gmelini var. *kamtschaticum* Hultén, Fl. Aleut. Is. 248. 1937.

Conioselinum Gmelini f. *foliosum* Hultén, Fl. Aleut. Is. 249. 1937.

Rather stout, sparingly branched, 3-15 dm. high; leaves ovate to deltoid in general outline, excluding the petioles 8-20 cm. long, 5-20 cm. broad, 1-2-pinnate or 1-2-ternate-pinnate, the leaflets lanceolate to ovate, 10-45 mm. long, 10-25 mm. broad, pinnatifid, the lobes acute, entire or toothed; petioles 5-15 cm. long; cauline leaves with dilated oblong sheaths; peduncles 6-18 cm. long; involucre of several narrow, entire or toothed, foliaceous bracts, 0.5-2 cm. long, or these sometimes replaced by dissected leaves, or the involucre wanting; involucre of few to numerous, filiform to linear, scarious-margined bractlets, 5-15 mm. long, shorter or longer than the flowers, sometimes foliaceous, elongate and divided; rays 13-30, subequal, 15-45 mm. long; pedicels 5-8 mm. long; fruit oblong-oval to oval, 4-6 mm. long, 2-3.5 mm. broad, the

dorsal ribs acute, unwinged, the laterals broadly winged; seed much flattened dorsally in cross section, the face plane. >

TYPE LOCALITY: "Chinensem dixit Barthram qui semina misit ex Virginia," apparently a mistake for the "Genesee country," western New York, *Bartram*.

DISTRIBUTION: Cold swamps; Labrador, Newfoundland, Quebec, and Maine, south to North Carolina and west to Minnesota and Missouri; Alaska and the Aleutian Islands, Northwest Territory to northern California, along the coast; Siberia and the Kurile Islands. (*Fernald & Bush 25,930, Jones 29,027.*)

ILLUSTRATIONS: Fl. Dan. Suppl. pl. 133; Bot. Gaz. 12: pl. 1, f. 7; Torr. Fl. N. Y. 1: pl. 35; Britt. & Brown, Ill. Fl. 2: 512; ed. 2. 2: 636.

3. *Conioselinum scopulorum* (A. Gray) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 151. 1900.

Ligusticum scopulorum A. Gray, Proc. Am. Acad. 7: 347. 1868.

Conioselinum coloradense Osterhout, Muhlenbergia 5: 36. 1909.

Rather slender, simple or sparingly branched, 3-10 dm. high; leaves lanceolate to ovate in general outline, excluding the petioles 10-20 cm. long, 5-15 cm. broad, 1-2-pinnate or 1-2-ternate-pinnate, the leaflets ovate, 20-65 mm. long, 15-40 mm. broad, pinnately incised, the lobes mucronulate; petioles 1-2.5 dm. long; cauline leaves with broadly dilated sheaths, pinnate to ternate-pinnate; peduncles 3-24 cm. long; involucre of 1-several filiform bracts up to 1 cm. long, or wanting; involucre of several linear, acute, scarious-margined bractlets, often slightly connate at the base, 2-8 mm. long, a little shorter than the flowers; rays 10-20, subequal, 15-50 (75?) mm. long; pedicels 4-12 mm. long; fruit oval, 4-6 mm. long, 2-3 mm. broad, slightly compressed dorsally, the dorsal ribs low, unwinged, the lateral narrowly corky-winged; seed much flattened dorsally in cross section, the face plane to slightly concave.

TYPE LOCALITY: Santa Antonita, New Mexico, *Bigelow*.

DISTRIBUTION: Rocky Mountains, Wyoming and Colorado to New Mexico and Arizona (*Baker 895, Nelson 8701*).

4. *Conioselinum cndiifolium* (Turcz.) A. Porsild, Rhodora 41: 267. 1939.

Selinum cndiifolium Turcz. Bull. Soc. Nat. Mosc. 13: 72. 1840.

Selinum Dawsoni Coult. & Rose, Bot. Gaz. 13: 144. 1888.

Conioselinum Dawsoni Coult. & Rose, Contr. U. S. Nat. Herb. 7: 152. 1900.

Stout, sparingly branched, 5-9 dm. high; leaves ovate to deltoid in general outline, excluding the petioles 10-20 cm. long, 8-15 cm. broad, ternate-pinnately dissected, the leaflets ovate, 10-20 mm. long, 5-10 mm. broad, pinnatifid, the lobes acute; peduncles 8-20 cm. long; involucre of 1-several narrow, scarious bracts, or wanting; involucre of several linear-oblong, scarious, aristate bractlets, about equaling the flowers; rays 12-30, subequal, 20-55 mm. long; pedicels 3-5 mm. long; fruit oblong-oval, 4-5 mm. long, 2-3 mm. broad, the dorsal ribs winged almost as strongly as the lateral; seed only moderately flattened dorsally in cross section, the face plane.

TYPE LOCALITY: "Inter Jakutzk et fl. Aldan," Siberia, collector unknown.

DISTRIBUTION: Northwestern Mackenzie district and Yukon Territory, west to Alaska and Siberia (*Dawson 23, Mexia 2155*).

76. ANGELICA L. Sp. Pl. 250. 1753.

Gingidium Forst. Char. Gen. 41. 1776.

Ostericum Hoffm. Gen. Umbell. 162. 1814.

Archangelica Hoffm. Gen. Umbell. 161. 1814.

Callisace Fisch. in Hoffm. Gen. Umbell. ed. 2. 170. 1816.

Tommasinia Bertol. Fl. Ital. 3: 414. 1838.

Scadialis Raf. New Fl. 4: 34. 1838. (Hyponym.)

Gomphopetalum Turcz. Bull. Soc. Nat. Mosc. 14: 539. 1841.

Coelopleurum Ledeb. Fl. Ross. 2: 361. 1844.

Czernaevia Turcz. Bull. Soc. Nat. Mosc. 17: 739. 1844.

Eustylis Hook. f. Fl. Nov. Zel. 1: 90, as subg. 1852.

Angelophyllum Rupr. Beitr. Pfl. Russ. Reich. 11: 8. 1859.

Rompelia K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 125. 1916.

Stout and fistulose or slender, usually erect, herbaceous, caulescent, glabrous to tomentose perennials, from stout taproots. Leaves petiolate, membranaceous, ternate-pinnately or

pinnately compound, the leaflets broad and distinct, serrate, dentate, or lobed. Petioles sheathing, the cauline sheaths often inflated and bladeless. Inflorescence of loose compound umbels; peduncles terminal, or terminal and lateral. Involucre wanting, or of conspicuous bracts nearly equaling the rays. Involucel of numerous narrow, entire bractlets, or wanting. Rays numerous to few, spreading-ascending, frequently webbed. Pedicels slender, spreading, frequently webbed. Flowers white, pink, or purplish; petals oval to obovate with a narrower inflexed apex, glabrous to tomentose dorsally; calyx-teeth minute or obsolete; styles short to long, spreading or recurved, the stylopodium low-conic. Carpophore 2-cleft to the base. Fruit oblong-oval to orbicular, strongly flattened dorsally, glabrous to tomentose; dorsal ribs filiform to narrowly winged or corky-winged, the lateral broadly thin-winged or corky-winged; oil-tubes numerous to few, adhering to the seed or to the pericarp; seed flattened dorsally, often sulcate under the tubes, free or attached to the pericarp, the face plane.

Type species, *Angelica Archangelica* L. (*A. officinalis* Hoffm.).

Oil-tubes numerous, adhering to the seed, which is free in the pericarp at maturity.

Plants stout, 6-25 dm. high; leaflets 3-15 cm. long, 1.5-10 cm. broad; rays 20-45, 3-10 cm. long.

Ribs of the fruit thick and corky, broader than the intervals; maritime.

Ribs of the fruit thin, narrower than the intervals.

Dorsal ribs filiform to narrowly winged, much narrower than the lateral; leaflets not crowded.

Dorsal and lateral ribs about equally winged; leaflets crowded.

Bractlets of the involucre 10-15 mm. long, usually exceeding the flowers; inflorescence densely puberulent.

Bractlets of the involucre 3-6 mm. long, shorter than the flowers; inflorescence glabrous to sparingly puberulent.

Plants slender, 3-9 dm. high; leaflets 1-2.5 cm. long, 0.5-1.5 cm. broad; rays 5-10, 1.5-3 cm. long.

Oil-tubes few, the seed adhering to the pericarp.

Leaves ternate-pinnately decomposed, the divisions linear to linear-oblong, 2-10 cm. long, 2-8 mm. broad.

Leaves ternately, pinnately, or ternate-pinnately divided with oval to lanceolate leaflets.

Ovaries pubescent or roughened.

Petals pubescent or scabrous dorsally; California and Nevada.

Leaves oblong; rays 7-14; fruit 4-5 mm. long, 2-3 mm. broad.

Leaves ovate to deltoid; rays 25-45; fruit 7-14 mm. long, 4-9 mm. broad.

Leaves white-tomentose beneath, green above; maritime.

Leaves scaberulous to villous, but not tomentose.

Leaves ternately or ternate-pinnately divided; foliage and inflorescence glabrate to villous; leaflets serrate to entire; bractlets of the involucre several, villous.

Foliage glaucous, villous with some forked hairs; Coast Ranges and southern California.

Foliage green, glabrate to somewhat villous; Sierra Nevada.

Leaves ternate-pinnate; foliage and inflorescence scaberulous; leaflets spinulose-dentate; involucre wanting.

Petals glabrous; not Californian (except no. 15).

Involucre wanting.

Fruit orbicular, 3-6 mm. long, glabrous; leaves oblong to oval, pinnate to incompletely bipinnate.

Fruit oblong-oval, 5-7 mm. long, 3-5 mm. broad, pubescent; leaves deltoid, ternate-pinnately divided.

Stout; rays 30-40; ovaries hispid; lateral wings of the fruit narrower than the body; Utah.

Slender; rays 15-25; ovaries tomentose or scabrous; lateral wings of the fruit equaling the body; Columbia Plateau.

Involucre present.

Main leaf-divisions reflexed and the rachis geniculate; ovaries hispidulous, fruit glabrous; Pacific Coast.

Main leaf-divisions not reflexed; rachis not geniculate; ovaries and fruit scabrous or tomentose.

Fruit orbicular, tomentose; wings thin, the lateral broader than the dorsal and broader than the body; leaves serrate.

Fruit oblong, scabrous; wings corky and subequal, the lateral narrower than the body; leaves dentate.

1. *A. lucida*.
2. *A. atropurpurea*.
3. *A. laurentiana*.
4. *A. ampla*.
5. *A. dentata*.
6. *A. lineariloba*.
7. *A. Kingii*.
8. *A. Hendersoni*.
9. *A. tomentosa*.
10. *A. Breweri*.
11. *A. scabrida*.
12. *A. pinnata*.
13. *A. Wheeleri*.
14. *A. Canbyi*.
15. *A. genuflexa*.
16. *A. venenosa*.
17. *A. Roseana*.

Ovaries glabrous.

Inflorescence simple, the umbel solitary; involucre bracts conspicuous, nearly equaling the rays.

18. *A. Dawsoni*.

Inflorescence branched, the umbels several to many; involucre wanting, or of a solitary bract.

Plants low, 2-6 dm. high; bractlets of the involucre lanceolate; flowers purplish-brown.

19. *A. Grayi*.

Plants tall, 6-20 dm. high; bractlets of the involucre linear to filiform, or wanting; flowers white or pink.

Pedicels conspicuously webbed; involucre usually wanting; lateral wings of the fruit about equaling the body.

20. *A. arguta*.

Pedicels not conspicuously webbed; involucre of numerous bractlets; lateral wings of the fruit exceeding the body.

Leaflets acuminate; bractlets of the involucre shorter than the flowers; fruit oval, 4-8 mm. long, 3-5 mm. broad.

21. *A. triquinata*.

Leaflets acute; bractlets of the involucre usually exceeding the flowers; fruit orbicular, 3-5 mm. long.

22. *A. Nelsoni*.

1. *Angelica lucida* L. Sp. Pl. 251. 1753.

Ferula canadensis L. Sp. Pl. 247. 1753.

Angelica Archangelica sensu Pennant, Arct. Zool. 1: cxv. 1785. Not *A. Archangelica* L. 1753.

Ligusticum actaeifolium Michx. Fl. Bor. Am. 1: 166. 1803. Not *L. actaeifolium* of authors.

Imperatoria lucida Spreng. Umbell. Prodr. 17. 1813.

Angelica Archangelica sensu Schrank, Denks. Bot. Ges. Regensb. 1²: 13. 1818. Not *A. Archangelica* L. 1753.

Angelica Archangelica sensu Cham. & Schlecht. Linnaea 1: 394. 1826. Not *A. Archangelica* L. 1753.

Archangelica Gmelini DC. Prodr. 4: 170. 1830.

Archangelica officinalis Hook. Fl. Bor. Am. 1: 267. 1832. Not *A. officinalis* Hoffm. 1814.

Apium ternatum Pall.; Steud. Nom. Bot. ed. 2. 1: 112. 1840.

Archangelica peregrina Nutt.; Torr. & Gray, Fl. N. Am. 1: 622. 1840.

Coelopleurum Gmelini Ledeb. Fl. Ross. 2: 361. 1844.

Coelopleurum longipes Coult. & Rose, Contr. U. S. Nat. Herb. 7: 142. 1900.

Coelopleurum maritimum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 142. 1900.

Coelopleurum actaeifolium Coult. & Rose, Contr. U. S. Nat. Herb. 7: 142. 1900.

Coelopleurum lucidum Fernald, Rhodora 21: 146. 1919.

Coelopleurum lucidum f. *frondosum* Fernald, Rhodora 21: 147. 1919.

Stout, 6-12 dm. high, the foliage essentially glabrous, the inflorescence villous; leaves ovate to deltoid in general outline, excluding the petioles 1-3 dm. long, 1-3-ternate, the leaflets ovate to ovate-lanceolate, acute to obtuse, sessile or petiolulate, 3-15 cm. long, 2-10 cm. broad, spinulose-serrate to crenate-dentate; petioles stout, 1-6 dm. long, sheathing at the base; cauline leaves similar, reduced above with broadly dilated sheaths, the uppermost petioles wholly sheathing; peduncles stout, 1-2 dm. long; involucre wanting, or of a few deciduous bracts; involucre of numerous linear to linear-lanceolate, villous bractlets, 5-15 mm. long, equaling or exceeding the flowers; rays numerous, 20-45, spreading-ascending, subequal, 3-10 cm. long; pedicels 5-15 mm. long, spreading-ascending; flowers white, the petals oval, glabrous; ovaries glabrous; stylopodium low-conic; fruit oblong-oval, 4-9 mm. long, 2-5 mm. broad, glabrous, the ribs all about equally narrowly winged and corky-thickened, or the lateral slightly broader than the dorsal but narrower than the body; oil-tubes small, continuous about the seed; seed-face concave.

TYPE LOCALITY: Canada, collector unknown.

DISTRIBUTION: Maritime, from Labrador to New York, and Alaska to northern California; Siberia and the Kurile Islands. (Fernald & Long 24,254, Macoun 67,963, Suksdorf 1200, Tracy 4581.)

ILLUSTRATIONS: Bot. Gaz. 12: pl. 2, f. 19, 20 (fr.); Britt. & Brown, Ill. Fl. 2: 520; ed. 2. 2: 646; Contr. U. S. Nat. Herb. 7: 141 (fr.).

2. *Angelica atropurpurea* L. Sp. Pl. 251. 1753.

Archangelica atropurpurea Hoffm. Gen. Umbell. 162. 1814. (Nomen nudum.)

Angelica atropurpurea var. *occidentalis* Fassett, Rhodora 33: 74. 1931.

Stout, 10-20 dm. high, the foliage essentially glabrous, the inflorescence scabrous; leaves ovate to orbicular in general outline, excluding the petioles 2-2.5 dm. long, 2.5-3 dm. broad, pinnately divided, the leaflets ovate to ovate-lanceolate, acute, petiolulate or sessile, 3-12 cm. long, 1.5-6 cm. broad, serrate; petioles stout, 1-3 dm. long, sheathing at the base; cauline leaves similar, reduced above with conspicuously dilated and often bladeless sheaths, the uppermost

petioles wholly sheathing; peduncles stout, 5–25 cm. long; involucre wanting; involucre of a few filiform, scaberulous bractlets, 2–5 mm. long; rays numerous, 25–45, spreading, subequal, 7–10 cm. long; pedicels 10–20 mm. long, spreading; flowers white, the petals oval, glabrous; ovaries glabrous to scaberulous; stylopodium low-conic; fruit oblong-oval, 8–9 mm. long, 5–6 mm. broad, glabrous, the dorsal ribs filiform to narrowly winged, the lateral broader than the dorsal and about equaling the body; oil-tubes small, continuous about the seed; seed-face plane.

TYPE LOCALITY: Canada, collector unknown.

DISTRIBUTION: River banks, Labrador to Delaware and west to Illinois and Minnesota (*Blanchard 2016, Heady 510*).

ILLUSTRATIONS: Millsp. Am. Med. Pl. *pl. 64*; Britt. & Brown, III. Fl. 2: 512; ed. 2: 637; Bull. U. S. Dep. Agr. Pl. Ind. 107: *pl. 6*; Rydb. Fl. Pr. & Pl. 603; Fassett, Man. Aquat. Pl. 272.

3. *Angelica laurentiana* Fernald, *Rhodora* 28: 222. 1926.

Stout, 10–20 dm. high, the foliage glabrous, the inflorescence densely puberulent; leaves ovate to deltoid in general outline, excluding the petioles 3–4 dm. long, ternate-pinnate, the leaflets ovate, acute, sessile or petiolulate, crowded, 6–10 cm. long, 3.5–5 cm. broad, coarsely serrate; petioles stout, sheathing at the base; cauline leaves similar, the upper with conspicuously dilated and often bladeless sheaths, the uppermost petioles wholly sheathing; peduncles stout, 2–3 dm. long; involucre wanting; involucre of several linear to filiform bractlets, 10–15 mm. long, usually exceeding the flowers; rays numerous, about 40, spreading-ascending, subequal, 5–10 cm. long; pedicels 6–12 mm. long, spreading; stylopodium low-conic; fruit oblong-oval, 7–10 mm. long, 4–5 mm. broad, glabrous, the ribs all about equally narrowly winged, narrower than the body, the wings thin; oil-tubes small, continuous about the seed; seed-face plane.

TYPE LOCALITY: "Anse aux Sauvages, Pistolet Bay, Newfoundland," *Fernald, Wiegand & Long 28, 784*.

DISTRIBUTION: Newfoundland; Quebec. (*Fernald & Long 28, 782, St. John 90, 626*.)

4. *Angelica ampla* A. Nelson, *Bull. Torrey Club* 25: 375. 1898.

Stout, 15–25 dm. high, the foliage glabrous, the inflorescence glabrous to sparingly puberulent; leaves deltoid in general outline, excluding the petioles 15–35 cm. long, ternate-pinnately divided, the leaflets ovate to ovate-lanceolate, acute to acuminate, sessile, crowded, 3–20 cm. long, 2–10 cm. broad, serrate; petioles stout, 1–4 dm. long, sheathing at the base; cauline leaves similar but generally reduced above with conspicuously dilated and often bladeless sheaths, the uppermost petioles wholly sheathing; peduncles stout, 2–18 cm. long; involucre wanting; involucre of a few filiform bractlets, 3–6 mm. long; rays numerous, 30–45, spreading, subequal, 4–10 cm. long; pedicels 5–12 mm. long, spreading; flowers white, the petals obovate, glabrous; ovaries glabrous; stylopodium low-conic; fruit oblong-oval, 7–8 mm. long, 4–5 mm. broad, glabrous, the ribs about equally narrowly winged, narrower than the body, the wings thin; oil-tubes small, continuous about the seed; seed-face concave.

TYPE LOCALITY: Sand Creek, Wyoming, near the Colorado line, *A. Nelson 2046*.

DISTRIBUTION: Rocky Mountains, Wyoming and Colorado (*Macbride 2607c, Nelson 8807*).

5. *Angelica dentata* (Chapm.) Coult. & Rose, *Bot. Gaz.* 12: 61. 1887.

Archangelica dentata Chapm.; T. & G. Fl. N. Am. 1: 622. 1840.

Slender, 3–9 dm. high, the foliage essentially glabrous, the inflorescence more or less scaberulous; leaves deltoid in general outline, excluding the petioles 0.5–1.2 dm. long, biternate or ternate-pinnate, the leaflets ovate to lanceolate, acute to obtuse, sessile, 1–2.5 cm. long, 5–15 mm. broad, sinuate-dentate; petioles slender, 8–20 cm. long, inconspicuously sheathing at the base; cauline leaves similar, reduced above with narrow and often bladeless sheaths, the uppermost petioles wholly sheathing; peduncles slender, 2–5 cm. long; involucre wanting or of a filiform bract; involucre of several filiform, scaberulous bractlets, 3–8 mm. long; rays few, 5–10, spreading-ascending, unequal, 1.5–3 cm. long; pedicels 3–8 mm. long, spreading-ascending; flowers white, the petals obovate, glabrous; ovaries glabrous to scaberulous; stylopodium low-conic; fruit oval, 5–6 mm. long, 4–5 mm. broad, glabrous, the dorsal ribs filiform to nar-

rowly winged, the lateral broader than the dorsal and about equaling the body; oil-tubes small, continuous about the seed; seed-face plane.

TYPE LOCALITY: "Sandy barrens, Gadsden County, middle Florida," *Chapman*.

DISTRIBUTION: Pine barrens, Georgia to Florida (*Curtiss 1014, 6709*).

ILLUSTRATION: *Bot. Gaz.* 12: pl. 2, f. 17.

6. *Angelica lineariloba* A. Gray, *Proc. Am. Acad.* 7: 347. 1868.

Angelica lineariloba var. *Culbertsonii* Jepson, *Man. Fl. Pl. Calif.* 728. 1925.

Stout, 5–15 dm. high, the foliage scabrous to glabrate, the inflorescence more or less scabrous; leaves deltoid in general outline, excluding the petioles 1–3.5 dm. long, ternate-pinnately decomposed, linear to linear-oblong, mucronate, acute, sessile, 2–10 cm. long, 2–8 mm. broad, entire; petioles 5–25 cm. long, sheathing at the base; cauline leaves similar, reduced above with dilated sheaths, the uppermost petioles wholly sheathing; peduncles stout, 1.5–3 dm. long; involucre wanting or of a sheathlike bract; involucre wanting; rays numerous, 20–40, spreading-ascending, subequal, 3–7 cm. long; pedicels 3–10 mm. long, spreading; flowers white or pinkish, the petals oval, glabrous to scaberulous; ovaries glabrous to scabrous; stylopodium conic; fruit oblong to cuneate, 10–13 mm. long, 5–7 mm. broad, scaberulous to glabrate, the dorsal ribs narrowly winged, the lateral broader than the dorsal and about equaling the body; oil-tubes solitary or a pair in the intervals, 4 on the commissure; seed-face concave.

TYPE LOCALITY: Ostrander's Meadows, Yosemite Valley, California, 2400 m., *Bolander*.

DISTRIBUTION: Central and southern Sierra Nevada, Sweetwater, and Panamint ranges, California and adjacent Nevada (*Keck & Abrams 2906, Hall & Chandler 7128*).

7. *Angelica Kingii* (S. Wats.) Coult. & Rose, *Contr.*

U. S. Nat. Herb. 7: 158. 1900.

Selinum Kingii S. Wats. *Bot. King's Expl.* 126. 1871.

Stout, 3–9 dm. high, the foliage glabrous to scaberulous, the inflorescence scaberulous to glabrous; leaves oblong in general outline, excluding the petioles 1.5–4 dm. long, 1.5 dm. broad, ternate-pinnate, the leaflets lanceolate to ovate-lanceolate, acuminate to acute, sessile or petiolulate, entire to remotely serrate; petioles 1.5–3 dm. long, sheathing at the base; cauline leaves similar, reduced above to bladeless sheaths, the petioles of the uppermost leaves wholly sheathing; peduncles slender, 1–1.5 dm. long; involucre wanting; involucre wanting; rays few, 7–14, ascending, unequal, 0.5–10 cm. long, webbed; pedicels few, spreading-ascending, 1–6 mm. long, webbed; flowers white, the petals ovate-oblong, pubescent on the back; ovaries hispid; stylopodium low-conic to conic; fruit oblong, 4–5 mm. long, 2–3 mm. broad, hispid, the dorsal ribs narrowly winged, the lateral little broader than the dorsal and much narrower than the body; oil-tubes solitary in the intervals or 2 in the lateral, 2 on the commissure; seed-face slightly concave.

TYPE LOCALITY: "East and West Humboldt Mountains and in Ruby Valley," Nevada, *Watson 456*.

DISTRIBUTION: Mountains, Nevada and adjacent Idaho to eastern California (*Clokey & Clokey 5549, Heller 9309, Duran 554*).

8. *Angelica Hendersoni* Coult. & Rose, *Bot. Gaz.* 13: 80. 1888.

Stout, 3–8 dm. high, the foliage white-tomentose beneath, green above, the inflorescence tomentose; leaves ovate to deltoid in general outline, excluding the petioles 1–2 dm. long, ternate-pinnately divided, the leaflets oval to ovate-lanceolate, obtuse to acute, sessile or petiolulate, 4–8 cm. long, 2.5–6 cm. broad, serrate; petioles 1–2 dm. long, sheathing at the base; cauline leaves similar, reduced above with broadly dilated and occasionally bladeless sheaths, the uppermost petioles wholly sheathing; peduncles stout, 1–3.5 dm. long; involucre wanting; involucre of several linear, tomentose bractlets, 5–7 mm. long, often exceeding the flowers; rays numerous, 30–45, spreading-ascending, subequal, 2–6 cm. long; pedicels 1–8 mm. long, spreading-ascending; flowers white, the petals obovate, tomentose on the back; ovaries tomentose; stylopodium low-conic; fruit oval, 7–10 mm. long, 6–9 mm. broad, tomentose to glabrate, the

dorsal ribs scarcely winged, the lateral broader than the dorsal and about equaling the body; oil-tubes solitary in the intervals, 4 on the commissure; seed-face concave.

TYPE LOCALITY: "Bluffs moistened by sea spray," Long Beach, Ilwaco, Pacific County, Washington, *Henderson 2158*.

DISTRIBUTION: Maritime bluffs, southern Washington to central California (*Davy 6869, Maguire 17,204*).

ILLUSTRATION: Madroño 1: 162.

9. *Angelica tomentosa* S. Wats. Proc. Am. Acad. 11: 141. 1876.

Angelica californica Jepson, *Erythraea* 1: 8. 1893.

Angelica tomentosa var. *californica* Jepson, Fl. W. Middle Calif. 356. 1901.

Angelica tomentosa var. *elata* Jepson, Fl. W. Middle Calif. 356. 1901.

Stout, 6–18 dm. high, the foliage glaucous beneath and villous with occasional forked hairs, the inflorescence villous; leaves deltoid in general outline, excluding the petioles 15–45 cm. long, ternate-pinnately divided, the leaflets acute to obtuse, sessile or petiolulate, oval to oblong or lanceolate, 3–15 cm. long, 1–8 cm. broad, mucronulate-serrate; petioles stout, 2–3 dm. long, sheathing at the base; cauline leaves similar, reduced above with dilated and often bladeless sheaths, the uppermost petioles wholly sheathing; peduncles stout, 15–45 cm. long; involucre wanting; involucre of several linear or filiform, villous bractlets, 2–5 mm. long; rays numerous, 25–40, spreading-ascending, unequal, 3–12 cm. long; pedicels 2–12 mm. long, spreading-ascending; flowers white, the petals obovate, villous on the back; ovaries densely villous; stylopodium low-conic; fruit oblong-oval, 8–10 mm. long; 6–7 mm. broad, villous to glabrate, the dorsal ribs narrowly winged, the lateral broader than the dorsal and about equaling the body; oil-tubes solitary in the intervals, 4 on the commissure; seed-face concave.

TYPE LOCALITY: Crystal Springs, San Mateo County, California, *Bolander*.

DISTRIBUTION: Coast Ranges, southern Oregon to southern California (*Baker 3354, Elmer 4998, Parish 7146*).

10. *Angelica Breweri* A. Gray, Proc. Am. Acad. 7: 348. 1868.

Stout, 9–12 dm. high, the foliage and inflorescence glabrate to somewhat villous; leaves deltoid in general outline, excluding the petioles 15–35 cm. long, ternately or ternate-pinnately divided, the leaflets lanceolate, acute, petiolulate or sessile, 4–12 cm. long, 5–30 mm. broad, serrate to entire; petioles 2–3 dm. long, sheathing at the base; cauline leaves similar, reduced above with inflated and often bladeless sheaths, the uppermost petioles wholly sheathing; peduncles stout, 1–3 dm. long; involucre wanting; involucre of several linear, villous bractlets, 4–6 mm. long, often exceeding the flowers; rays numerous, 25–40, spreading-ascending, unequal, 3–8 cm. long, webbed; pedicels spreading-ascending, 8–12 mm. long, inconspicuously webbed; flowers white, the petals oval to obovate, villous on the back; ovaries densely villous; stylopodium low-conic; fruit oblong to oval, 8–12 mm. long, 5–7 mm. broad, more or less villous, the dorsal ribs narrowly winged, the lateral broader than the dorsal and about equaling the body; oil-tubes solitary in the intervals, 2 on the commissure; seed-face slightly concave.

TYPE LOCALITY: Sierra Nevada, near Ebbetts Pass, Alpine County, California, *Brewer*.

DISTRIBUTION: Dry slopes; northern and central Sierra Nevada, California, and adjacent Nevada (*Hansen 326, Baker 1473*).

ILLUSTRATION: Jepson, Fl. Calif. 2: 650.

11. *Angelica scabrida* Clokey & Mathias; Clokey, Bull. So. Calif. Acad. 37: 8. 1938.

Stout, up to 15 dm. high, the foliage scaberulous, the inflorescence scaberulous; leaves deltoid in general outline, excluding the petioles 2–3.5 dm. long, ternate-pinnate, the leaflets lanceolate to ovate-lanceolate, broad, acute, petiolulate or sessile, 8–16 cm. long, 2–7 cm. broad, spinulose-dentate; petioles 1.5–2 dm. long, sheathing at the base; cauline leaves similar, reduced above with dilated and often bladeless sheaths, the uppermost petioles wholly sheathing; peduncles stout, 1–2.5 dm. long; involucre wanting or of a single sheathlike bract; involucre wanting or of a linear bractlet; rays numerous, 25–32, spreading-ascending, subequal, 1–7.5 cm. long, webbed; pedicels 2–12 mm. long, spreading; flowers white, the petals oblong-oval,

scabrous on the back; ovaries scabrous; stylopodium low-conic; fruit oblong to cuneate, 8-14 mm. long, 4-5 mm. broad, sparingly scabrous to glabrate, the dorsal ribs filiform to obsolete, the lateral broader than the dorsal but narrower than the body; oil-tubes solitary in the intervals or a pair in the lateral, 2-4 on the commissure; seed-face plane.

TYPE LOCALITY: Charleston Park, Charleston Mountains, Clark County, Nevada, alt. 2200-2400 m., *I. W. & C. B. Clokey 5548*.

DISTRIBUTION: Charleston Mountains, southern Nevada.

ILLUSTRATION: Bull. So. Calif. Acad. 37: 9.

12. *Angelica pinnata* S. Wats. Bot. King's Expl. 126. 1871.

Angelica leporina S. Wats. Proc. Am. Acad. 12: 252. 1877.

Slender, 2.5-9 dm. high, the foliage scaberulous to glabrate, the inflorescence scaberulous; leaves oblong to oval in general outline, excluding the petioles 5-17 dm. long, 5-17 dm. broad, pinnate to incompletely bipinnate, the leaflets lanceolate to ovate-lanceolate, acute, sessile or short-petiolulate, 3-9 cm. long, 0.5-3 cm. broad, serrate to rarely entire; petioles 0.4-2 dm. long, sheathing at the base; cauline leaves similar, the uppermost petioles wholly sheathing; peduncles slender, 1-7.5 dm. long; involucre wanting or of a sheathlike bract; involucre wanting; rays few, 6-25, ascending to spreading-ascending, unequal, 1-7.5 (or 10) cm. long, webbed; pedicels 3-8 mm. long, spreading-ascending, webbed; flowers white or pinkish, the petals obovate, glabrous; ovaries sparingly hispidulous; stylopodium conic; fruit nearly orbicular, 3-6 mm. long, glabrous, the dorsal ribs narrowly winged, the lateral broader than the dorsal and about equaling the body; oil-tubes solitary or occasionally a pair in the intervals, several on the commissure; seed-face slightly concave.

TYPE LOCALITY: Uinta Mountains, Utah, 2400 m., *Watson 458*.

DISTRIBUTION: Wyoming and Colorado to Utah and New Mexico (*Payson & Payson 2860, 4098, E. Palmer 183*).

13. *Angelica Wheeleri* S. Wats. Am. Nat. 7: 301. 1873.

Angelica dilatata A. Nelson; Coult. & Rose, Contr. U. S. Nat. Herb. 12: 446. 1909.

Stout, 5-10 dm. high, the foliage glabrous, the inflorescence scaberulous; leaves deltoid in general outline, excluding the petioles 1.5-2.5 dm. long, ternate-pinnately divided, the leaflets ovate to ovate-lanceolate, acute, sessile or petiolulate, 2-9 cm. long, 1-4 cm. broad, obscurely to incisely serrate; petioles 1-3 dm. long, sheathing at the base; cauline leaves similar, reduced above with broadly inflated and often bladeless sheaths, the uppermost petioles wholly sheathing; peduncles stout, 5-15 cm. long; involucre wanting or of a sheath-like bract; involucre wanting; rays numerous, 30-40, spreading-ascending, unequal, 3-13 cm. long, webbed; pedicels slender, spreading-ascending, 5-15 mm. long, webbed, exceeding the fruit; flowers white, the petals oblong, glabrous; ovaries hispid; stylopodium conic; fruit oblong-oval, 5-7 mm. long, 3-4 mm. broad, hispid, the dorsal ribs narrowly winged, the lateral broader than the dorsal but narrower than the body; oil-tubes solitary in the intervals or 2 in the lateral, 4 on the commissure; seed-face plane or slightly concave.

TYPE LOCALITY: Utah, *Wheeler*.

DISTRIBUTION: Northern to central Utah (*Garrett 2157, 7251, Rydberg & Carlton 7663*).

14. *Angelica Canbyi* Coult. & Rose, Rev. N. Am. Umbell. 40. 1888.

Slender, 5-12 dm. high, the foliage scaberulous, the inflorescence glabrous to sparingly scaberulous; leaves deltoid in general outline, excluding the petioles 0.8-2 dm. long, 6-16 cm. broad, ternate-pinnately divided, the leaflets ovate to lanceolate, acute to obtuse, petiolulate or sessile, 2-6 cm. long, 8-30 mm. broad, serrate to laciniate-serrate and often few-lobed; petioles 0.5-2.5 dm. long, sheathing at the base; cauline leaves similar, reduced above with dilated sheaths, the uppermost petioles wholly sheathing; peduncles slender, 4-15 cm. long; involucre wanting; involucre wanting; rays few, 15-25, spreading-ascending, unequal, 2-6 cm. long, webbed; pedicels slender, spreading-ascending, 3-12 mm. long, webbed; flowers white, the petals oval, glabrous; ovaries tomentose or scabrous; stylopodium conic; fruit oval to oblong,

5-6 mm. long, 4-5 mm. broad, sparingly tomentose to scabrous, the dorsal ribs narrowly winged, the lateral broader than the dorsal and about equaling the body; oil-tubes solitary in the intervals or 2 in the lateral, several on the commissure; seed-face plane.

TYPE LOCALITY: "Low grassy ground along streams, Klickitat River, near Mount Adams," Washington, *Suksdorf 763*.

DISTRIBUTION: Central Washington and adjacent Oregon (*Thompson 4951, 14,250, Sandberg & Leiberg 420*).

ILLUSTRATION: Coult. & Rose, *Rev. N. Am. Umbell. f. 14*.

15. *Angelica genuflexa* Nutt.; T. & G. Fl. N. Am. 1: 620. 1840.

Angelica refracta F. Schmidt, *Mém. Acad. St.-Pétersb. VII. 12*: 138. 1868.

Stout, 4-18 dm. high, the foliage glabrous to somewhat scaberulous, the inflorescence hispidulous to pilose; leaves ovate to deltoid in general outline, excluding the petioles 1.5-3 dm. long, ternate-pinnate or biternate, the main divisions frequently reflexed and the rachis geniculate, the leaflets broadly ovate to ovate-lanceolate, acute to acuminate, sessile or petiolulate, 4-10 cm. long, 2-6 cm. broad, coarsely serrate to incised; petioles stout, 1-6 dm. long, sheathing at the base; cauline leaves similar, the sheaths conspicuously dilated and often bladeless, the uppermost petioles wholly sheathing; peduncles stout, 1-3 dm. long; involucre wanting; involucre of numerous linear to filiform, hispidulous bractlets, 5-10 mm. long, about equaling the flowers; rays numerous, 22-45, spreading-ascending, unequal, 2-7 cm. long; pedicels 5-15 mm. long, spreading-ascending, inconspicuously webbed; flowers white or pinkish, the petals oval, glabrous; ovaries hispidulous; stylopodium conic; fruit nearly orbicular, 3-4 mm. long, glabrous, the dorsal ribs filiform to narrowly winged, the lateral broader than the dorsal and about equaling the body; oil-tubes solitary in the intervals, 2 on the commissure; seed-face slightly concave.

TYPE LOCALITY: "Wappatoo Island, Oregon, and near Fort Vancouver, Washington," *Nuttall*,

DISTRIBUTION: Alaska and the Aleutian Islands, south to northern California; Siberia, Sakhalin, and the Kurile Islands. (*Leiberg 701, Thompson 426, 11,196, Elmer 2765*.)

16. *Angelica venenosa* (Greenway) Fernald, *Rhodora* 45: 301. 1943.

Ferula villosa Walt. Fl. Car. 115. 1788. Not *Angelica villosa* Lag. 1816.

Cicuta venenosa Greenway, *Trans. Am. Phil. Soc.* 3: 235. 1793.

Pastinaca triquinata Spreng. Sp. Umbell. 68. 1818.

Archangelica hirsuta T. & G. Fl. N. Am. 1: 622. 1840.

Cicuta venenata Nutt.; Steud. *Nom. Bot. ed. 2. 1*: 362. 1840. (Nomen nudum.)

Angelica villosa B.S.P. *Prel. Cat. N. Y.* 22. 1888. Not *A. villosa* Lag. 1816.

Archangelica villosa Kuntze, *Rev. Gen.* 1: 256. 1891.

Slender, 6-10 dm. high, the foliage scaberulous to glabrate, the inflorescence tomentulose; leaves deltoid in general outline, excluding the petioles 15-25 cm. long, ternate-pinnately divided, the leaflets ovate-lanceolate to lanceolate, acute, sessile, 2.5 cm. long, 1-2.5 cm. broad, mucronulate-serrate; petioles 6-20 cm. long, sheathing at the base; cauline leaves similar, reduced above with dilated sheaths, the uppermost petioles wholly sheathing; peduncles slender, 2-10 cm. long; involucre wanting; involucre of several linear, acuminate, tomentulose bractlets, 2-6 mm. long; rays numerous, 20-35, spreading-ascending, subequal, 1-8 cm. long; pedicels spreading-ascending, 2-10 mm. long; flowers white, the petals obovate, glabrous; ovaries densely tomentose; stylopodium low-conic; fruit nearly orbicular, 4-6 mm. long, tomentose, the dorsal ribs narrowly winged, the lateral broader than the dorsal and broader than the body; oil-tubes several in the intervals, several on the commissure; seed-face plane.

TYPE LOCALITY: Presumably in Dinwiddie County, Virginia, *Greenway*.

DISTRIBUTION: Massachusetts to Florida, west to Minnesota and Mississippi (*Rydberg 9520, Blomquist 343*).

ILLUSTRATIONS: Spreng. Sp. Umbell. *pl. 6, f. 12*; Torr. Fl. N. Y. 1: *pl. 36*; Britt. & Brown, *Ill. Fl.* 2: 512; ed. 2. 2: 637.

17. *Angelica Roseana* Henderson, *Contr. U. S. Nat. Herb.* 5: 201. 1899.

Rompelia Roseana K.-Pol. *Bull. Soc. Nat. Mosc. II. 29*: 125. 1916.

Low and stout, 3-8.5 dm. high, the foliage and inflorescence scaberulous to puberulent or glabrate; leaves deltoid in general outline, excluding the petioles 5-30 cm. long, 1-3-ternate or

ternate-pinnately divided, the leaflets ovate to lanceolate, acute or obtuse, strongly reticulate, 1-7 cm. long, 5-30 mm. broad, mucronate-dentate to spinulose-dentate; petioles 0.5-2.5 dm. long, sheathing at the base; cauline leaves similar, reduced above with large elongated and inflated sheaths, the uppermost petioles wholly sheathing; peduncles stout, 5-20 cm. long; involucre wanting, or occasionally of a few filiform or foliaceous bracts; involucre of a few filiform or linear, scaberulous bractlets, 1.5-16 mm. long; rays 15-35, spreading-ascending, unequal, 3-13 cm. long, webbed; pedicels slender, spreading-ascending, 5-11 mm. long, webbed, exceeding the fruit; flowers white or pink, the petals oval, glabrous; ovaries scabrous; stylopodium conic; fruit oblong, 4-7 mm. long, 3-4 mm. broad, scaberulous, the dorsal ribs narrowly winged, the lateral broader than the dorsal; oil-tubes solitary in the intervals, 4 on the commissure; seed-face plane to slightly concave.

TYPE LOCALITY: "Banks of dried, gravelly rills, foothills of the Lost River Mountains," near Salmon, Fremont County, Idaho, *Henderson 4065*.

DISTRIBUTION: Mountains, Montana and Colorado to Idaho and northern Utah (*Payson & Payson 5123, Nelson 2355, 3493*).

ILLUSTRATIONS: *Contr. U. S. Nat. Herb. 5: pl. 26; 7: pl. 6.*

18. *Angelica Dawsoni* S. Wats. *Proc. Am. Acad.* 20: 369. 1885.

Thaspium aureum var. *involutratum* Coult. & Rose, *Rev. N. Am. Umbell.* 83. 1888.

Slender, 3-9 dm. high, the foliage essentially glabrous, the inflorescence glabrate to scaberulent; leaves deltoid in general outline, excluding the petioles 6-25 cm. long, 1-3-ternate, the leaflets lanceolate to ovate-lanceolate, acute, petiolulate or sessile, 3-6 cm. long, 1-3 cm. broad, spinulose-serrate; petioles 1-5 dm. long, obscurely sheathing at the base; cauline leaves none or few, reduced above, the uppermost petioles wholly sheathing; peduncles slender, 3-6 dm. long; involucre of about 10 oblanceolate, foliaceous, acuminate, lacinate bracts, 15-25 mm. long, nearly equaling the rays; involucre of bractlets similar to the bracts, 4-8 mm. long, exceeding the flowers; rays few, 10-20, spreading-ascending, subequal, 2-4 cm. long; pedicels 5-8 mm. long, spreading-ascending; flowers white, the petals oval, glabrous; ovaries glabrous; stylopodium conic; fruit oblong-oval, 5 mm. long, 3-4 mm. broad, glabrous, the dorsal ribs narrowly winged, the lateral broader than the dorsal but narrower than the body; oil-tubes solitary in the intervals, several on the commissure; seed-face plane.

TYPE LOCALITY: "Rocky Mountains near the boundary, alt. 6500 ft.," *Lyall*.

DISTRIBUTION: Alberta and British Columbia to northern Montana and Idaho (*Kirkwood 1785, Leiberg 1455*).

19. *Angelica Grayi* Coult. & Rose, *Contr. U. S. Nat.*

Herb. 7: 154. 1900.

Selinum Grayi Coult. & Rose, *Bot. Gaz.* 13: 144. 1888.

Low and stout, 2-6 dm. high, the foliage and inflorescence more or less scabrous; leaves oblong to ovate in general outline, excluding the petioles 4-17 cm. long, 3-12 cm. broad, pinnate to incompletely bipinnate or ternate-bipinnate, the leaflets ovate to lanceolate, acute, petiolulate or sessile, 1-5 cm. long, 5-25 mm. broad, serrate; petioles 4-12 cm. long, sheathing at the base; cauline leaves similar, with conspicuously dilated sheaths, the uppermost petioles wholly sheathing; peduncles stout, 2-12 cm. long; involucre wanting or of a foliaceous bract; involucre of numerous lanceolate, acuminate, scabrous bractlets, 5-18 mm. long, often exceeding the flowers; rays numerous, spreading-ascending, 2.5-6 cm. long, webbed; pedicels 2-6 mm. long, spreading-ascending, webbed; flowers purplish-brown, the petals obovate, glabrous; ovaries glabrous; stylopodium conic; fruit oval, 4-5 mm. long, 3-3.5 mm. broad, glabrous, the dorsal ribs narrowly winged, the lateral broader than the dorsal but narrower than the body; oil-tubes solitary in the intervals, several on the commissure; seed-face plane.

TYPE LOCALITY: "Westons Pass, in high mountains of Colorado, alt. 3450 m.," *Coulter*.

DISTRIBUTION: Alpine rock slides of the Rocky Mountains, Wyoming to Colorado (*Nelson 7923, Payson & Payson 4149*).

ILLUSTRATION: *Clements & Clements, Rocky Mt. Fl. pl. 35, f. 21 (fr.)*.

20. *Angelica arguta* Nutt.; T. & G. Fl. N. Am. 1: 620. 1840.

Angelica Lyallii S. Wats. Proc. Am. Acad. 17: 374. 1882.
Angelica Piperi Rydb. Fl. Rocky Mts. 631. 1917.

Stout, 5–20 dm. high, the foliage and inflorescence glabrous to scaberulous; leaves ovate to orbicular in general outline, excluding the petioles 1.5–3 dm. long, 1.5–2 dm. broad, bi-pinnate or ternate-pinnate or rarely simply pinnate, the leaflets ovate to lanceolate, acute, sessile or petiolulate, 5–15 cm. long, 2–5 cm. broad, spinulose-serrate; petioles 1–3 cm. long, sheathing at the base; cauline leaves similar, reduced upwards, with dilated sheaths, the uppermost often bladeless, the uppermost petioles wholly sheathing; peduncles stout, 8–25 cm. long; involucre wanting; involucre wanting or occasionally of a few filiform bractlets; rays numerous, 18–45, spreading-ascending, subequal, 1–8 cm. long, webbed; pedicels 2–10 mm. long, spreading-ascending, conspicuously webbed; flowers white or pinkish, the petals obovate, glabrous; ovaries glabrous; stylopodium low-conic; fruit oval to orbicular or obovoid, 4–7 mm. long, 4–5 mm. broad, glabrous, the dorsal ribs narrowly winged, the lateral broader than the dorsal and about equaling the body; oil-tubes solitary in the intervals, several on the commissure; seed-face plane.

TYPE LOCALITY: "Wappatoo Island, Oregon, and near Fort Vancouver, Washington," Nuttall.
 DISTRIBUTION: Alberta to Montana and Wyoming, west to British Columbia, south to Utah and northern California (*Leiberg 1333, Thompson 7736, Nelson & Nelson 6579*).

21. *Angelica triquinata* Michx. Fl. Bor. Am. 1: 167. 1803.

Oxypolis triquinata Raf. Bull. Bot. Seringe 218. 1830.
Angelica Curtisii Buckl. Am. Jour. Sci. 45: 173. 1843.

Stout, 6–18 dm. high, the foliage glabrous to slightly scaberulous, the inflorescence scaberulous; leaves ovate to deltoid in general outline, excluding the petioles 1.5–3 dm. long, ternately or ternate-pinnately divided, the leaflets ovate to ovate-lanceolate, acuminate, petiolulate or sessile, 4–6 cm. long, 1.5–3.5 cm. broad, serrate to incised; petioles 1–1.5 dm. long, sheathing at the base; cauline leaves similar, reduced above with slightly dilated and often bladeless sheaths, the uppermost petioles wholly sheathing; peduncles stout, 8–15 cm. long; involucre wanting; involucre of numerous linear bractlets, 2–5 mm. long; rays few, 10–25, spreading-ascending, subequal, 3–8 cm. long; pedicels 5–12 mm. long, spreading-ascending; flowers white, the petals oblong-oval, glabrous; ovaries glabrous; stylopodium low-conic; fruit broadly oval, 4–8 mm. long, 3–5 mm. broad, glabrous, the dorsal ribs filiform to narrowly winged, the lateral broader than the dorsal and exceeding the body; oil-tubes solitary to several in the intervals, about 4 on the commissure; seed-face plane.

TYPE LOCALITY: "In Canada" (presumably an error for "Carolina"), collector unknown.
 DISTRIBUTION: Allegheny Mountains, from Pennsylvania to North Carolina (*Killip 36,012, 36,024*).

ILLUSTRATIONS: Bot. Gaz. 12: pl. 2, f. 14, 15 (fr.); Britt. & Brown, Ill. Fl. 2: 511; ed. 2. 2: 636.

22. *Angelica Nelsoni* Coult. & Rose, Contr. U. S. Nat.

Herb. 3: 294. 1895.

Angelica Pringlei Coult. & Rose, Contr. U. S. Nat. Herb. 3: 295. 1895.
Angelica Seatonii Coult. & Rose, Contr. U. S. Nat. Herb. 3: 295. 1895.
Angelica polycarpa Coult. & Rose, Proc. Wash. Acad. 1: 148. 1900.

Slender, 6–15 dm. high, the foliage sparsely villous, the inflorescence more or less scaberulous to villous; leaves deltoid in general outline, excluding the petioles 1.5–6 dm. long, 1.2–4 dm. broad, ternate-pinnately divided, the leaflets ovate-lanceolate to lanceolate, acute, sessile or petiolulate, 3–7 cm. long, 1.5–3 cm. broad, mucronulate-serrate; petioles 2–6 dm. long, sheathing at the base; peduncles slender, 1–2 dm. long; involucre wanting; involucre of several filiform, villous bractlets, 8–12 mm. long, often exceeding the flowers; rays numerous, 20–35, spreading-ascending, subequal, 3–8 cm. long; pedicels spreading-ascending, 3–15 mm. long; flowers white or pinkish, the petals oval, glabrous; ovaries glabrous; stylopodium low-conic; fruit almost orbicular, 3–5 mm. long, glabrous, the dorsal ribs narrowly winged, the lateral broader than the

dorsal and broader than the body; oil-tubes solitary or occasionally 2 in the intervals, 4 on the commissure; seed-face plane to concave.

TYPE LOCALITY: "Wet meadows of Sierra de Clavellinas, 9000 ft. alt.," Oaxaca, *E. W. Nelson 1405*.

DISTRIBUTION: Vera Cruz and Mexico to Oaxaca (*Pringle 4748, 6467, 13,525*).

77. SPHENOSCIADIUM A. Gray, Proc. Am. Acad. 6: 536. 1866.

Tall, stout, erect, herbaceous, caulescent, branching perennials, glabrous up to the tomentose inflorescence, from thick roots. Leaves petiolate, membranaceous, once or twice pinnately or ternate-pinnately compound, the leaflets broad or narrow, serrate to pinnatifid. Petioles sheathing, inflated. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre wanting. Involucel of numerous linear-setaceous, tomentose bractlets. Rays numerous, spreading-ascending or ultimately reflexed. Pedicels reduced to a tomentose disk. Flowers white or purplish; petals obovate with a narrower inflexed apex; calyx-teeth obsolete; styles slender, spreading, the stylopodium small, conic. Carpophore 2-cleft to the base. Fruit truncate-obovoid, strongly flattened dorsally, tomentose; dorsal ribs prominent and usually narrowly winged, the lateral more broadly winged; oil-tubes small, solitary in the intervals, 2 on the commissure; seed flattened dorsally in cross section, the face plane or slightly concave.

Type species, *Sphenosciadium capitellatum* A. Gray.

1. *Sphenosciadium capitellatum* A. Gray, Proc. Am. Acad. 6: 537. 1866.

Selinum capitellatum S. Wats. Bot. King's Expl. 126. 1871.

Selinum eryngiifolium Greene, Pittonia 2: 102. 1890.

Selinum validum Congdon, Erythra 7: 185. 1900.

Sphenosciadium eryngiifolium Coult. & Rose, Contr. U. S. Nat. Herb. 7: 128. 1900.

Sphenosciadium capitellatum var. *eryngiifolium* Jepson, Man. Fl. Pl. Calif. 729. 1925.

Sphenosciadium capitellatum var. *scabrum* Jepson, Man. Fl. Pl. Calif. 729. 1925.

Sphenosciadium capitellatum var. *validum* Jepson, Man. Fl. Pl. Calif. 729. 1925.

Plants 5-18 dm. high, the foliage scabrous, the inflorescence tomentose; leaves oblong to ovate in general outline, excluding the petioles 1-4 dm. long, 5-30 cm. broad, 1-2-pinnate or ternate-pinnate, the leaflets linear-oblong to ovate-lanceolate, 1-12 cm. long, 0.5-5 cm. broad, distinct or confluent, acute, remotely serrate to coarsely dentate, incised or pinnatifid, paler and scabrous beneath; petioles 1-4 dm. long; upper cauline leaves reduced to conspicuously dilated sheaths; peduncles 7-40 cm. long; rays 4-18, spreading-ascending or ultimately reflexed, 1.5-10 cm. long, densely tomentose; fruit 5-8 mm. long, 3-5 mm. broad, tomentose, the dorsal ribs prominent or narrowly winged, the lateral more broadly winged.

TYPE LOCALITY: "In the Sierra Nevada, near Ebbett's Pass, Alpine County, California," *Brewer*.

DISTRIBUTION: Mountains of Idaho and Oregon to the Sierra Nevada, California, and adjacent Nevada (*Copeland 430, Duran 770, Heller 7148*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 7: 127 (fr.); Jepson, Man. Fl. Pl. Calif. 729.

78. LEVISTICUM Koch, Nova Acta Acad. Leop.-Carol. 12: 101. 1825.

Hipposelinum Britt. & Rose in Britt. & Brown, Ill. Fl. ed. 2: 2: 634. 1913.

Stout, herbaceous, caulescent, branching perennials, glabrous except for the scaberulous inflorescence. Leaves petiolate, membranaceous, ternately or pinnately decomposed, the divisions broadly cuneate. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre of numerous narrow, entire, reflexed bracts. Involucel of bractlets like the bracts. Rays rather few, spreading-ascending. Pedicels short, spreading. Flowers yellowish-white; petals obovate with a narrower inflexed apex; calyx-teeth obsolete; styles short, spreading, the stylopodium conic. Carpophore 2-cleft to the base. Fruit ovoid-oblong, flattened dorsally, glabrous; ribs narrowly winged, the wings subequal; seed flattened dorsally in cross section, the face plane.

Type species, *Ligusticum Levisticum* L. (*Levisticum officinale* Koch).

1. *Levisticum officinale* Koch, Nova Acta Acad.

Leop.-Carol. 12: 101. 1825.

- Ligusticum Levisticum* L. Sp. Pl. 250. 1753.
Angelica paludapifolia Lam. Fl. Fr. 3: 451. 1778.
Angelica levisticum All. Fl. Ped. 2: 10. 1785.
Levisticum vulgare Reichenb. Fl. Germ. Exc. 463. 1832.
Levisticum paludapifolium Asch. Fl. Brand. 1: 250. 1860.
Levisticum Levisticum Karst. Deuts. Fl. 844. 1882.
Selinum Levisticum E. H. L. Krause in Sturm, Fl. Deuts. ed. 2: 116. 1904.
Hipposelinum Levisticum Britt. & Rose in Britt. & Br. Ill. Fl. ed. 2: 635. 1913.

Plants 1-2 m. high; basal leaves ovate in general outline, excluding the petioles 25-70 cm. long, 15-65 cm. broad, pinnately decomposed, the leaflets broadly ovate to oblong, cuneate, 3-11 cm. long, 1-7 cm. broad, coarsely dentate or lobed above the middle; peduncles 5-10 cm. long; involucre of numerous lanceolate, acute, scarios bracts, 5-10 mm. long, reflexed; involucre of bractlets like the bracts, up to 5 mm. long; rays 12-20, spreading-ascending, unequal, 2-6 cm. long, scaberulous; pedicels spreading, 1-5 mm. long, densely scaberulous; fruit ovoid-oblong, 4-7 mm. long, 2-3 mm. broad, compressed dorsally, the ribs all about equally narrowly winged; oil-tubes small, 1 or 2 in the intervals, 2-4 on the commissure; seed-face plane.

TYPE LOCALITY: "In Apenninis Liguriae," collector unknown.

DISTRIBUTION: Southern Europe; escaped from cultivation, Vermont to Pennsylvania and New Jersey, Missouri, New Mexico.

ILLUSTRATIONS: Nova Acta Acad. Leop.-Carol. 12: pl. 10, f. 41; Karst. Fl. Deuts. ed. 2: 410; Britt. & Brown, Ill. Fl. ed. 2: 635.

79. *ANETHUM* L. Sp. Pl. 263. 1753.

Slender, erect, herbaceous, caulescent, branching, glabrous and glaucous annuals, with a strong anise odor, from subfusiform roots. Leaves petiolate, membranaceous, pinnately dissected with filiform divisions. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral, longer than the leaves. Involucre usually wanting. Involucre usually wanting. Rays numerous, spreading-ascending. Pedicels slender, spreading. Flowers yellow; petals suborbicular with a narrower, obtuse, inflexed apex; calyx-teeth obsolete; styles short, reflexed, the stylopodium conic. Carpophore 2-cleft to the base. Fruit ovoid, flattened dorsally, glabrous; ribs narrowly winged, the lateral broader than the dorsal; oil-tubes solitary in the intervals, 2-4 on the commissure; seed flattened dorsally in cross section, the face plane or slightly concave.

Type species, *Anethum graveolens* L.

1. *Anethum graveolens* L. Sp. Pl. 263. 1753.

Peucedanum Anethum Baillon, Traité Bot. Méd. 1045. 1884.

Alternately branching above, 4-17 dm. high; leaves oblong to obovate in general outline, excluding the petioles 13-35 cm. long, 11-20 cm. broad, pinnately decomposed, the ultimate divisions filiform, 4-20 mm. long, less than 0.5 mm. broad; petioles 5-6 cm. long; upper cauline leaves greatly reduced; peduncles 7-16 cm. long; rays 10-45, spreading, 3-10 cm. long; pedicels 20-50, 6-10 mm. long; fruit ovoid, about 4 mm. long, 2 mm. broad.

TYPE LOCALITY: "Inter Lusitaniae et Hispaniae segetes," collector unknown.

DISTRIBUTION: Europe; adventive throughout the United States, Mexico, Central America, and the West Indies.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: pl. 1968; Coste, Fl. Fr. 2: 173; Britt. & Brown, Ill. Fl. ed. 2: 634.

80. *EURYTAENIA* T. & G. Fl. N. Am. 1: 633. 1840.

Slender, erect, herbaceous, caulescent, branching, somewhat scaberulous annuals, from slender taproots. Basal leaves petiolate, membranaceous, lobed or pinnatifid with obtuse, crenate-serrate lobes, the cauline pinnately or ternate-pinnately dissected with narrow, often elongate, entire or serrate divisions. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre of several 3-cleft, reflexed bracts shorter than the rays. Involucre of bractlets like the bracts. Rays few, spreading-ascending, scaberu-

lous. Pedicels slender, spreading-ascending, scaberulous. Flowers white; petals obovate with a narrower inflexed apex; calyx-teeth prominent; styles slender, reflexed, the stylopodium depressed. Carpophore 2-cleft to the base. Fruit oval to orbicular, strongly flattened dorsally, scaberulous; dorsal ribs filiform to narrowly winged, the lateral ribs broadly thick-winged, the wings narrower than the body, prominently nerved near the middle, their margins thin and contiguous; oil-tubes large and flattened, solitary in the intervals, 2 on the commissure; seed flattened dorsally in cross section, the face plane; strengthening cells prominent in the ribs.

Type species, *Eurytaenia texana* T. & G.

1. *Eurytaenia texana* T. & G. Fl. N. Am. 1: 633. 1840.

Eurytenia macrophylla Buckl. Proc. Acad. Phila. 1861: 455. 1862.

Plants 3–12 dm. high, scaberulous in the inflorescence or glabrate; leaves ovate in general outline, excluding the petioles 4–10 cm. long, 2–5 cm. broad, lobed or pinnatifid with obtuse, crenate to serrate lobes; petioles 2–5 cm. long; cauline leaves pinnately or ternate-pinnately dissected, the divisions oblong-lanceolate to linear or even filiform, sharply serrate to entire, the terminal often elongate; peduncles 4–15 cm. long; involucre of about 5 3-cleft bracts, 5–10 mm. long, scarious-margined toward the base; involucre of several bractlets like the bracts; rays 8–15, spreading-ascending, unequal, 1.5–8 cm. long, scaberulous; pedicels 5–8 mm. long, scaberulous; fruit orbicular to ovoid, 4–6 mm. long, minutely scaberulous, emarginate at the apex, strongly compressed dorsally, the dorsal ribs filiform or very narrowly winged, the lateral ribs broadly thick-winged, the wings narrower than the body, distinctly nerved on the commissural side, their margins thin and contiguous; oil-tubes large, flattened, solitary in the intervals, 2 on the commissure; seed-face plane.

TYPE LOCALITY: Austin, Texas, *Drummond*.

DISTRIBUTION: Oklahoma to eastern Texas (*Cory 13,883, 14,868, Hall 256*).

ILLUSTRATIONS: Marcy, Expl. pl. 7; *Flora* 83: 273 (veg.); *Contr. U. S. Nat. Herb.* 7: 126 (fr.).

81. *MYRRHIDENDRON* Coult. & Rose, Bot. Gaz. 19: 466. 1894.

Tall, erect, caulescent, branching, glabrous or pubescent trees, shrubs, or herbs. Leaves petiolate, membranaceous, ternate-pinnately decomposed, the leaflets acute or acuminate, serrate. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre of a few bracts, or wanting. Involucre of few to numerous, usually cleft or divided bractlets. Rays numerous, spreading-ascending. Pedicels slender, spreading-ascending. Flowers white; calyx-teeth obsolete; stylopodium low-conic. Carpophore 2-cleft to the base. Fruit oblong to linear, flattened dorsally, glabrous; dorsal ribs narrowly winged, the lateral somewhat broader; oil-tubes large, solitary in the intervals, 2 or 3 on the commissure; seed flattened dorsally in cross section, sulcate beneath the tubes, the face plane.

Type species, *Myrrhidendron Donnellsmithii* Coult. & Rose.

Petioles half-sheathing; petiolules with a membranaceous stipular ring; peduncles 3–8 cm. long.

Petioles wholly sheathing; petiolules with a glandular-tufted stipular ring; peduncles 10–28 cm. long.

1. *M. Maxonii*.

2. *M. Donnellsmithii*.

1. *Myrrhidendron Maxonii* Coult. & Rose, Jour. Wash.

Acad. 17: 214. 1927.

Stout, glaucous herbs or small trees, 2–4 m. high from stout tap roots; leaves 3–4 dm. long, ternate-pinnately divided, the leaflets lanceolate, 2–6 cm. long, acute to acuminate, sharply and often irregularly serrate with spinulose teeth to somewhat laciniately lobed, shining and depressed-venose above, paler beneath, conspicuously reticulate, the petiolules with a membranaceous stipular ring; petioles with purplish inflated sheaths about one-half their length; cauline leaves reduced upwards, sometimes to bladeless sheaths; peduncles short, 3–8 cm. long, densely glandular-puberulent above; involucre of 1–3 entire or apically toothed, linear bracts, up to 2.5 cm. long; involucre of several prominently purplish-veined, entire to 5-cleft bractlets with lacinate spinulose lobes, exceeding the flowers, 5–10 mm. long; fruiting rays unequal, 3–6

cm. long, glandular-puberulent on the angles; pedicels 7-9 mm. long, glandular-puberulent; fruit linear, 15-20 mm. long.

TYPE LOCALITY: Cuesta Grande, eastern slope of Chiriquí Volcano, 2000-2900 m., Panama, Maxon 5311.

DISTRIBUTION: Known only from the region of the type locality (Davidson 983, Pittier 3099).

2. *Myrrhidendron Donnellsmithii* Coult. & Rose,

Bot. Gaz. 19: 466. 1894.

Myrrhidendron chirriipoense Süsseng. Bot. Jahrb. 72: 280. 1942.

Stout herbs or shrubs, 1.5-6 m. high, the trunks 7.5 cm. in diameter at the base, the branches about 3.5 cm. in diameter; leaves 2-3 dm. or more long, ternate-pinnately divided, the leaflets ovate to lanceolate, 2.5-10 cm. long, acute to acuminate, sharply and often irregularly serrate with spinulose teeth to somewhat laciniately lobed, glabrous, shining, and impressed-venose above, dull and paler beneath, conspicuously reticulate, the petioles with a prominent, glandular-tufted stipular ring; petioles glaucous, broadly inflated-sheathing throughout; cauline leaves reduced upwards, with conspicuously inflated sheaths; peduncles 1-2.8 dm. long, densely glandular-puberulent above; involucre of a few scarious-margined, entire or lobed, purplish-veined bracts, up to 1.5 cm. long, or wanting; involucre of numerous scarious-margined, purplish-veined bractlets, 3-4-toothed or cleft, the lobes laciniate, spinulose, exceeding the flowers, 5-10 mm. long; fruiting rays subequal, 3.5-7 cm. long, glandular-puberulent on the angles; pedicels 8-12 mm. long, glandular-puberulent; fruit linear, 10-18 mm. long.

TYPE LOCALITY: Lava beds at the summit of the Volcano Irazú, Costa Rica, J. Donnell Smith 4825.

DISTRIBUTION: Volcanic peaks of Guatemala and Costa Rica (Stork 2340, 2016, Quiros 326).

ILLUSTRATIONS: Bot. Gaz. 19: pl. 32; Bot. Jahrb. 72: pl. 3, f. 6.

82. *PRIONOSCIADIUM* S. Wats. Proc. Am. Acad. 23: 275. 1888.

Langlassea H. Wolff, Repert. Sp. Nov. 9: 420. 1911.

Mostly stout, tall, erect, herbaceous, caulescent, branching or simple, glabrous or pubescent perennials, from stout taproots or tubers. Leaves petiolate, membranaceous, ternate-pinnate to ternate-pinnately compound, the leaflets filiform to ovate, serrate to pinnately divided or rarely entire, the rachis frequently winged. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral, usually numerous, opposite or whorled, occasionally few, alternate. Involucre wanting, or of a few filiform bracts. Involucre of several filiform to linear-lanceolate, entire bractlets shorter than the fruit. Fertile rays few to numerous, spreading-ascending, spreading, or divaricate. Fertile pedicels few, spreading. Flowers white, greenish-yellow, or purple; petals spatulate to obovate with a narrower inflexed apex; calyx-teeth obsolete or minute; styles slender, recurved; ovary glabrous to pilose; stylopodium lacking. Carpophore 2-cleft to the base, each division usually bifid at the apex. Fruit oblong to orbicular or ellipsoid, frequently retuse at apex and base, strongly flattened dorsally, glabrous or rarely hispidulous; dorsal ribs prominent and occasionally narrowly winged, the lateral broadly thin-winged, the wings narrower or broader than the body; oil-tubes solitary to several in the intervals, 4-12 on the commissure; seed flattened dorsally in cross section, frequently channeled beneath the intervals, the face slightly concave to involute.

Type species, *Prionosciadium madrense* S. Wats.

Leaves ternate-pinnate to biternate-bipinnate; at least the secondary rachis winged; leaflets crenate to sharply doubly serrate, occasionally lobed below.

Ovary variously pubescent; fruit glabrous to pubescent.

Leaflets subacuminate to acuminate at the apex.

Rachis coarsely serrate-winged; leaflets coarsely serrate; fruit glabrous.

Rachis finely serrate-winged; leaflets finely serrate; fruit densely hispidulous at least on the body.

Leaflets obtuse, rounded or abruptly acute at the apex.

Primary rachis winged; involucre of several filiform bracts, 10-20 mm. long; fruit rounded or truncate at the apex.

1. *P. acuminatum*.

2. *P. Nelsonii*.

3. *P. serratum*.

- Primary rachis essentially unwinged; involucre wanting or of one to several filiform bracts about 5 mm. long; fruit retuse at the apex.
 Fertile rays 17-30; fruit oval.
 Fertile rays 6-10; fruit oblong.
- Ovary and fruit glabrous.
 Basal leaves 9-12 dm. long; leaflets 6-10 cm. broad; fruit 15-20 mm. long, 10-15 mm. broad; Oaxaca.
 Basal leaves 1.5-8 dm. long; leaflets 1-5.5 cm. broad; fruit 7-15 mm. long, 5-10 mm. broad.
 Leaflets obtuse to abruptly acute; dorsal ribs of the fruit narrowly winged; lateral wings about equaling the body of the seed.
 Fertile rays 17-25, 2-4 cm. long; calyx-teeth obsolete.
 Fertile rays 8-15, 1-2 cm. long; calyx-teeth evident.
 Leaflets acute to acuminate; dorsal ribs of the fruit unwinged; lateral wings broader than the body of the seed.
 Leaflets linear-lanceolate to lanceolate; inflorescence glabrous to slightly scaberulous; fertile rays 8-16.
 Leaflets ovate; inflorescence scaberulous to puberulent; fertile rays 4-7.
- Leaves ternate or ternate-pinnately decomposed with filiform to linear divisions or ternate-pinnately divided with incised or lobed leaflets; rachis essentially unwinged.
 Leaflets filiform to linear, entire; ovary and young fruit puberulent.
 Leaflets linear to ovate, never entire; ovary and fruit glabrous.
 Plants stout, 10-40 dm. high; peduncles many, opposite to whorled.
 Leaflets linear to lanceolate, elongate, sharply and finely serrate to lobed below.
 Inflorescence glabrous; involucre wanting or of a single minute bract; wings and body of fruit heterochromous; lateral wings broader than the body, thin.
 Inflorescence scaberulous; involucre of 1-several bracts, 6-12 mm. long; wings and body of fruit homochromous; lateral wings thick, about half the width of the body.
 Leaflets lanceolate to ovate, pinnately incised to divided, the divisions coarsely serrate.
 Upper cauline leaves with conspicuous, orbicular, purplish sheaths; fertile rays 15-25.
 Upper cauline leaves with oblong or obsolete sheaths; fertile rays 4-12.
 Basal leaves about 2-3 dm. long; bractlets of the involucre equaling or longer than the flowers; fruit 8-11 mm. long, 5-8 mm. broad.
 Basal leaves 6-12 dm. long; bractlets of the involucre shorter than the flowers; fruit 10-13 mm. long, 7-11 mm. broad.
- Plants slender, 4-8 dm. high; peduncles few, alternate.
 Leaflets ovate, 4-6 cm. long, 30-45 mm. broad, serrate and incised; flowers greenish-yellow.
 Leaflets oblong to ovate-lanceolate, 1.5-2.5 cm. long, 8-15 mm. broad, finely serrate; flowers purple.
4. *P. thapsoides*.
 4a. *P. thapsoides* var. *Pringlei*.
 6. *P. megacarpum*.
 4. *P. thapsoides*.
 5. *P. cuneatum*.
 7. *P. Townsendi*.
 8. *P. diversifolium*.
 9. *P. filifolium*.
 10. *P. Watsoni*.
 11. *P. linearifolium*.
 12. *P. dissectum*.
 13. *P. madrense*.
 14. *P. macrophyllum*.
 15. *P. humile*.
 16. *P. simplex*.

1. *Prinosciadium acuminatum* B. L. Robinson; Coult. & Rose,
 Proc. Wash. Acad. 1: 149. 1900.

Prinosciadium mexicanum var. *acuminatum* B. L. Robinson; Urbina, Cat. Pl. Mex. 108. 1897.

Plants stout, 1-2 m. high, the inflorescence puberulent, the foliage glabrous to villous; basal leaves ovate in general outline, excluding the petioles 2-4 dm. long, 1-2-ternate to 1-2-pinnate, the leaflets ovate to lanceolate, acuminate at the apex, cuneate at the base, 5-12 cm. long, 2-5.6 cm. broad, sharply doubly serrate and often lobed toward the base, the sinuses narrow, confluent by a coarsely serrate, winged rachis; upper cauline leaves opposite, ternate, the sheaths obsolete; inflorescence several times trifurcate or with some irregular branching; the peduncles slender, 2-6.5 cm. long, each subtended by a pair of leaves or occasionally by a solitary leaf; involucre of 1-several filiform bracts 5-20 mm. long; involucre of several filiform bractlets 3-7 mm. long, about equaling the flowers but shorter than the fruit; fertile rays 3-8, spreading or divaricate, subequal, 1-3 cm. long; fertile pedicels 1-3, 2-6 mm. long; flowers greenish-yellow to purple, the ovary and young fruit hispidulous; fruit ovoid-oblong, rounded or truncate at the apex, retuse at the base, 8-14 mm. long, 7-10 mm. broad, glabrous, the dorsal ribs prominent to narrowly winged, the lateral broadly thin-winged, the wings much broader

than the body; oil-tubes small, 2-several in the intervals, about 6 on the commissure; seed nearly terete in cross section, channeled under the intervals, the face sulcate.

TYPE LOCALITY: "Barranca near Guadalajara," Jalisco, *Pringle 3864*.

DISTRIBUTION: Sinaloa to Michoacán (*Pringle 7634, 8635*).

2. *Prionosciadium Nelsoni* Coult. & Rose, Proc.

Wash. Acad. 1: 149. 1900.

Langlassea eriocarpa H. Wolff, Repert. Sp. Nov. 9: 421. 1911.

Plants stout, 1.5-2 m. high, the foliage and inflorescence hispidulous or villous; basal leaves ovate in general outline, excluding the petioles 3-4 dm. long, 1-3-pinnate, the leaflets lanceolate, subsacuminate to acuminate at the apex, cuneate at the base, 2-6 cm. long, 1-2 cm. broad, sharply serrate, hispidulous or villous, especially on the veins and veinlets beneath, the sinuses broad, confluent by the narrow, finely serrate, winged rachis; petioles 3-3.5 dm. long; upper cauline leaves opposite or whorled, pinnate, ternate, or simple, with elongate linear-lanceolate divisions and rather conspicuous sheaths; inflorescence of several verticils of peduncles; peduncles slender, 4.5-12 cm. long, subtended by opposite or whorled leaves; involucre wanting or of a single filiform bract 5-10 mm. long; involucre of several linear-filiform, hispidulous bractlets 5 mm. long, longer than the flowers but shorter than the fruit; fertile rays 10-13, spreading or divaricate, subequal, 1.5-3 cm. long; fertile pedicels 2-5, 3-6 mm. long; flowers yellow, the ovary densely hispidulous; fruit ovoid-oblong, rounded at the apex, retuse at the base, 7-10 mm. long, densely pilose at least on the body, the dorsal ribs prominent, the lateral broadly thin-winged, the wings a little broader than the body; oil-tubes 1-several in the intervals, 5 or 6 on the commissure; seed slightly channeled under the intervals, the face concave.

TYPE LOCALITY: Tuxtla, Chiapas, 720-780 m., *Nelson 3079*.

DISTRIBUTION: Michoacán and Guerrero to Mexico and Chiapas (*Hinton 7907, Pringle 6345*).

3. *Prionosciadium serratum* Coult. & Rose, Proc.

Wash. Acad. 1: 149. 1900.

Plants stout, 0.6-1.5 m. high, hispidulous throughout; basal leaves deltoid in general outline, excluding the petioles 2-3.5 dm. long, ternate-pinnate, the leaflets oblong to oblanceolate, obtuse or abruptly acute at the apex, tapering or blunt at the base, 3-14 cm. long, 1.5-5 cm. broad, crenate-serrate to sharply serrate, confluent at the base into the broadly serrate-winged rachis, both the main rachis and summit of the petiole winged; upper cauline leaves opposite, ternate to entire, with inconspicuous sheaths; inflorescence of several opposite peduncles, the terminal whorled; peduncles stout, 1.5-5 cm. long, or the terminal to 7 cm. long; involucre of several filiform, puberulent bracts 10-20 mm. long; involucre of several filiform, puberulent bractlets 5-10 mm. long, longer than the flowers but shorter than the fruit; fertile rays 10-15, spreading, subequal, 1.5-3 cm. long; fertile pedicels 2-4, 3-6 mm. long; calyx-teeth evident but minute, triangular; flowers yellow, the ovary hispidulous; fruit oval, rounded or truncate at the apex, retuse at the base, glabrous, 8-13 mm. long, 8-10 mm. broad, the dorsal ribs narrowly winged, the lateral broadly winged, the wings broader than the body; oil-tubes 1-4 in the intervals, 4-6 on the commissure; seed channeled under the intervals, the face involute.

TYPE LOCALITY: "In the mountains of southern Durango," *Rose 2343*.

DISTRIBUTION: Durango to Jalisco (*Pringle 3886, 8633*).

4. *Prionosciadium thapsoides* (DC.) Mathias,

Brittonia 2: 245. 1936.

Ligusticum dubium H.B.K. Nov. Gen. & Sp. 5: 19. 1821. Not *L. dubium* Spreng. 1806.

Elaeostelinum thapsoides DC. Prodr. 4: 215. 1830.

Imperatoria mexicana Hort. Chels.; G. Don, Gen. Syst. 3: 336. 1834; Steud. Nom. Bot. ed. 2. 1: 805. 1840.

Angelica mexicana Vatke, Ind. Sem. Hort. Berol. 1876. app. 2. no. 12. 1876.

Prionosciadium mexicanum S. Wats. Proc. Am. Acad. 23: 275. 1888.

Prionosciadium Seleri Rose, Contr. U. S. Nat. Herb. 8: 335. 1905.

Prionosciadium moschatum Rose, Contr. U. S. Nat. Herb. 8: 335. 1905.

Prionosciadium Palmeri Rose, Contr. U. S. Nat. Herb. 10: 130. 1906.

Plants stout, 1.5–4 m. high, the foliage and inflorescence more or less hispidulous; basal leaves deltoid in general outline, excluding the petioles 2.5–3.5 dm. long, 1–2-ternate to 1–2-pinnate, the leaflets lanceolate to oblanceolate, obtuse or acutish at the apex, tapering or abruptly confluent at the base, 3–8 cm. long, 0.8–3 cm. broad, crenate to crenate-serrate, the leaflets confluent into the narrow, entire-winged, secondary rachis, the primary rachis essentially unwinged; petioles 1–3 cm. long; upper cauline leaves opposite, ternate with inconspicuous sheaths; inflorescence of a series of opposite umbels, the terminal whorled; peduncles stout, 2.5–10 cm. long, subtended by leaves; involucre wanting or of 1–several filiform bracts about 5 mm. long; involucre of several filiform bractlets 3–6 mm. long, puberulent; fertile rays 17–25, spreading, subequal, 2–3 cm. long, or 3–4 cm. long in some terminal umbels; fertile pedicels 2–4, 2–4 mm. long; calyx-teeth obsolete; flowers greenish-yellow or purple, the ovary hispidulous to glabrate; fruit oval, retuse at apex and base, 9–14 (16?) mm. long, 6–10 mm. broad, glabrous, the dorsal ribs short-winged, the lateral, broadly thin-winged, the wings equaling or a little broader than the body; oil-tubes 2–4 in the intervals, 3–6 on the commissure; seed-face involute.

TYPE LOCALITY: "In Mexico circa Sanctum-Angelum," probably *Hahn*.

DISTRIBUTION: Zacatecas and Mexico to Guatemala (*Purpus 7448*, *Seler 3106*).

4a. *Prionosciadium thapsoides* var. *Pringlei* (S. Wats.) Math. & Const. Bull. Torrey Club 69: 247. 1942.

Prionosciadium Pringlei S. Wats. Proc. Am. Acad. 23: 276. 1888.

Similar, but with 6–10 spreading fertile rays; fruit oblong, 6–17 mm. long, 4–12 mm. broad.

TYPE LOCALITY: "In the shade of cliffs on the Mapula Mountains, Chihuahua," *Pringle 1137*.

DISTRIBUTION: Chihuahua to Durango (*Pringle 1249*, *13,532*).

5. *Prionosciadium cuneatum* Coult. & Rose, Proc. Wash. Acad. 1: 149. 1900.

Plants stout, 1.5–3 m. high, glaucous, hispidulous throughout; basal leaves deltoid in general outline, excluding the petioles 1.5–3.5 dm. long, ternate to bipinnate, the leaflets oblong or oblanceolate, obtuse or abruptly acute at the apex, tapering or blunt at the base, 3–7 cm. long, 1–4 cm. broad, crenate to crenate-serrate, confluent by the broad winged rachis, which is crenate-dentate at the summit but rapidly tapering and entire below, the main rachis winged at least above; petioles unwinged or only slightly winged at the summit; cauline leaves opposite, the uppermost simple, linear, bractlike; inflorescence a whorl of branches bearing opposite peduncles below and whorled ones terminally; peduncles rather stout, 3–6 cm. long; involucre wanting; involucre of several filiform bractlets 3–4 mm. long, shorter than the flowers and fruit; fertile rays 8–15, spreading, subequal, 1–2 cm. long; fertile pedicels 1–3, 2–4 mm. long; calyx-teeth evident but minute, triangular; flowers purple, the ovary glabrous; fruit oblong, rounded at the apex, or retuse at both apex and base, 7–15 mm. long, 5–8 mm. broad, glabrous, the dorsal ribs narrowly winged, the lateral broadly winged, the wings about equaling the body; oil-tubes 1 or 2 in the intervals, about 5 on the commissure; seed scarcely channeled under the intervals, the face involute.

TYPE LOCALITY: "On grassy slope of barranca near Guadalaajara," *Jalisco, Pringle 3868*.

DISTRIBUTION: Jalisco (*Pringle 8636*, *Rose & Hough 4822*).

6. *Prionosciadium megacarpum* Coult. & Rose, Contr. U. S. Nat. Herb. 3: 308. 1895.

Plants stout, 2–5 m. high, the foliage and inflorescence hispidulous or villous; basal leaves ovate in general outline, excluding the petioles 9–12 dm. long, 3-ternate, the leaflets ovate to lanceolate, acute at the apex, cuneate at the base, 10–25 cm. long, 6–10 cm. broad, finely crenate-dentate and often somewhat lobed toward the base, confluent by the broadly entire-winged

rachis; cauline leaves opposite, 1-2-ternate, greatly reduced upward with smaller and narrower leaflets; inflorescence of successive verticils of peduncles; peduncles short, 6-13 cm. long, each whorl subtended by a pair of leaves; involucre of several scarious, villous, linear or filiform bracts 5-10 mm. long; involucre of several scarious, villous, filiform bractlets 5-10 mm. long, longer than the flowers but shorter than the fruit; fertile rays 15-20, spreading-ascending, subequal, 2-5 cm. long, those of the lateral umbels often fewer and shorter; fertile pedicels 1-4, 5-8 mm. long; flowers white; fruit broadly oblong, retuse at apex and base, 15-20 mm. long, 10-12 mm. broad, occasionally shortened and nearly orbicular, up to 15 mm. broad, glabrous, the dorsal ribs narrowly winged, the lateral broadly thin-winged, the wings about twice as broad as the body; oil-tubes large, 3 in the intervals, the middle much the largest, about 6 on the commissure; seed sulcate under the intervals, the face strongly involute.

TYPE LOCALITY: Sierra de San Felipe, Oaxaca, 7,500 feet, *Pringle 4688*.
DISTRIBUTION: Oaxaca (*Consatti 4005*, *C. L. Smith 886*).

7. *Prionosciadium Townsendi* Rose, Contr. U. S. Nat.

Herb. 8: 335. 1905.

Plants stout, 1-2 m. high, glabrous except for the slightly scaberulous inflorescence; basal leaves ovate-deltoid in general outline, excluding the petioles 1.5-3 dm. long, ternate to bipinnate, the leaflets lanceolate to linear-lanceolate, acute to acuminate at the apex, cuneate at the base, 3-11 cm. long, 1-3.5 cm. broad, finely serrate, confluent by the narrow, serrate to nearly entire, winged rachis; upper cauline leaves opposite or whorled, ternate or simple, with short, broad sheaths; inflorescence of several verticils of peduncles; peduncles slender, 1.5-6 cm. long, subtended by a pair of leaves, scaberulous at the summit; involucre wanting, or of a single filiform bract 5-10 mm. long; involucre of several filiform bractlets 5-8 mm. long, longer than the flowers but shorter than the fruit; fertile rays 8-16, spreading or divaricate, subequal, 1.5-4 cm. long; fertile pedicels 2-5, 3-7 mm. long; calyx-teeth obsolete; flowers purplish, the ovary glabrous; fruit broadly oblong, truncate at the apex, retuse at the base, 8-12 mm. long, 6-9 mm. broad, glabrous, the dorsal ribs prominent, the lateral broadly thin-winged, the wings broader than the body; oil-tubes 2 or 3 in the intervals, about 6 on the commissure; seed nearly terete in cross section, channeled under the intervals, the face involute.

TYPE LOCALITY: "In the Sierra Madre, 20 miles southwest of Chihuahua, Chihuahua," *Townsend & Barber 381*.

DISTRIBUTION: Chihuahua to Nayarit (*LeSueur 822*, *Pringle 1610*).

8. *Prionosciadium diversifolium* Rose, Contr. U. S. Nat.

Herb. 8: 334. 1905.

Prionosciadium palustre Rose, Contr. U. S. Nat. Herb. 8: 335. 1905.

Plants stout, 1-2 m. high, the inflorescence puberulent or scaberulous, the foliage scaberulous to glabrate; basal leaves ovate in general outline, excluding the petioles 2-4 dm. long, 1-2-ternate to 1-2-pinnate, the leaflets ovate, acuminate to rarely obtuse at the apex, cuneate at the base, 2.5-8 cm. long, 1.5-5.5 cm. broad, coarsely dentate and often incised or lobed toward the base, confluent by the narrow, remotely serrate or entire, winged rachis; cauline leaves opposite, ternate or simple, with short broad sheaths; inflorescence successively trifurcate; peduncles slender, 1.5-10 cm. long, each subtended by a pair of leaves; involucre wanting or of a single linear bract 2-6 mm. long; involucre of several linear bractlets 2-5 mm. long, longer than the flowers but shorter than the fruit; fertile rays 4-7, spreading, subequal, 0.8-2.5 cm. long; fertile pedicels 1-5, 2-4 mm. long; calyx-teeth obsolete; flowers greenish-white; fruit oblong-ovoid, rounded at the apex, retuse at the base, 8-12 mm. long, 6-8 mm. broad, glabrous, the dorsal ribs prominent, the lateral broadly thin-winged, the wings broader than the body; oil-tubes 2 or 3 in the intervals, 4-8 on the commissure; seed-face deeply sulcate to involute.

TYPE LOCALITY: "On mountain sides above Iguala," *Guerrero, Pringle 8420*.

DISTRIBUTION: Mexico and Michoacán to Guerrero and Morelos (*Hinton 8040*, *Rose & Painter 6555*).

9. *Prionosciadium filifolium* Coult. & Rose, Proc.
Wash. Acad. 1: 152. 1900.

Prionosciadium tenuifolium Coult. & Rose, Proc. Wash. Acad. 1: 152. 1900.

Plants stout, 0.5–1.5 m. high, more or less scaberulous throughout; basal leaves deltoid in general outline, excluding the petioles 3–5 dm. long, ternately or ternate-pinnately decomposed, the ultimate divisions linear to filiform, 1–4 cm. long, 2 mm. or less broad, entire, the rachis unwinged; upper cauline leaves opposite, ternately decomposed with inconspicuous sheaths; inflorescence of several verticils of peduncles; peduncles slender, 2.5–5 cm. long, subtended by a pair of leaves, scaberulous at the summit; involucre wanting; involucre of several linear bractlets 5–8 mm. long, shorter or longer than the flowers but shorter than the fruit; fertile rays 8–10, spreading, 1.5–3 cm. long; fertile pedicels 1–4, 2–4 mm. long; calyx-teeth obsolete; flowers yellowish-white, the ovary and very young fruit puberulent; mature fruit not seen; immature fruit ovoid-oblong, rounded at the apex, retuse at the base, 5–6 mm. long, 4 mm. broad, the dorsal ribs unwinged, the lateral broadly winged; oil-tubes 3 or 4 in the intervals, 7 or 8 on the commissure.

TYPE LOCALITY: "On the road between Colotlan and Bolanos," Jalisco, *Rose 2834*.
DISTRIBUTION: Jalisco (*Rose 2510*).

10. *Prionosciadium Watsoni* Coult. & Rose; S. Wats.
Proc. Am. Acad. 25: 150. 1890.

Peucedanum mexicanum S. Wats. Proc. Am. Acad. 17: 361. 1882. Not *Prionosciadium mexicanum* S. Wats. 1888.

Plants stout, about 1 m. high, glaucous and glabrous throughout, or the foliage minutely scaberulous; basal leaves deltoid in general outline, excluding the petioles 2.5–4 dm. long, 1–2-ternate to 2-pinnate, the leaflets linear to lanceolate, elongate, acuminate at the apex, cuneate and often slightly confluent or decurrent at the base, 2.5–14 cm. long, 0.5–4 cm. broad, sharply serrate and usually lobed toward the base, the rachis unwinged, glaucous beneath; petioles unwinged; cauline leaves sessile with broad, orbicular to oblong sheaths, the uppermost opposite or occasionally alternate, ternate or simple; inflorescence compound-umbellate, or of several whorls of branches terminating in single umbels or whorls of peduncles; peduncles slender to stout, 2.5–10 cm. long; involucre wanting, or occasionally of a single, minute, filiform bract; involucre of 1–several filiform or linear bractlets 2–3 mm. long, shorter than the flowers and fruit; fertile rays 5 or 6, spreading or spreading-ascending, subequal to unequal, 1–4.5 cm. long; fertile pedicels 1–5, 2–5 mm. long; calyx-teeth obsolete or minute; flowers purple, the ovary glabrous; fruit oval to nearly orbicular, rounded at the apex, retuse at the base, 7–11 mm. long, 5–9 mm. broad, glabrous, the dorsal ribs filiform to prominent, the lateral broadly thin-winged, the wings broader than the body; oil-tubes 2–6 in the intervals, 6–8 on the commissure; seed scarcely channeled under the intervals, the face involute.

TYPE LOCALITY: "On rocks near Morales," San Luis Potosí, *Schaffner 4*.
DISTRIBUTION: Chihuahua, Durango, and San Luis Potosí to Querétaro and Jalisco (*Palmer 508*, *Pennell 17,734*, *Pringle 3822*).

11. *Prionosciadium linearifolium* (S. Wats.) Coult. & Rose,
Contr. U. S. Nat. Herb. 3: 308. 1895.

Cicuta (?) *linearifolia* S. Wats. Proc. Am. Acad. 22: 415. 1887.

Plants stout, about 3 m. high, the inflorescence scaberulous, otherwise glabrous; basal leaves deltoid in general outline, excluding the petioles 2–4 dm. long, ternately or ternate-pinnately decomposed, the ultimate divisions linear, acuminate, 3–17 cm. long, 3–9 mm. broad, sharply serrate, the rachis often narrowly entire-bordered but unwinged; upper cauline leaves opposite, 1–2-ternate, the uppermost whorled, opposite, or alternate, simple with a linear elongate blade and inconspicuous sheath; inflorescence compound-umbellate; peduncles rather stout, 5–13 dm. long, subtended by leaves, puberulent at the summit; involucre of 1–several filiform bracts 6–12 mm. long; involucre of several linear-lanceolate to filiform, puberulent bractlets 3–5 mm. long, longer than the flowers but shorter than the fruit; fertile rays 9–15,

spreading-ascending, subequal, 1.5-4 cm. long, those of the lateral umbels often fewer and shorter; fertile pedicels 1-5, 3-5 mm. long; calyx-teeth evident but minute, triangular; flowers purple, the ovary glabrous; fruit oval, rounded at the apex, truncate or slightly retuse at the base, 8-11 mm. long, 6-8 mm. broad, less strongly compressed than in the other species, glabrous, the dorsal ribs narrowly winged, the lateral more broadly winged than the dorsal but only about one-half the width of the body, the wings and body homochromous, the wings rather thick; oil-tubes 3-several in the intervals, about 6-8 on the commissure; seed nearly terete in cross section, channeled under the intervals, the face involute.

TYPE LOCALITY: Guadalajara, Jalisco, *Palmer 275*.

DISTRIBUTION: Zacatecas to Jalisco and Tamaulipas (*Pringle 7298, 8634*).

12. *Prionosciadium dissectum* Coult. & Rose, Proc. Wash. Acad. 1: 151. 1900.

Plants stout, 1-2 m. high, glabrous and more or less glaucous throughout; basal leaves ovate in general outline, excluding the petioles 3-3.5 dm. long, ternate to bipinnate, the leaflets ovate-lanceolate, acuminate at the apex, truncate to cuneate at the base, 3.5-9 cm. long, 1.5-6 cm. broad, distinct, petiolulate, again 1-2-pinnatifid, the lobes lanceolate, remotely serrate, the rachis unwinged; upper cauline leaves opposite or solitary, bipinnatifid with conspicuous orbicular purplish sheaths; inflorescence of several verticils of peduncles, or these occasionally alternate; peduncles slender, 4.5-10 cm. long; involucre of 1-several filiform bracts 5-10 mm. long, or wanting; involucre of several filiform bractlets 3-6 mm. long, about equaling the flowers but shorter than the fruit; fertile rays 15-25, spreading, subequal, 2-3.5 cm. long; fertile pedicels 2-5, 2-3 mm. long; calyx-teeth obsolete; flowers purple, the ovary glabrous; fruit oblong, rounded at the apex, retuse at the base, 9-11 mm. long, 5-6 mm. broad, glabrous, the dorsal ribs prominent, the lateral broadly thin-winged, the wings about as broad as the body; oil-tubes 1 or 2 in the intervals, 4-6 on the commissure; seed unchanneled under the intervals, the face involute.

TYPE LOCALITY: "Between San Cristobal and Guadalajara," Jalisco, *Pringle 3002*.

DISTRIBUTION: Jalisco (*Pringle 8641, Rose 3060*).

13. *Prionosciadium madrese* S. Wats. Proc. Am. Acad. 23: 275. 1888.

Prionosciadium durangense Coult. & Rose, Proc. Wash. Acad. 1: 151. 1900.

Plants stout, 1 m. high, the inflorescence and foliage somewhat scaberulous or glabrous; basal leaves deltoid in general outline, excluding the petioles 2-3 dm. long, 1-2-ternate to 1-2-pinnate, the leaflets lanceolate to ovate, acute or acuminate at the apex, cuneate at the base, 1.5-5 cm. long, 0.5-2 cm. broad, distinct or the distal confluent, again 1-2-pinnatifid, the rachis unwinged; petioles 1-1.5 dm. long, broadly inflated-sheathing; upper cauline leaves opposite, bipinnatifid with obsolete sheaths; inflorescence of several series of opposite or whorled branches terminating in simple terminal peduncles, or with lateral peduncles also; peduncles slender, 2.5-10 cm. long, each subtended by a pair of leaves; involucre wanting, or of a single filiform bract about 5 mm. long; involucre of several filiform, puberulent bractlets 3-6 mm. long, about equaling the flowers but shorter than the fruit; fertile rays 6-12, spreading or divaricate, unequal, 1.5-3.5 cm. long; fertile pedicels 2-6, 4-6 mm. long; calyx-teeth obsolete; flowers purple, the ovary glabrous; fruit oblong, rounded at the apex, retuse at the base, 8-10 mm. long, 5-8 mm. broad, glabrous, the dorsal ribs prominent, the lateral broadly thin-winged, the wings equaling or broader than the body; oil-tubes small, 3-5 in the intervals, about 7 on the commissure; seed slightly channeled under the intervals, the face involute.

TYPE LOCALITY: "On ledges of a river cañon near Guerrero, Chihuahua," *Pringle 1251*.

DISTRIBUTION: Chihuahua and Sonora to Durango (*Gentry 1527, Townsend & Barber 153*).

14. *Prionosciadium macrophyllum* Coult. & Rose, Proc. Wash. Acad. 1: 151. 1900.

Plants stout, 1-4 m. high, the foliage and inflorescence somewhat scaberulous; basal leaves deltoid in general outline, excluding the petioles 6-12 dm. long, 2-ternate-pinnate, the leaflets

broadly lanceolate to ovate, acute at the apex, subcordate at the base, 5–14 cm. long, 1.5–8.5 cm. broad, petiolulate, pinnately incised to divided with coarsely dentate to pinnatifid, ovate or oblong lobes, the rachis unwinged; upper cauline leaves opposite, bipinnatifid, with short oblong sheaths; inflorescence compound-umbellate, the short verticillate branches each bearing a whorl of peduncles; peduncles slender, 1.5–9 cm. long, each subtended by a pair of leaves and usually bearing a solitary leaf or bract; involucre wanting, or of 1–several filiform bracts 5–10 mm. long; involucre of several filiform bractlets 3–6 mm. long, shorter than the flowers and fruit; fertile rays 4–9, spreading or divaricate, subequal, 2–3 cm. long; fertile pedicels 2–5, 2–7 mm. long; calyx-teeth obsolete; flowers greenish-white, the ovary glabrous; fruit oval, truncate or retuse at the apex, retuse at the base, 10–13 mm. long, 7–11 mm. broad, glabrous, the dorsal ribs prominent, the lateral broadly winged, the wings broader than the body; oil-tubes small, 1–3 in the intervals, 6–12 on the commissure; seed channeled under the intervals, the face involute.

TYPE LOCALITY: "Rocky bank of river, Falls of Juanacatlan, Jalisco," Pringle 3889.
DISTRIBUTION: Sonora and Durango to Jalisco (Nelson 4554, Pringle 8632).

15. *Prionosciadium humile* Rose, Contr. U. S. Nat.
Herb. 12: 302. 1909.

Peucedanum(?) madrense S. Wats. Proc. Am. Acad. 25: 150. 1890. Not *Prionosciadium madrense* S. Wats. 1888.

Plants slender, 4–6 dm. high from a slender, short, branching horizontal rootstock bearing dead leaf-sheaths, glabrous and somewhat glaucous except for the scaberulous inflorescence; basal leaves ovate to deltoid in general outline, excluding the petioles 1–2 dm. long, 1–2-ternate or ternate-pinnate, the leaflets ovate, acute or obtuse at the apex, truncate or cuneate at the base, 4–6 cm. long, 3–4.5 cm. broad, distinct or the distal confluent, petiolulate, serrate, incised and often 3-lobed toward the base, green above, glaucous beneath, the rachis essentially unwinged; petioles slender, 7–12 cm. long, dilated and sheathing at the base, the sheaths elongate, oblong, scariosus-winged; cauline leaves reduced upward and simply ternate; inflorescence of 1–several terminal and axillary, alternate peduncles; peduncles rather stout, 1–2 dm. long; involucre wanting; involucre of several linear-lanceolate bractlets 3–5 mm. long, shorter than the flowers and fruit; fertile rays 8–12, spreading-ascending, subequal, 2.5–4 cm. long; fertile pedicels 3–9, 5–8 mm. long; calyx-teeth obsolete; flowers greenish-yellow, red-veined; fruit oblong to oval, rounded at the apex, subcordate at the base, 12–14 mm. long, 6–8 mm. broad, glabrous and glaucous, the dorsal ribs prominent, the lateral broadly thin-winged, the wings broader than the body; oil-tubes solitary in the intervals but with some smaller accessory ones, 2–6 on the commissure; seed-face slightly concave.

TYPE LOCALITY: "In the Sierra Madre, near Monterrey," Pringle 2211.
DISTRIBUTION: Nuevo León (Pringle 10,204).

16. *Prionosciadium simplex* Math. & Const. Bull.
Torrey Club 68: 255. 1941.

Plants slender, 3–8 dm. high, glaucous and glabrous except for the scaberulous inflorescence; basal leaves deltoid in general outline, excluding the petioles 8–15 cm. long, biternate, the leaflets oblong to ovate-lanceolate, obtuse or abruptly acute at the apex, truncate at the base, 1.5–2.5 cm. long, 8–15 mm. broad, distinct, petiolulate, finely serrate and often with 2 lateral lobes at the base, glaucous beneath, the rachis unwinged; petioles slender, 3–5 cm. long, the sheaths elongate, oblong, with a scariosus margin; cauline leaves alternate, reduced upward with a conspicuous oblong sheath; inflorescence of a single terminal umbel or with some lateral branches below; peduncles slender, 7–12 cm. long; involucre wanting; involucre of several, lanceolate or ovate-lanceolate, acuminate, purplish bractlets 3–6 mm. long, shorter than the fruit; fertile rays about 4–11, spreading-ascending, unequal, 1.5–4.5 cm. long, scaberulous; fertile pedicels 2–6, 2–4 mm. long; calyx-teeth obsolete; flowers purple; ovary glabrous; fruit ovoid, truncate at the apex, rounded at the base, 6–8 mm. long, 3.5–5 mm. broad, glabrous, the dorsal ribs filiform, the lateral thin-winged, the wings narrower than the body.

TYPE LOCALITY: "On mountains near Miquihuana, Tamaulipas," 7000–9000 feet, Nelson 4478
DISTRIBUTION: Known only from the type locality (Stanford & al. 677).

83. *RHODOSCIADIUM* S. Wats. Proc. Am. Acad. 25: 151. 1890.

Deanea Coult. & Rose, Bot. Gaz. 20: 372. 1895.

Slender or stout, erect, herbaceous, caulescent, glabrous and often glaucous to puberulent, scaberulous, or hispidulous perennials, from stout taproots or tubers. Leaves petiolate, membranaceous, 1-2-pinnate, 1-2-ternate, or 1-2-ternate-pinnate to ternately or ternate-pinnately decomposed. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal, or terminal and lateral, often paniculate, or frequently some umbels sessile. Involucre wanting, or of 1-several filiform, foliaceous, or minute bracts. Involucel of several lanceolate to filiform bractlets shorter or longer than the flowers and fruit. Fertile rays few, spreading-ascending to divaricate. Fertile pedicels few, spreading-ascending to divaricate. Flowers purple or greenish-yellow; petals spatulate to obovate with a narrower inflexed apex; calyx-teeth obsolete; styles long or short, spreading or recurved, the stylopodium low-conic. Carpophore 2-cleft to the base. Fruit oval to obovoid, strongly flattened dorsally, acute to cordate at the apex, rounded or cordate at the base, glabrous; dorsal ribs prominent to filiform, the lateral broadly thin-winged, the wings narrower to broader than the body; oil-tubes small, 1-3 in the intervals, 6-9 on the commissure; seed flattened dorsally in cross section, the face involute, sulcate, or plane.

Type species, *Rhodosciadium Pringlei* S. Wats.

- Rachis of the leaves conspicuously winged and toothed; leaflets of the basal leaves 18-24 cm. long, 8-10 cm. broad.
- Rachis of the leaves not winged; leaflets of the basal leaves less than 10 cm. long.
- Bractlets of the involucre filiform to spatulate-linear, 5-35 mm. long, longer than the fruit; inflorescence usually a single terminal umbel.
- Bractlets of the involucre filiform to linear, 1-7 mm. long, shorter than the fruit; inflorescence branched.
- Leaflets entire to crenate-serrate.
- Plants hispidulous; flowers purple; fruit-wings narrower than or equaling the body.
- Plants glabrous or the foliage somewhat scaberulous; flowers greenish-yellow; fruit-wings broader than the body.
- Leaflets lanceolate to ovate-lanceolate, 5-20 mm. broad; pedicels 2-3 mm. long.
- Leaflets linear to linear-lanceolate, 2-5 mm. broad; pedicels 3-6 mm. long.
- Leaflets sharply serrate to incised or lobed.
- Leaves ternately or pinnately decomposed.
- Leaves hispidulous, deltoid in general outline; fertile rays subequal, 10-25 mm. long.
- Leaves glabrous to slightly scaberulous, ovate-lanceolate to oblong in general outline; fertile rays very unequal, 15-85 mm. long.
- Leaves biternate to ternate-bipinnate, not decomposed.
- Fertile pedicels 10-15 mm. long.
- Fertile pedicels 1-8 mm. long.
- Fertile rays subequal, 5-35 mm. long; fruit-wings equaling or broader than the body.
- Fertile pedicels about 1 mm. long; fruit-wings about equaling the body; Jalisco.
- Fertile pedicels 2-7 mm. long; fruit-wings broader than the body; Morelos to Chiapas.
- Leaflets acute, 2.5-3.5 cm. long, 2-2.5 cm. broad; fertile rays spreading-ascending; fruit 8-15 mm. long, 6-10 mm. broad.
- Leaflets acuminate, 5-9 cm. long, 3-6 cm. broad; fertile rays divaricate; fruit 15-18 mm. long, 10-11 mm. broad.
- Fertile rays unequal, 1-11 cm. long; fruit-wings narrower than or about equaling the body.
- Plants slender, 3-6 dm. high; cauline leaves few; fruit ellipsoid, 5-6 mm. long, 4-5 mm. broad; Oaxaca.
- Plants rather stout, 6-10 dm. high; cauline leaves several; fruit broadly oblong to ovoid, 7-8 mm. long, 5-6 mm. broad.
- Plants glabrous and somewhat glaucous; involucre usually present; Zacatecas to Durango.
- Plants usually scaberulous; involucre wanting; San Luis Potosí.

1. *R. macrophyllum*.

2. *R. toluense*.

3. *R. purpureum*.

4. *R. glaucum*.

4a. *R. glaucum* var. *lineare*.

5. *R. dissectum*.

6. *R. tuberosum*.

7. *R. longipes*.

8. *R. Pringlei*.

9. *R. diffusum*.

10. *R. Nelsoni*.

11. *R. nudicaule*.

12. *R. montanum*.

13. *R. argutum*.

1. *Rhodosciadium macrophyllum* Math. & Const. Bull.

Torrey Club 68: 124. 1941.

Deanea glauca Coult. & Rose, Proc. Wash. Acad. 1: 156. 1900. Not *Rhodosciadium glaucum* Coult. & Rose, 1895.

Stout, 9–12 dm. high, very glaucous, the inflorescence scaberulous; leaves ovate-deltoid in general outline, excluding the petioles 30–60 cm. long, ternate-pinnate, the leaflets oblong-lanceolate, acuminate at the apex, sessile and confluent by a broad, toothed rachis-wing, 18–24 cm. long, 8–10 cm. broad, crenate-serrate and incised toward the base, very glaucous beneath; petioles stout, 25 cm. or more long; upper cauline leaves lanceolate, ternate or simple, with obsolete sheaths and elongate acuminate lobes; inflorescence compound-umbellate, irregularly branched, leafy, usually some umbels sessile, the peduncles slender, 2–5 cm. long, each subtended by a foliaceous bract; involucre of several filiform or foliaceous bracts 10–15 mm. long; involucre of several filiform bractlets 2–4 mm. long, exceeding the flowers but shorter than the fruit; rays 4–8, divaricate, subequal, 1–2.5 cm. long, scaberulous; pedicels 1–4, divaricate, 2–5 mm. long, scaberulous; petals apparently purple; immature fruit ovoid, acute at the apex, cordate at the base, 7–9 mm. long, 4–5 mm. broad, glaucous, the dorsal ribs apparently filiform, the lateral wings broader than the body.

TYPE LOCALITY: "Foothills between Aguacata and Dolores," Nayarit, Rose 2029.

DISTRIBUTION: Sinaloa to Nayarit (Rose 1781).

2. *Rhodosciadium toluense* (H.B.K.) Mathias,

Brittonia 2: 245. 1936.

Ferula toluensis H.B.K. Nov. Gen. & Sp. 5: 12. 1821.*Pastinaca toluensis* Spreng. Syst. 1: 913. 1825.*Peucedanum toluense* Hemsl. Biol. Centr. Am. Bot. 1: 570. 1881.*Deanea longibracteata* Coult. & Rose, Proc. Wash. Acad. 1: 154. 1900.*Deanea toluensis* Rose, Contr. U. S. Nat. Herb. 10: 128. 1906.

Rather stout, from a vertical or oblique fusiform taproot, 3–12 dm. high, glabrous throughout or the inflorescence scaberulous; leaves ovate-lanceolate in general outline, excluding the petioles 10–35 cm. long, 5–15 cm. broad, bipinnate, the leaflets ovate, acute to obtuse at the apex, cuneate at the base, the lower distinct, sessile, 2–6 cm. long, 1–3 cm. broad, pinnatifid; petioles stout, 5–25 cm. long; inflorescence of a solitary umbel or accompanied by 2 or 3 axillary umbels, the peduncles stout, 10–40 cm. long, or some umbels occasionally sessile; involucre of a solitary foliaceous bract 3–13 mm. long, or frequently wanting; involucre of several spatulate-linear to filiform bractlets 5–35 mm. long, exceeding the flowers and fruit; rays 10–20, slender, spreading-ascending, very unequal, 3–11 cm. long; pedicels 1–6, spreading-ascending, 3–8 mm. long, sometimes scaberulous; petals greenish-yellow or purplish; fruit oval to orbicular, cordate at apex and base, 6–9 mm. long, 6–8 mm. broad, the dorsal ribs prominent, the lateral wings equaling the body; seed-face slightly concave.

TYPE LOCALITY: "Crescit in frigidis juxta urbem Toluca, alt. 1380 hex. (Nova Hispania)," Humboldt & Bonpland.

DISTRIBUTION: Jalisco and Vera Cruz, south to Mexico and Puebla (Pringle 4233, Purpus 1680, Rose & Hay 5717).

ILLUSTRATION: H.B.K. Nov. Gen. & Sp. 5: pl. 418.

3. *Rhodosciadium purpureum* (Rose) Math. & Const.

Bull. Torrey Club 68: 124. 1941.

Deanea Pringlei Rose, Contr. U. S. Nat. Herb. 10: 128. 1906. Not *Rhodosciadium Pringlei* S. Wats. 1890.*Deanea purpurea* Rose, Contr. U. S. Nat. Herb. 10: 128. 1906.

Stout, from a short swollen tuberous rootstock, 4–12 dm. high, hispidulous throughout; leaves ovate to deltoid in general outline, excluding the petioles 10–25 cm. long, 8–17 cm. broad, ternate-pinnate, the leaflets ovate-lanceolate, acute to obtuse at the apex, cuneate at the base, more or less confluent, sessile, 2.5–5 cm. long, 1–2 cm. broad, crenate-serrate, hispidulous especially on the veins, margins, and rachis; petioles stout, 5–25 cm. long, hispidulous; uppermost cauline leaves linear, acuminate; inflorescence 2-trifurcate or irregularly branched, the pedun-

cles slender, 3-17 cm. long, hispidulous; involucre wanting, or of a single minute, linear or filiform bract; involucre of several linear bractlets 3-5 mm. long, puberulent or hispidulous, exceeding the flowers but shorter than the fruit; rays 5-9, spreading-ascending, unequal, 1-5.5 cm. long; pedicels 2-6, spreading-ascending, 2-3 mm. long; petals purple; fruit oblong-ovoid, rounded at the apex, cordate at the base, 6-9 mm. long, 4-6 mm. broad, the dorsal ribs prominent, the lateral wings narrower than or equaling the body; seed-face involute.

TYPE LOCALITY: "Between Somoriel and Las Lajas, Hidalgo," *Rose & Painter 9212*.
DISTRIBUTION: Hidalgo to Tlaxcala (*Pringle 8601, 8794*).

4. *Rhodosciadium glaucum* Coult. & Rose, Contr. U. S. Nat.
Herb. 3: 309. 1895.

Slender, from a short tuberous, often forked rootstock, 8-15 dm. high, glaucous throughout, the foliage scaberulous; leaves ovate-deltoid in general outline, excluding the petioles 5-25 cm. long, biternate or ternate-pinnate, the leaflets lanceolate to ovate-lanceolate, acute or acuminate at the apex, cuneate at the base, distinct, sessile, 2-9 cm. long, 0.5-2 cm. broad, crenate-serrate to slightly incised, scaberulous on the veins above and sometimes beneath; petioles slender, 5-35 cm. long; upper cauline leaves oblong; inflorescence widely branched, the peduncles slender, 2-8 cm. long, frequently some umbels sessile and proliferating; involucre wanting, or of 1 or 2 minute bracts; involucre similar to the involucre; rays 3-7, slender, spreading, subequal, 1-3 cm. long; pedicels 1-4, spreading, 2-3 mm. long; petals greenish-yellow; fruit oval, cordate at apex and base, 6-10 mm. long, 5-8 mm. broad, the dorsal ribs filiform, the lateral wings broader than the body; seed-face slightly concave to sulcate.

TYPE LOCALITY: "On foothills above Oaxaca," Oaxaca, *Pringle 5539*.
DISTRIBUTION: Morelos and Oaxaca, south to Guatemala (*Galeotti 2784, Pringle 4823*).

4a. *Rhodosciadium glaucum* var. *lineare* Coult. & Rose, Contr.
U. S. Nat. Herb. 3: 309. 1895.

Very slender, 4-8 dm. high; leaves lanceolate to deltoid in general outline, excluding the petioles 5-20 cm. long, pinnate to ternate-pinnate, the leaflets linear to linear-oblong or linear-lanceolate, 3-7 cm. long, 2-5 mm. broad, entire to remotely dentate; rays 2-4 cm. long; immature pedicels 3-6 mm. long.

TYPE LOCALITY: "Valley of Oaxaca, at base of Cerro San Felipe," Oaxaca, *Nelson 1189*.
DISTRIBUTION: Oaxaca (*Conzatti & Gonzalez 223, Galeotti 2750*).

5. *Rhodosciadium dissectum* Coult. & Rose, Contr. U. S. Nat.
Herb. 3: 309. 1895.

Slender, from a swollen tuberous rootstock bearing dead leaf-sheaths, 6-9 dm. high, the foliage hispidulous; leaves deltoid in general outline, excluding the petioles 8-12 cm. long, ternately or ternate-pinnately decomposed, the ultimate divisions linear to linear-lanceolate, acute, 1-5 mm. long, hispidulous on the veins and rachis; petioles slender, 4-14 cm. long; inflorescence 1-2-trifurcate with some alternate peduncles below and some lateral branches weakly dichasial, the peduncles slender, 1.5-3 cm. long, or the terminal 6.5 cm. long, each subtended by a small bract; involucre wanting; involucre of 1-several linear bractlets 2-3 mm. long, shorter than the flowers and fruit; rays 3-5, spreading-ascending, subequal, 1-2.5 cm. long; pedicels 1-3 mm. long; petals purple; fruit ovoid, cordate at the base, narrowed at the apex, 5-7 mm. long, 4-6 mm. broad, the dorsal ribs prominent, the lateral wings narrower than the body; seed-face plane to slightly concave.

TYPE LOCALITY: "Dry calcareous hills, Las Sedas, Oaxaca," *Pringle 4764*.
DISTRIBUTION: Oaxaca (*Rose & Hough 4630*).

6. *Rhodosciadium tuberosum* Coult. & Rose; Urbina, Cat.
Pl. Mex. 108. 1897.

Deanea tuberosa Coult. & Rose, Bot. Gaz. 20: 373. 1895.

Slender, from a swollen tuberous rootstock, 3-8 dm. high, glabrous throughout or the foliage scaberulous; leaves oblong to ovate-lanceolate in general outline, excluding the petioles

5–20 cm. long, 3–15 cm. broad, pinnately or ternate-pinnately decomposed, the ultimate divisions linear, acute, 1–8 mm. long, somewhat scaberulous on the veins or glabrate; petioles very slender, 5–25 cm. long; inflorescence of a solitary umbel terminal on each branch or with some axillary umbels below, the peduncles slender, 5–20 cm. long; involucre wanting, or of a single filiform bract; involucre of several linear bractlets 1–5 mm. long, shorter than the flowers and fruit; rays 2–5, spreading-ascending, very unequal, 1.5–8.5 cm. long; pedicels 1–5, spreading-ascending, 1–2 mm. long; petals purple; fruit oval to orbicular, rounded or truncate at the apex, cordate at the base, 7–9 mm. long, 5–7 mm. broad, the dorsal ribs prominent, the lateral wings narrower than or equaling the body; seed-face slightly concave.

TYPE LOCALITY: "In low meadows, valley of Toluca," Mexico, *Pringle 4295*.

DISTRIBUTION: Hidalgo, south to Mexico and the Federal District (*Pringle 8618, 8735*).

7. *Rhodosciadium longipes* (Rose) Math. & Const.

Bull. Torrey Club 68: 124. 1941.

Deanea longipes Rose, Contr. U. S. Nat. Herb. 10: 128. 1906.

Stout, 8–18 dm. high, glabrous throughout or the foliage occasionally scaberulous; leaves deltoid in general outline, excluding the petioles 30–40 cm. long, ternate-bipinnate, the leaflets ovate to lanceolate, acuminate at the apex, truncate to cuneate at the base, the terminal confluent, petiolulate to sessile, 3–6 cm. long, 1.5–3.5 cm. broad, sharply serrate and incised or lobed toward the base, glabrous or minutely scaberulous on the veins beneath; petioles stout, 60–80 cm. long, somewhat inflated; inflorescence usually 1–2-trifurcate, the peduncles slender, 4–16 cm. long, but the terminal umbel usually sessile; involucre of 1–3 foliaceous bracts, or wanting; involucre of several linear bractlets 2–4 mm. long, shorter than the flowers and fruit; rays 3–6, spreading-ascending, subequal, 5–10 cm. long; pedicels 1–4, spreading-ascending, 10–15 mm. long; petals greenish-yellow; fruit oval to slightly orbiculate, rounded at the apex, cordate at the base, 8–11 mm. long, 7–8 mm. broad, the dorsal ribs prominent, the lateral wings equaling or a little broader than the body; seed-face slightly concave.

TYPE LOCALITY: "At Trinidad, Puebla," *Pringle 13,496* (apparently an error for "Trinidad Iron Works, Hidalgo").

DISTRIBUTION: Hidalgo (*Pringle 10,297*).

8. *Rhodosciadium Pringlei* S. Wats. Proc. Am. Acad. 25: 151. 1890.

Rather slender, from a simple or branched short tuberous rootstock, 8–12 dm. high, glaucous throughout, the foliage puberulent; leaves deltoid in general outline, excluding the petioles 10–30 cm. long, ternate-pinnate, the leaflets ovate, acute at the apex, cuneate at the base, confluent, sessile to petiolulate, 2.5–5 cm. long, 1–2.5 cm. broad, deeply incised to pinnatifid, puberulent on the veins above and sometimes beneath; petioles slender, 7–20 cm. long; upper cauline leaves lanceolate; inflorescence widely branched, the peduncles slender, 2–7 cm. long; involucre of 1 or 2 minute, linear bracts; involucre similar to the involucre; rays 1–5, slender, spreading, subequal, 0.5–1.5 cm. long; pedicels 1 or 2, spreading, about 1 mm. long; petals purple; fruit oval, cordate at apex and base, 6–10 mm. long, 4–8 mm. broad, the dorsal ribs filiform, the lateral wings equaling the body; seed-face slightly concave.

TYPE LOCALITY: "Hillsides near Guadalajara," Jalisco, *Pringle 2981*.

DISTRIBUTION: Jalisco to Michoacán (*Arsène 2876, Pringle 3869, Rose & Painter 7675*).

9. *Rhodosciadium diffusum* (Coulter & Rose) Math. & Const.

Bull. Torrey Club 68: 124. 1941.

Deanea diffusa Coulter & Rose, Proc. Wash. Acad. 1: 155. 1900.

Stout, 15–25 dm. high, glaucous throughout, the foliage often scaberulous; leaves deltoid in general outline, excluding the petioles 20–30 cm. long, ternate-bipinnate, the leaflets ovate, acute at the apex, truncate to cuneate at the base, distinct or the terminal confluent, sessile to petiolulate, 2.5–3.5 cm. long, 2–2.5 cm. broad, deeply incised or divided, minutely scaberulous on the veins beneath or glabrate; petioles stout, 10 cm. or more long, somewhat inflated; inflorescence terminal with a continuous axis bearing usually opposite or occasionally whorled

branches or peduncles, some of which are trifurcate or irregularly branched, the peduncles slender, 1.5–3.5 cm. long, each subtended by a small bract, the lateral umbels usually sterile; involucre wanting; involucl of 1–several linear to lanceolate bractlets 2–10 mm. long, shorter or longer than the flowers and fruit; rays 2–5, spreading to spreading-ascending, 1.5–2 cm. long; pedicels 1–2, spreading-ascending, 3–5 mm. long; petals greenish-yellow to purple; fruit oval, a little narrowed toward the rounded apex, cordate at the base, 8–15 mm. long, 6–10 mm. broad, the dorsal ribs prominent, the lateral wings once to twice as broad as the body; seed-face slightly concave.

TYPE LOCALITY: "On lava beds near Cuernavaca," Morelos, *Pringle 7177*.

DISTRIBUTION: Mexico and Morelos to Chiapas (*Hinton 8099, Matuda 1623, Pringle 8425*).

10. *Rhodosciadium Nelsoni* (Coul. & Rose) Math. & Const.

Bull. Torrey Club 68: 124. 1941.

Deanea Nelsoni Coul. & Rose, Proc. Wash. Acad. 1: 155. 1900.

Rather stout, 9–12 dm. high, glaucous, the foliage and inflorescence scaberulous; leaves ovate-deltoid in general outline, excluding the petioles 10–30 cm. long, ternate-pinnate, the leaflets ovate, acuminate at the apex, truncate to cuneate at the base, distinct, petiolulate or sessile, 5–9 cm. long, 3–6 cm. broad, sharply serrate to incised, divided toward the base, minutely scaberulous on the veins above; petioles slender, 8–25 cm. long; upper cauline leaves with lanceolate lobes; inflorescence trifurcate, the lateral branches usually forming prolonged dichasia, with some axillary peduncles at the base, the peduncles slender, 2.5–5 cm. long, or the terminal to 10 cm. long, each subtended by a foliaceous bract or leaf; involucre wanting; involucl of several linear-lanceolate, acuminate bractlets 2–15 mm. long, exceeding the flowers but usually shorter than the fruit; rays 5–9, divaricate, subequal, 1.5–3.5 cm. long; pedicels 1–5, divaricate, 3–7 mm. long, scaberulous; petals dull yellow to purplish; fruit oval to slightly obovoid, truncate at the apex, cordate at the base, 15–18 mm. long, 10–11 mm. broad, the dorsal ribs prominent, the lateral wings twice as broad as the body or broader; seed-face sulcate.

TYPE LOCALITY: "Valley of Jiquipilas, Chiapas," *Nelson 2938*.

DISTRIBUTION: Known only from the type locality.

11. *Rhodosciadium nudicaule* (Coul. & Rose) Drude in E. & P.

Nat. Pfl. 3⁸: 223. 1898.

Deanea nudicaulis Coul. & Rose, Bot. Gaz. 20: 372. 1895.

Rather slender, from a branched tuberous rootstock bearing old leaf-sheaths, 3–6 dm. high, the foliage and inflorescence often scaberulous; leaves deltoid in general outline, excluding the petioles 5–20 cm. long, biternate or ternate-pinnate, the leaflets ovate, acute to obtuse at the apex, truncate to cuneate at the base, distinct or the terminal confluent, sessile to petiolulate, 1.5–4 cm. long, 1–2.5 cm. broad, sharply serrate and incised to divided at the base, glabrous, or scaberulous on the veins; petioles slender, 2–14 cm. long; cauline leaves ternate; inflorescence branched, the lower peduncles alternate, the peduncles slender, 8–24 cm. long; involucre wanting, or of an occasional filiform bract; involucl of several filiform bractlets 3–10 mm. long, usually exceeding the flowers but shorter than the fruit; rays 5–8, spreading-ascending, 2–7 cm. long; pedicels 2–3 mm. long; petals yellowish-green; fruit oval, rounded at apex and base, 5–6 mm. long, 4–5 mm. broad, the dorsal ribs prominent, the lateral wings narrower than the body; seed-face involute.

TYPE LOCALITY: Sierra de San Felipe, Oaxaca, *Pringle 4663*.

DISTRIBUTION: High mountains, Vera Cruz to Oaxaca (*Conzatti & Gonzales 224, Galeotti 2782*).

ILLUSTRATIONS: Bot. Gaz. 20: pl. 27; Contr. U. S. Nat. Herb. 3: pl. 6.

12. *Rhodosciadium montanum* (Coul. & Rose) Math. & Const.

Bull. Torrey Club 68: 124. 1941.

Deanea montana Coul. & Rose, Proc. Wash. Acad. 1: 155. 1900.

Rather stout, about 10 dm. high, glabrous and somewhat glaucous throughout; leaves deltoid in general outline, excluding the petioles 15–20 cm. long, 1–2-ternate-pinnate, the leaflets

ovate, acute at the apex, cuneate at the base, distinct and rather remote, sessile, 1.5-3 cm. long, 1-2 cm. broad, serrate and somewhat incised and lobed; petioles stout, 10-20 cm. long; uppermost cauline leaves ternate, the middle lobe elongate; inflorescence trifurcate, the peduncles rather slender, 8-20 cm. long, the terminal umbel often sessile; involucre of 1 or 2 filiform bracts 10-15 mm. long; involucre of several filiform bractlets 3-6 mm. long, shorter than the fruit; rays 6-10, spreading-ascending, unequal, 2-6 cm. long; pedicels 1-4, spreading-ascending, 2-4 mm. long; petals not seen; fruit oval, rounded at apex and base, 7-8 mm. long, 5 mm. broad, the dorsal ribs prominent, the lateral wings a little narrower than the body; seed-face slightly concave.

TYPE LOCALITY: "On the Sierra de los Morones near Plateado," Zacatecas, *Rose 3623*.
DISTRIBUTION: Zacatecas to Durango (*Nelson 4548*).

13. *Rhodosciadium argutum* (Rose) Math. & Const.

Bull. Torrey Club 68: 124. 1941.

Deanea arguta Rose, Contr. U. S. Nat. Herb. 10: 128. 1906.

Rather stout, about 6 dm. high, the foliage and inflorescence usually scaberulous; leaves deltoid in general outline, excluding the petioles 13-22 cm. long, 1-2-ternate-pinnate, the leaflets ovate to ovate-lanceolate, acute at the apex, rounded to cuneate at the base, distinct or the terminal confluent, rather remote, sessile, 1.5-3.5 cm. long, 1-2 cm. broad, serrate and lobed toward the base, scaberulous on the margins and veins; petioles slender, 10-20 cm. long; inflorescence 2-trifurcate, the peduncles slender, 5-13 cm. long, scaberulous at the summit, the lateral umbels often sterile and occasionally some umbels sessile; involucre wanting; involucre of several linear to filiform bractlets 3-7 mm. long, exceeding the flowers but shorter than the fruit; rays 9-12, spreading-ascending, unequal, 2.5-4.5 cm. long, scaberulous; pedicels 1-4, spreading-ascending, 3-7 mm. long, scaberulous; petals greenish-yellow; fruit oval, rounded at apex and base, 8 mm. long, 6 mm. broad, the dorsal ribs prominent, the lateral wings a little narrower than the body; seed-face slightly concave.

TYPE LOCALITY: Alvarez, San Luis Potosí, *Palmer 114*.
DISTRIBUTION: Known only from the type locality.

84. ENANTIOPHYLLA Coult. & Rose, Bot. Gaz. 18: 55. 1893.

Tall, erect, herbaceous, caulescent, branching, more or less pubescent perennials. Leaves petiolate, membranaceous, opposite, ternately or pinnately compound, the leaflets lanceolate to ovate-lanceolate. Petioles sheathing, inflated. Inflorescence of loose compound umbels; peduncles terminal and lateral, verticillate. Involucre of several linear, scarious-margined bracts. Involucre of bractlets like the bracts. Rays spreading to reflexed. Pedicels spreading to reflexed. Flowers white (?); calyx-teeth obsolete; styles furrowed on the ventral face, slightly thickened above, the stylopodium conic. Carpophore 2-cleft to the base. Fruit oblanceolate, flattened dorsally, glabrate, contracted below the seed to form a stipe-like base; dorsal ribs filiform, acute, the lateral narrowly thin-winged; oil-tubes solitary in the intervals, 2 on the commissure; seed flattened dorsally in cross section, sulcate under the tubes, the face shallowly concave.

Type species, *Enantiophylla Heydeana* Coult. & Rose.

1. *Enantiophylla Heydeana* Coult. & Rose, Bot. Gaz. 18: 56. 1893.

Plants 12-60 dm. high, glabrous or scaberulous throughout, the branches numerous, opposite; leaves ovate in general outline, excluding the petioles 6-20 cm. long, 5-27 cm. broad, the leaflets 2.5-14 cm. long, 1-6 cm. broad, finely serrate and often lobed; peduncles 3.5-8 cm. long; involucre bracts shorter than the rays; bractlets of the involucre about equaling the flowers; rays 14-20, subequal, 1.5-4 cm. long; pedicels 4-7 mm. long; fruit 10-13 mm. long, 3-4 mm. broad.

TYPE LOCALITY: Santiago, Zacatepequez, Guatemala, 6500 feet, *Rosalio Gomez (J. Donnell Smith 788; fruit)*.

DISTRIBUTION: Jalisco and Nayarit to Mexico, Guatemala, and El Salvador (*Hinton 6562, Mexia 706*).

ILLUSTRATION: Bot. Gaz. 18: pl. 5.

85. OXYPOLIS Raf. Neog. 2. 1825.

Tiedemannia DC. Coll. Mém. 5: 51. 1829.
Archemora DC. Coll. Mém. 5: 52. 1829.
Sataria Raf. New Fl. 4: 20. 1838.
Discadia Raf. Good Book 50, as syn. 1840.
Neurophyllum T. & G. Fl. N. Am. 1: 612. 1840.

Slender, erect, caulescent, glabrous perennials, from fascicled tubers. Leaves petiolate, membranaceous, simply pinnate or ternate, the leaflets broad or narrow, serrate to incised, mostly distinct and sessile, or the leaves reduced to hollow, acute, septate phyllodes. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and axillary. Involucre of a few slender bracts, or wanting. Bractlets of the involucre similar to the bracts, or wanting. Rays few to numerous, usually spreading-ascending. Pedicels slender, ascending to spreading. Flowers white or purple; petals oval to obovate with a narrower inflexed apex; calyx-teeth prominent or minute; styles slender, spreading, the stylopodium conic. Carpophore 2-cleft to the base. Fruit oblong to obovoid, strongly flattened dorsally, glabrous; dorsal ribs filiform, the lateral broadly thin-winged and nerved dorsally at the inner margin, giving the appearance of 5 filiform dorsal ribs; oil-tubes large, solitary in the intervals, 2-6 on the commissure; seed flattened dorsally in cross section, the face plane; strengthening cells beneath the dorsal ribs and the nerves of the lateral wings.

Type species, *Sium rigidius* L. (*Oxypolis rigidior* Raf.).

Leaves reduced to cylindrical or flattened, septate phyllodes.

Plants 6-14 dm. high; rays 3-14; flowers white.

Sheathing base of the petiole 0.5-4 cm. long; fruit nearly orbicular, the wings thicker than the body; Delaware to northern Georgia.

Sheathing base of the petiole 5-18 cm. long; fruit oval to obovoid, the wings thinner than the body; the Gulf Coast, Bahamas, and Cuba.

Plants 18-24 dm. high; rays 16-19; flowers purple.

Leaves not reduced; the blades pinnately or ternately divided.

Leaves ternate or occasionally reduced to a solitary leaflet; petioles very slender; bractlets of the involucre filiform; calyx-teeth minute.

Leaves pinnate; petioles stout; bractlets of the involucre linear or wanting; calyx-teeth conspicuous.

Leaflets 7-15 cm. long, remotely salient-dentate or entire; eastern United States.

Leaflets 3-6.5 cm. long, crenate-dentate, serrate or incised; western United States.

Involucre present; rays 12-24, spreading-ascending; Oregon and California.

Involucre absent; rays 5-14, strictly ascending; Rocky Mountains.

1. *O. Canbyi*.

2. *O. filiformis*.

3. *O. Greenmanii*.

4. *O. ternata*.

5. *O. rigidior*.

6. *O. occidentalis*.

7. *O. Fendleri*.

1. *Oxypolis Canbyi* (Coults. & Rose) Fernald, *Rhodora* 41: 139. 1939.

Oxypolis filiformis var. *Canbyi* Coults. & Rose, *Contr. U. S. Nat. Herb.* 7: 193. 1900.

Plants 6-9 dm. high; leaves reduced to hollow, septate phyllodes 1-2 dm. long, the sheaths 0.5-1 cm. long; peduncles 4-8 cm. long; involucre of several linear or filiform bracts 5-8 mm. long; involucre of linear bractlets 3-5 mm. long; rays 3-6, spreading-ascending, slightly unequal, 1.5-2.5 cm. long; pedicels spreading-ascending, 5-9 mm. long; calyx-teeth evident; fruit nearly orbicular, 4-5 mm. long, the lateral wings thicker than the body.

TYPE LOCALITY: "Moist upland meadows," Ellendale, Delaware, *Canby*.

DISTRIBUTION: Delaware to Georgia (*McVaugh 5235*).

2. *Oxypolis filiformis* (Walt.) Britton, *Mem. Torrey Club* 5: 239. 1894.

Oenanthe filiformis Walt. *Fl. Car.* 113. 1788.

Oenanthe carolinensis Pers. *Syn. Pl.* 1: 318. 1805.

Oenanthe teretifolia Muhl. *Cat.* 32. 1813.

Tiedemannia teretifolia DC. *Coll. Mém.* 5: 81. 1829. (Hyponym.)

Oxypolis caroliniana Raf. *Bull. Bot. Seringe* 218. 1830.

Peucedanum teretifolium Wood, *Bot. & Fl.* 136. 1870.

Tiedemannia Bakeri H. Wolff; *Urban, Symb. Ant.* 5: 452. 1908.

Oxypolis Bakeri Britton & Wilson; *L. J. K. Brace, Torreya* 29: 16. 1929.

Plants 8-14 dm. high; leaves reduced to hollow, septate phyllodes 2-6 dm. long, the sheaths 5-18 cm. long; peduncles 2-9 cm. long; involucre of several linear to lanceolate bracts 5-15 mm.

long; involucre of linear to lanceolate bractlets 2-4 mm. long; rays 8-14, spreading, slightly unequal, 2-4.5 cm. long; pedicels spreading, 5-10 mm. long; calyx-teeth conspicuous; fruit oval or obovoid, 5-8 mm. long, 3-5 mm. broad, the lateral wings thinner than the body.

TYPE LOCALITY: Presumably in the Carolinas, *Walter* (?).

DISTRIBUTION: Southern Virginia to Florida, west to Texas; Bahamas; Cuba. (*Curtiss 1011*, *Léon 6169*, *Palmer 12,340*.)

ILLUSTRATIONS: DC. Coll. Mém. 5: pl. 12; Britt. & Brown, Ill. Fl. ed. 2. 2: 638.

3. *Oxypolis Greenmanii* Math. & Const. Bull. Torrey Club 69: 152. 1942.

Plants 18-24 dm. high; leaves reduced to hollow, septate phyllodes, 2.5-4.5 dm. long, the sheaths 8-12 cm. long; peduncles 5-15 cm. long; involucre of several lanceolate-acuminate bracts 10-20 mm. long; involucre of subulate bractlets 2-8 mm. long; rays 16-19, spreading, slightly unequal, 2.5-5 cm. long (in flower); pedicels spreading, 3-15 mm. long; flowers dark purple; calyx-teeth conspicuous; fruit unknown.

TYPE LOCALITY: Wewahitchka, Gulf County, western Florida, *A. W. Chapman*.

DISTRIBUTION: Known only from the type locality.

4. *Oxypolis ternata* (Nutt.) A. Heller, Cat. N. Am. Pl. 5. 1898.

Peucedanum ternatum Nutt. Gen. 1: 182. 1818.

Archemora denticulata DC. Prodr. 4: 188. 1830.

Oxypolis denticulata Raf. Bull. Bot. Seringe 218. 1830.

Achemora trifoliata Raf. Herb. Raf. 78. 1833.

Salaria linearis Raf. New Fl. 4: 21. 1838.

Salaria linearis var. *longipes* Raf. New Fl. 4: 21. 1838.

Neurophyllum longifolium T. & G. Fl. N. Am. 1: 613. 1840.

Archemora ternata Nutt., T. & G. Fl. N. Am. 1: 631. 1840.

Pastinaca denticulata D. Dietr. Syn. Pl. 2: 971. 1840.

Tiedemannia ternata Coult. & Rose, Bot. Gaz. 12: 74. 1887.

Plants 6-9 dm. high; leaves deltoid in general outline, excluding the petioles 7-22 cm. long, simply ternate or occasionally with only 1 or 2 leaflets, the leaflets linear-oblong to filiform, 7-22 cm. long, 1-6 mm. broad, acute, entire; petioles 10-30 cm. long; cauline leaves often reduced to a solitary leaflet; peduncles 2-10 cm. long; involucre of 1 or more filiform bracts 5-10 mm. long, or wanting; involucre of several filiform bractlets 2-4 mm. long; rays 4-10, spreading-ascending, 2.5-7 cm. long; pedicels spreading-ascending, 5-15 mm. long; calyx-teeth ovate, minute; fruit oval to orbicular, 3-5 mm. long, 3-3.5 mm. broad.

TYPE LOCALITY: "On the bushy margins of swamps, in the pine forests of North and South Carolina," *Nuttall*.

DISTRIBUTION: North Carolina to Florida (*Biltmore Herb. 497*, *Curtiss 1010*).

5. *Oxypolis rigidior* * (*L.*) Raf. Bull. Bot. Seringe 218. 1830.

Sium rigidius L. Sp. Pl. 251. 1753.

Oenanthe rigida Crantz, Class. Umbell. 85. 1767.

Sium longifolium Pursh, Fl. Am. Sept. 194. 1814.

Sium tricuspidatum Ell. Bot. S. C. & Ga. 1: 354. 1817.

Oenanthe ambigua Nutt. Gen. 1: 189. 1818.

Pastinaca rigida Spreng. in R. & S. Syst. Veg. 6: 586. 1820.

Pastinaca ambigua Torr. Fl. U. S. 315. 1824.

Oxypolis tricuspidata Raf. Bull. Bot. Seringe 218. 1830.

Archemora rigida DC. Prodr. 4: 188. 1830.

Archemora ambigua DC. Prodr. 4: 188. 1830.

Archemora tricuspidata DC. Prodr. 4: 188. 1830.

?*Thaspium tenuifolium* Raf. Herb. Raf. 78. 1833.

Achemora serrata Raf. Herb. Raf. 78. 1833.

Pastinaca tricuspidata D. Dietr. Syn. Pl. 2: 971. 1840.

Peucedanum rigidum Wood, Bot. & Fl. 136. 1870.

Peucedanum rigidius Baillon, Hist. Pl. 7: 187. 1879.

Tiedemannia rigida Coult. & Rose, Bot. Gaz. 12: 74. 1887.

Tiedemannia rigida var. *ambigua* Coult. & Rose, Rev. N. Am. Umbell. 47. 1888.

Oxypolis rigidus Britton, Mem. Torrey Club 5: 239. 1894.

Oxypolis rigidus var. *longifolius* Britton, Mem. Torrey Club 5: 239. 1894.

* As *O. rigida*. Since "*Sium rigidium* Linn." is cited as synonym, this is interpreted as an orthographic error.

Oxypolis longifolia Small, Fl. SE. U. S. 875. 1903.
Oxypolis rigidior var. *ambigua* B. L. Robinson, *Rhodora* 10: 35. 1908.
Oxypolis turgida Small, Man. SE. Fl. 986. 1933.

Plants 6-15 dm. high; leaves oval to deltoid in general outline, excluding the petioles 10-30 cm. long, 10-25 cm. broad, pinnate with 5-9 leaflets, the leaflets lanceolate or linear, 7-15 cm. long, 5-45 mm. broad, remotely salient-dentate or entire; petioles 5-10 cm. long; peduncles 6-30 cm. long; involucre of a few linear bracts 1-2 cm. long; involucre of a few linear bractlets 3-5 mm. long; rays 15-45, spreading, subequal, 3-12 cm. long; pedicels spreading, 5-15 mm. long; calyx-teeth conspicuous; fruit oval or oblong, 4-7 mm. long, 2.5-4 mm. broad.

TYPE LOCALITY: Virginia, *Clayton*.

DISTRIBUTION: Wet ground along streams, bogs; New York and New Jersey to South Carolina, west to Minnesota and Texas (*Demaree 16,078, Eggert 6463, House 3064*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 7: 194 (fr.); Britt. & Brown, Ill. Fl. ed. 2: 2: 638; Rydb. Fl. Pr. & Pl. 604.

6. *Oxypolis occidentalis* Coult. & Rose, Contr. U. S.

Nat. Herb. 7: 196. 1900.

Plants 6-15 dm. high; leaves oblong in general outline, excluding the petioles 12-30 cm. long, 6-20 cm. broad, pinnate, the leaflets 5-13, ovate to linear-lanceolate, 3.5-6.5 cm. long, 5-50 mm. broad, crenate-dentate, serrate, or incised, or some 2-parted; cauline leaves with dilated petioles and few small leaflets; peduncles 6-30 cm. long; involucre of several linear, scarious bracts 5-25 mm. long, or wanting; involucre of linear-lanceolate bractlets 5-15 mm. long; rays 12-24, spreading-ascending, subequal to very unequal, 2-8 cm. long; pedicels spreading, 3-15 mm. long; calyx-teeth conspicuous; fruit oval or oblong, 5-6 mm. long, 3-4 mm. broad.

TYPE LOCALITY: "In springy meadows west of Crater Lake," Oregon, 1870 m., *Leiberg 4413*.

DISTRIBUTION: Cascade Mountains of southern Oregon through the Sierra Nevada to the mountains of southern California (*Hall 9676, Heller 11,641*).

ILLUSTRATIONS: Madroño 1: 161; Jepson, Man. Fl. Pl. Calif. 726. f. 710.

7. *Oxypolis Fendleri* (A. Gray) A. Heller, Bull.

Torrey Club 24: 478. 1897.

Archemora Fendleri A. Gray, Mem. Am. Acad. II. 4: 56. 1849.
Tiedemannia Fendleri Coult. & Rose, Rev. N. Am. Umbell. 48. 1888.

Plants 6-10 dm. high; leaves oblong in general outline, excluding the petioles 8-15 cm. long, 4-9 cm. broad, the leaflets mostly 7-9 (5-13), broadly ovate to narrowly lanceolate, 3-5 cm. long, 1-4 cm. broad, crenate-dentate, serrate, or rarely incised; petioles 6-14 cm. long; cauline leaves with dilated sheaths and few narrow leaflets; peduncles 8-20 cm. long; involucre wanting; involucre wanting; rays 5-14, strictly ascending, very unequal, 1-6 cm. long; pedicels ascending, 3-10 mm. long; calyx-teeth conspicuous; fruit oblong to oval, 3-5 mm. long, 2-3 mm. broad.

TYPE LOCALITY: "Margins of Santa Fe Creek," New Mexico, *Fendler 272*.

DISTRIBUTION: Subalpine streambanks; Rocky Mountains, Wyoming to southeastern Utah and New Mexico, 8000-11,000 feet (*Baker 722, Nelson 5080*).

ILLUSTRATION: Clements & Clements, Rocky Mt. Fl. pl. 35, f. 26 (fr.).

85. PSEUDOTAENIDIA Mackenzie, Torreya 3: 158. 1903.

Slender, erect, herbaceous, caulescent, glabrous perennials from subfusiform tubers. Leaves petiolate, membranaceous, 2-3-ternate, the leaflets remote, oblong to oval, entire or rarely with a basal lobe. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and sometimes axillary. Involucre wanting, rarely of a single linear bract. Involucre wanting. Rays few, spreading-ascending to spreading, the fertile much exceeding the sterile. Pedicels very slender, spreading, the fertile much exceeding the sterile. Flowers yellow; calyx-teeth minute; styles short, spreading, the stylopodium lacking. Carpophore 2-cleft to the base. Fruit oblong-ovoid to nearly orbicular, flattened dorsally, glabrous; dorsal ribs filiform, the lateral broadly corky-winged, the wings narrower than the body, those of the two carpels contiguous; oil-tubes usually solitary in the intervals, 2-4 on the commissure; seed very oily, flattened dorsally in cross section, the face plane.

Type species, *Pseudotaenidia montana* Mackenzie.

1. *Pseudotaenidia montana* Mackenzie, *Torreyia* 3: 159. 1903.

Peucedanum Pseudotaenidia K.-Pol. Bull. Soc. Nat. Mosc. II, 29: 180. 1916.

Plants 5-7 dm. high; leaves deltoid in general outline, excluding the petioles 6-12 cm. long, the leaflets oblong-oval to oval, 2-3.5 cm. long, 5-20 mm. broad, acute and mucronate at the apex, rounded to narrowed at the base, entire or rarely with a basal lobe; petioles 1.5-12 cm. long; peduncles 8-18 cm. long; fertile rays 5-14, slender, 1.5-8 cm. long; fertile pedicels 1-7, 3-15 mm. long; fruit oblong-ovoid to nearly orbicular, 4-7 mm. long, 3-4 mm. broad.

TYPE LOCALITY: Kate's Mountain, White Sulphur Springs, West Virginia, *K. K. Mackenzie*.

DISTRIBUTION: Shale barrens; southern Pennsylvania and Maryland to Virginia and West Virginia (*Davis & Davis 3167, Core 4900*).

ILLUSTRATION: Britt. & Brown, Ill. Fl. ed. 2. 2: 631.

86. *LOMATIUM* Raf. Jour. de Phys. 89: 101. 1819.

Cogswellia Spreng, in R. & S. Syst. Veg. 6: 588. 1820.

Euryptera Nutt.; T. & G. Fl. N. Am. 1: 629. 1840.

Leptotaenia Nutt.; T. & G. Fl. N. Am. 1: 629. 1840.

Leibergeria Coult. & Rose, Contr. U. S. Nat. Herb. 3: 575. 1896.

Cynomarathrum Nutt.; Coult. & Rose, Contr. U. S. Nat. Herb. 7: 244. 1900.

Cusickia M. E. Jones, Contr. W. Bot. 12: 39. 1908.

Peucedanum and *Ferula* of American authors, not of L. 1753.

Low or tall, herbaceous, acaulescent, short-caulescent, or caulescent, simple or less commonly branching, glabrous to pubescent, perennials, from globose tubers, or from long, slender or thickened, subfusiform roots. Leaves all or chiefly basal, petiolate, membranaceous to subcoriaceous, ternately, pinnately, quinately, or ternate-pinnately divided or decomposed, the ultimate divisions obovate to filiform, crowded or remote, entire or usually variously toothed, lobed, or divided. Petioles sheathing at least at the base, and frequently throughout. Inflorescence of loose compound umbels; peduncles usually solitary and terminal, equaling or exceeding the leaves, occasionally also lateral. Involucre wanting, or inconspicuous. Involucel rarely wanting, of filiform to obovate, foliaceous to subscarious, distinct or connate bractlets. Rays numerous to few, spreading to ascending or strict, rarely reflexed, the central umbellets often sterile and short-rayed. Pedicels slender and filiform to short and stout, or rarely obsolete, the central flowers often sterile, sessile or pedicellate. Flowers yellow, salmon-yellow, greenish-white, white, or purple; petals oblanceolate to obovate with a narrower inflexed apex; calyx-teeth obsolete, or small; styles slender, the stylopodium lacking. Carpophore 2-cleft to the base. Fruit linear to orbicular or obovate, flattened dorsally, glabrous, roughened, or pubescent; dorsal ribs filiform or obsolete, the lateral with membranaceous or corky wings, these broader than the body to much narrower, rarely obsolete; oil-tubes small or large, solitary to numerous in the intervals, 2-several on the commissure, or sometimes obscure; seed flattened dorsally in cross section, the face plane to slightly concave.

Type species, *Lomatium villosum* Raf. (*L. foeniculaceum* Coult. & Rose).

Peduncles not conspicuously inflated at the apex, slender or uniformly fistulose, the rays sometimes dilated into a prominent disc.

Fruit more or less deeply emarginate at each end, the wings distinct on each side of the body; leaflets mostly broad in outline. KEY 1.

Fruit not emarginate or scarcely so, the wings more or less joined above and below the body; leaflets mostly narrow.

Plants mostly low, from globose or somewhat elongate or irregular tubers; leaves mostly small. KEY 2.

Plants usually stouter, from more or less thickened elongate tap-roots, sometimes with a very deep-seated tuber.

Leaves decomposed, dissected into numerous small divisions.

Ovaries and young (sometimes mature) fruit variously pubescent or roughened. KEY 3.

Ovaries and fruit glabrous.

Bractlets absent. KEY 4.

Bractlets present. KEY 5.

Leaves with mostly few or large divisions, ternately or pinnately divided, the divisions mostly remote. KEY 6.

Peduncles conspicuously swollen and inflated at the apex. 78. *L. nudicaule*.

KEY 1.

Leaf-segments not pinnatifid, merely toothed or sometimes 3-lobed.

Leaves 1-2-ternate; wings thickened, much broader than the body; oil-tubes solitary in the intervals; southern California.

Leaves ternate-pinnate; wings thin, about equaling or broader than the body; oil-tubes 1-3 in the intervals.

Fruit broadly oval; plants mostly low; Napa and Lake counties, California.

Fruit suborbicular; plants mostly taller; southern Oregon and adjacent California.

Leaf-segments pinnatifid, usually incised.

Leaf-blades small, mostly equaling or shorter than the petioles; fruit 7-10 mm. long; California mainland.

Leaf-divisions not acerose-tipped; wings broader than the body; Monterey and San Luis Obispo counties, California.

Foliage green; rays 0.8-2.5 cm. long; pedicels 3-6 mm. long.

Foliage pale; rays 3-6.5 cm. long; pedicels 7-17 mm. long.

Leaf-divisions acerose-tipped; wings less than half as wide as the body; eastern slope of the Sierra Nevada, Inyo County, California.

Leaf-blades large, longer than the petioles; fruit 12-15 mm. long; San Nicolas Island, California.

1. *L. lucidum*.2. *L. repostum*.3. *L. Howellii*.4. *L. parvifolium*.4a. *L. parvifolium* var. *pallidum*.6. *L. rigidum*.5. *L. insulare*.

KEY 2.

Ovaries and fruit variously pubescent.

Flowers white or purple; bractlets absent or setaceous.

Flowers yellow; bractlets distinct and obovate, or connate.

Tuber deep-seated, oblong; bractlets united nearly to the apex; fruit ovate, sessile or subsessile; oil-tubes obsolete.

Tuber globose or occasionally elongate; bractlets distinct, obovate, scarious-margined; fruit oblong; pedicels 2-4 mm. long; oil-tubes prominent.

Ovaries and fruit glabrous.

Involucel absent or inconspicuous.

Flowers yellow; pedicels prominent, 4-25 mm. long.

Plants caulescent, alternately branched above; pedicels 4-15 mm. long.

Plants glabrous; lower leaves ternate-pinnate; fruit oblong, 8-10 mm. long.

Plants puberulent; lower leaves 2-3-pinnate; fruit ovate-oblong, 6-7 mm. long.

Plants acaulescent, unbranched; pedicels 15-25 mm. long.

Flowers white; pedicels short or obsolete, up to 2 mm. long.

Involucel of conspicuous bractlets.

Leaflets few; fruit linear, 1-1.5 mm. broad, constricted toward the apex; wings almost obsolete.

Leaflets several to many; fruit ovate to linear-oblong, 2-6 mm. broad, not constricted above; wings evident.

Bractlets linear to linear-lanceolate, sometimes more or less connate.

Leaflets filiform to linear, mostly elongate, up to 8 cm. long; flowers white or yellow.

Flowers yellow; oil-tubes solitary in the intervals.

Flowers white; oil-tubes several in the intervals.

Bractlets distinct; pedicels lax, 6-17 mm. long.

Bractlets more or less connate; pedicels suberect, 2-5 mm. long.

Leaflets short-linear, up to 1 cm. long; flowers white.

Rays 2-6; fruit oblong-oval; wings corky, homochromous with the brown body.

Rays 12-17; fruit linear-oblong; wings membranaceous, lighter-colored than the body.

Bractlets obovate, sometimes connate.

Plants acaulescent; oil-tubes 2-4 in the intervals.

Plants caulescent; oil-tubes solitary in the intervals.

7. *L. Gormanii*.15. *L. Watsonii*.19. *L. Cous.*17. *L. ambiguum*.18. *L. Rollinsii*.11. *L. Hamblenae*.8. *L. Piperi*.9. *L. oregonioides*.16. *L. leptocarpum*.10. *L. farinosum*.12. *L. Geyeri*.13. *L. Hendersonii*.14. *L. Canbyi*.20. *L. montanum*.21. *L. circumdatum*.

KEY 3.

Bractlets oblanceolate to obovate.

Plants scabrous or roughened; umbels 10-25-rayed; wings equaling the body.

Plants glabrous or pubescent, not scabrous nor roughened; umbels 5-13-rayed; wings mostly broader than the body.

Mature fruit glabrous.

Mature fruit papillate.

22. *L. vaginatum*.23. *L. utriculatum*.23a. *L. utriculatum* var. *papillatum*.

- Bractlets mostly linear, never obovate, sometimes reduced to a sheath.
 Young fruit granulate-roughened, not pubescent.
 Plants caulescent; peduncles numerous; fertile rays 5-14; Montana and Idaho.
- Plants acaulescent; peduncles solitary to few; fertile rays 1-3; southern Oregon and northern California.
- Young fruit variously pubescent, not granulate-roughened.
 Bractlets with a conspicuous scarious margin, never tomentose nor villous.
 Bractlets not conspicuously scarious-margined, more or less tomentose or villous.
- Plants acaulescent, usually low, up to 3 or rarely 5 dm. high.
 Plants more or less villous throughout; petioles shorter than the leaf-blades.
 Petioles 1-2.5 cm. long, usually sheathing throughout; flowers yellow, tinged with purple; Great Basin.
- Petioles 3-8 cm. long, sheathing about to the middle; flowers yellow; Great Plains.
- Plants hoary-pubescent, never villous; petioles longer than the leaf-blades; deserts of California and adjacent Nevada.
- Plants short-caulescent, rarely acaulescent, mostly higher, up to 5 dm. high.
 Petals glabrous; fruit narrowly oblong, sparingly pubescent with long hairs.
 Petals tomentose; fruit ovate-oblong to orbicular, densely pubescent.
 Pedicels mostly longer than the fruit; wings broader than the body, membranaceous, thinly pubescent to glabrate.
 Pedicels mostly shorter than the fruit; wings narrower than or equaling the body, somewhat thickened, tomentose.
44. *L. Sandbergii*.
 31. *L. Peckianum*.
 32. *L. nevadense*.
 34. *L. MacDougali*.
 36. *L. foeniculaceum*.
 40. *L. mohavense*.
 42. *L. macrocarpum*.
 39. *L. dasycarpum*.
 41. *L. tomentosum*.
 46. *L. Engelmannii*.
 43. *L. Congdoni*.
 45. *L. Torreyi*.
 47. *L. angustatum*.
 47a. *L. angustatum* var. *flavum*.
- KEY 4.
- Foliage and peduncles pubescent to glabrate; umbels 2-7-rayed; northern California.
- Foliage and peduncles glabrous, rarely scaberulous; umbels 5-16-rayed.
 Flowers white; pedicels 6-10 mm. long; central Sierra Nevada foothills, California.
- Flowers creamy-white to yellow; pedicels less than 6 mm. long, except in *L. angustatum* var. *flavum*.
- Leaf-divisions filiform, 3-8 mm. long; southern Sierra Nevada, California.
- Leaf-divisions ovate, 1-2 mm. long; Cascade Mountains and Coast Ranges, British Columbia to Oregon.
- Flowers creamy-white; pedicels 1-6 mm. long.
 Flowers lemon-yellow; pedicels 8-16 mm. long.
- KEY 5.
- Bractlets obovate, sometimes connate.
 Plants usually with several cauline leaves; wings broader than the body, the dorsal ribs obsolete.
- Fruit ovate to obovate, 9-15 mm. long; calyx-lobes prominent in the young fruit.
- Fruit oblong to ovate, 5-11 mm. long; calyx-lobes obsolete.
- Plants without or with a single cauline leaf; wings narrower than the body, or if broader, the dorsal ribs evident.
- Plants glabrous or slightly pubescent; flowers yellow (or if purple, the plants of the western Sierra Nevada).
- Plants caespitose; leaflets crowded; montane Montana to north-eastern Oregon.
- Plants not caespitose; leaflets distinct; California and western Oregon.
- Leaves broadly ovate to obovate; fertile rays 6-15.
- Leaves oblong to ovate; fertile rays 2-5.
 Bractlets entire or toothed; leaf-divisions elongate, up to 60 mm. long; California.
- Bractlets 1-3-ternately lobed; leaf-divisions shorter, up to 8 mm. long; Willamette Valley, Oregon.
- Plants scaberulous to densely pubescent; flowers white or purple (or if yellow, the plants of the northern Coast Ranges of California).
- Flowers purple or yellow; leaves ternate, then 1-2-pinnate; northern Coast Ranges of California.
- Leaves 3-7 cm. long, the ultimate divisions oblong to ovate, with oblong to ovate lobes 1-5 mm. long; peduncles 7-14 cm. long; pedicels 2-4 mm. long; fruit-wings thickish.
24. *L. Vaseyi*.
 23. *L. utriculatum*.
 20. *L. montanum*.
 28. *L. caruifolium*.
 29. *L. humile*.
 30. *L. Bradshawii*.
 25. *L. ciliolatum*.

- Leaves 6-13 cm. long, the ultimate divisions or lobes linear, 1-10 mm. long; peduncles 8-25 cm. long; pedicels 3-8 mm. long; fruit-wings thin.
- Flowers white; leaves tripinnate; Great Basin, Rocky Mountains, and Great Plains.
- Plants softly puberulent; bractlets distinct; rays subequal; Great Plains and eastern foothills of the Rocky Mountains.
- Plants pubescent; bractlets connate, sometimes reduced; rays unequal; Great Basin.
- Wings narrower than the body; dorsal ribs inconspicuous.
- Wings broader than the body; dorsal ribs conspicuous.
- 25a. *L. ciliolatum* var. *Hooveri*.
38. *L. orientale*.
- 32a. *L. nevadense* var. *Parishii*.
- 32b. *L. nevadense* var. *pseudorientale*.
- Bractlets filiform to linear-lanceolate, rarely oblanceolate-acuminate, never obovate.
- Bractlets more or less tomentose or villous.
- Flowers white; bractlets distinct, equaling to greatly exceeding the flowers.
- Wings narrower than or equaling the body.
- Wings broader than the body.
42. *L. macrocarpum*.
- 42a. *L. macrocarpum* var. *ellipticum*.
37. *L. daucifolium*.
- Flowers yellow; bractlets connate to above the middle, equaling the flowers.
- Bractlets glabrous or minutely and sparingly roughened.
- Fruit 12-16 mm. long, 6-10 mm. broad, the wings very narrow and corky-thickened.
- Fruit subsessile; pedicels shorter than the sterile flowers.
- Fruit pedicellate; pedicels exceeding the sterile flowers.
48. *L. dissectum*.
- 48a. *L. dissectum* var. *multifidum*.
- Fruit 5-13 mm. long, 3-7 mm. broad, the wings thin and membranaceous.
- Plants more or less pubescent.
- Flowers yellow; plants mostly low, less than 3 dm. high; Great Basin.
- Bractlets distinct; pedicels 5-10 mm. long; wings about half as broad as the body; oil-tubes several in the intervals.
- Bractlets connate at the base; pedicels 4-6 (rarely 10) mm. long; wings nearly as broad as the body; oil-tubes solitary in the intervals.
- Fruit oblong to oblong-ovate, 9-13 mm. long.
35. *L. juniperinum*.
- Fruit ovate, 8 mm. long.
- 33a. *L. Plummerae* var. *Sonnei*.
- 33b. *L. Plummerae* var. *Austinae*.
- Flowers white; plants usually taller, up to 4.5 dm. high.
- Plants soft-puberulent; rays subequal; Great Plains and eastern foothills of the Rocky Mountains.
- Plants pubescent; rays unequal; Great Basin.
- Wings narrower than the body; dorsal ribs inconspicuous.
- Wings broader than the body; dorsal ribs conspicuous.
38. *L. orientale*.
- 32a. *L. nevadense* var. *Parishii*.
- 32b. *L. nevadense* var. *pseudorientale*.
- Plants glabrous or occasionally scaberulous, never pubescent; flowers yellow or purple.
- Plants acaulescent or with a pseudoscape.
- Peduncles stout, fistulose; pedicels 15-25 mm. long; fruit 16-24 mm. long, 8-12 mm. broad.
- Peduncles slender; pedicels 3-22 mm. long; fruit 5-7 mm. long, 3-8 mm. broad.
- Leaf-divisions lanceolate to oblanceolate, minutely papillose above; bractlets finely puberulent; Snake River drainage.
- Leaf-divisions filiform, linear, or linear-oblong, glabrous or scaberulous; bractlets glabrous, rarely slightly scaberulous.
- Leaves oblong to ovate, 4-10 cm. long; fruit 3-5 mm. broad.
- Fertile rays 8-30; pedicels 3-15 mm. long.
- Fruit ovate to ovate-oblong, 4-5 mm. broad, the wings less than half as wide as the body; foliage grayish; northern Great Basin.
- Fruit oblong, 3 mm. broad, the wings about half as wide as the body; foliage green and shining; western Oregon.
49. *L. columbianum*.
55. *L. serpentinum*.
56. *L. Donnellii*.
66. *L. Hallii*.

- Fertile rays 1-6; pedicels 1-5 mm. long. 26. *L. Tracyi*.
 Leaves obovate, 6-26 cm. long; fruit 5-8 mm. broad.
 Leaf-divisions rather remote, elongate, up to 80 mm. long; petioles wholly sheathing or nearly so; bractlets scarious-margined; California. 27. *L. marginatum*.
 Leaf-divisions crowded, shorter, up to 11 mm. long; petioles sheathing only at the base; bractlets not scarious-margined; Rocky Mountains and Great Basin. 50. *L. Grayi*.
 Plants short-caulescent.
 Leaf-divisions remote, mostly elongate, up to 8 cm. long. 27. *L. marginatum*.
 Leaf-divisions crowded, shorter, up to 11 mm. long.
 Petioles wholly sheathing; fruit acute at the apex; east-central California and adjacent Nevada. 33. *L. Plummerae*.
 Petioles partially sheathing; fruit rounded at the apex.
 Bractlets sparingly hispid; southwestern Oregon. 57. *L. Nelsonianum*.
 Bractlets glabrous; Columbia Plateau and Great Basin.
 Peduncles stout, fistulose; rays stout. 52. *L. minus*.
 Peduncles slender; rays slender.
 Foliage glaucous; rays divergent in fruit; flowers purple.
 Leaflets linear, herbaceous; anthers yellow. 53. *L. tuberosum*.
 Leaflets lanceolate to ovate, rigid, cuspidate; anthers purple. 54. *L. cuspidatum*.
 Foliage green or gray-green, not glaucous; rays spreading-ascending in fruit; flowers yellow or salmon-yellow.
 Fruit-wings thick, corky, homochromous with the body; flowers salmon-yellow. 51. *L. salmoniflorum*.
 Fruit-wings thin, membranaceous, rarely obsolete, lighter-colored than the body; flowers yellow. 50. *L. Grayi*.

KEY 6.

- Plants acaulescent or short-caulescent; leaves 1-2-pinnate, rarely 3-pinnate.
 Foliage variously pubescent. 59. *L. oregonum*.
 Ovaries and fruit pubescent. 58. *L. minimum*.
 Ovaries and fruit glabrous.
 Leaves pinnate; plants less than 1 dm. high.
 Leaves mostly 2-3-pinnate; plants 1 dm. or more high.
 Plants caulescent, alternately branched above, puberulent; Oregon and Idaho. 18. *L. Rollinsii*.
 Plants acaulescent, unbranched, scaberulous; Colorado and Utah.
 Pedicels 6-17 mm. long; wings equaling or broader than the body; southwestern Colorado. 61. *L. Eastwoodae*.
 Pedicels 2(?) - 9 mm. long; wings less than half as broad as the body; southwestern Utah. 62. *L. scabrum*.
 Foliage glabrous.
 Leaves 2-3-pinnate.
 Plants short-caulescent, 12-25 cm. high; bractlets foliaceous, ovate-lanceolate; fruit ovate, 5-8 mm. long. 63. *L. concinnum*.
 Plants acaulescent, 15-50 cm. high; bractlets linear; fruit oblong, 7-13 mm. long.
 Peduncles equaling or somewhat exceeding the leaves; pedicels 10-17 mm. long; wings equaling or somewhat broader than the body. 64. *L. Parryi*.
 Peduncles usually greatly exceeding the leaves; pedicels 3-7 mm. long; wings about half as broad as the body.
 Leaf-divisions remote, 10-50 mm. long; plants tall, stout. 65. *L. Nuttallii*.
 Leaf-divisions crowded, 1-4 mm. long; plants low, slender.
 Leaves bipinnate, the pinnae few, remote. 50a. *L. Grayi* var. *depauperatum*.
 Leaves tripinnate, the pinnae many, crowded. 66. *L. Hallii*.
 Leaves pinnate, rarely bipinnate.
 Plants less than 1 dm. high; leaf-blades less than 2.5 cm. long.
 Plants acaulescent, 1-3.5 cm. high; rays 3-12 mm. long; southwestern Utah. 58. *L. minimum*.

- Plants caulescent with one cauline leaf, 5-8 cm. high; rays 1.5-2 mm. long; Wallowa Mountains, Oregon.
- Plants more than 1 dm. high; leaf-blades more than 2.5 cm. long.
- Leaflets ovate, crowded; fruit 13-16 mm. long; high Cascade Mountains, Oregon.
- Leaflets linear to lanceolate, remote; fruit less than 12 mm. long; mountains of the Great Basin.
- Umbel 3-6-rayed; pedicels 4-10 mm. long.
- Umbels 4-11-rayed; pedicels 1-4 mm. long.
- Leaf-divisions lanceolate, 2-6 mm. broad; central rays sterile.
- Leaf-divisions linear, about 1 mm. broad; central rays fertile.
- Plants mostly caulescent, tall; leaves ternately-pinnately or quinately-pinnately divided.
- Plants variously pubescent.
- Ovaries and young fruit glabrous.
- Leaf-divisions linear; fruit 7-14 mm. long.
- Leaves biternate; bractlets shorter than the pedicels; fruit 7-14 mm. broad, the wings equaling or broader than the body.
- Leaves ternate-pinnate; bractlets equaling the pedicels; fruit 3-5 mm. broad, the wings narrower than the body.
- Leaf-divisions ovate-lanceolate to obovate; fruit 13-22 mm. long.
- Ovaries and young fruit pubescent.
- Leaves biternate; wings equaling or broader than the body.
- Leaves ternate-pinnate; wings narrower than the body.
- Leaf-divisions elongate, up to 14.5 cm. long.
- Leaf-divisions shorter, up to 2.2 cm. long.
- Plants low, up to 3.5 dm. high; pedicels 1-4 mm. long; fruit 6-8 mm. long.
- Plants 9-21 dm. high; pedicels 6-17 mm. long; fruit 24-28 mm. long.
- Plants glabrous, or rarely slightly scaberulous, never pubescent.
- Plants 9-21 dm. high; fruit 15-32 mm. long.
- Plants 1-12 dm. high; fruit 6-15 mm. long.
- Plants 3-12 dm. high; leaf-divisions cuneate to obovate, 5-40 mm. broad, glaucous; southern Oregon and California.
- Plants 1-4 dm. high; leaf-divisions filiform to oblong or oblanceolate, 0.5-8 mm. broad, not glaucous; Idaho and Montana to central and eastern Washington and Oregon.
- Stems simple or occasionally few-branched; leaf-divisions filiform to oblong.
- Flowers white or purplish; involucrel about equaling the flowers; pedicels 2-6 mm. long.
- Flowers yellow; involucrel wanting or inconspicuous; pedicels 4-15 mm. long.
- Leaves ternate-pinnate or partially biternate, the leaflets few; rays 3-7; fruit 10-12 mm. long, 3-4 mm. broad.
- Leaves ternate, then 2-3-pinnate, the leaflets numerous; rays 9-20; fruit 6-10 mm. long, 4-6 mm. broad.
- Stems few-branched; leaf-divisions linear-lanceolate to oblanceolate; fruit usually reflexed.
60. *L. Greenmannii*.
67. *L. Martindalei*.
- 65a. *L. Nuttallii* var. *alpinum*.
68. *L. latilobum*.
69. *L. megarrhizum*.
70. *L. simplex*.
71. *L. triternatum*.
71. *L. triternatum* var. *anomalum*.
- 70a. *L. simplex* var. *leptophyllum*.
- 71b. *L. triternatum* var. *macrocarpum*.
- 71c. *L. triternatum* var. *brevifolium*.
- 75a. *L. Suksdorfii* var. *Thompsonii*.
75. *L. Suksdorfii*.
77. *L. californicum*.
72. *L. Cusickii*.
73. *L. idahoense*.
74. *L. laevigatum*.
76. *L. Brandegei*.

1. *Lomatium lucidum* (Nutt.) Jepson, Econ. Pl. Calif. 119. 1924.

- Euryptera lucida* Nutt.; T. & G. Fl. N. Am. 1: 629. 1840.
- Peucedanum Euryptera* A. Gray, Proc. Am. Acad. 7: 348. 1868.
- Peucedanum Hassei* Coult. & Rose, Bot. Gaz. 14: 276. 1889.
- Euryptera Hassei* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 242. 1900.
- Cogsuwellia lucida* M. E. Jones, Contr. W. Bot. 12: 31. 1908.
- Cogsuwellia Hassei* M. E. Jones, Contr. W. Bot. 12: 31. 1908.

Plants short-caulescent, 2.6-5 dm. high, from a long slender taproot, glabrous; leaves ovate-oblong to obovate in general outline, excluding the petioles 4.5-9 cm. long, 1-2-ternate, the ultimate divisions deltoid to cuneate, 15-70 mm. long, 10-65 mm. broad, entire or 3-lobed,

regularly and sharply dentate; petioles 2.5–14 cm. long, sheathing below; peduncles stout, exceeding the leaves; involucl of linear-lanceolate, acuminate, distinct or somewhat connate bractlets, about equaling the flowers; rays 10–20, spreading, 2–8.5 cm. long; pedicels 7–17 mm. long, the umbellets about 20-flowered; flowers yellow; fruit suborbicular to broadly elliptic, 6–15 mm. long, 5–15 mm. broad, emarginate especially at the base, the wings thick, broader than the body; oil-tubes solitary in the intervals, 2–4 on the commissure.

TYPE LOCALITY: "Woods of San Diego," California, *Nuttall*.

DISTRIBUTION: Coast Ranges of southern California (*Constance & Peirson 2851, Ewan 4173*).

ILLUSTRATIONS: Torr. Bot. Mex. Bound. Surv. *pl. 27*; Contr. U. S. Nat. Herb. 7: 241 (fr.); Armstrong, Field Book W. Wild Fl. 333; Madroño 1: 150; Jepson, Man. Fl. Pl. Calif. 720.

2. *Lomatium repostum* (Jepson) Mathias, Ann. Mo. Bot. Gard.

25: 237. 1937.

Lomatium lucidum var. *repostum* Jepson, Madroño 1: 149. 1924.

Plants acaulescent, 1.5–3.6 dm. high, from a long, slender, sometimes branching taproot, glabrous; leaves broadly ovate in general outline, excluding the petioles 5–15 cm. long, 1–2-ternate or ternate-pinnate, the ultimate divisions ovate to subflabellate, 1–4 cm. long, 1–6 cm. broad, regularly and sharply dentate, rarely shallowly lobed; petioles 3–17 cm. long, shortly sheathing below; peduncles exceeding the leaves; involucl of lanceolate, subacuminate, dimidiate bractlets, usually connate below, about equaling the flowers; rays 8–20, spreading, 3–8 cm. long; pedicels 8–12 mm. long, the umbellets about 20-flowered; flowers greenish-yellow; fruit broadly oval, 10–15 mm. long, 7–12 mm. broad, emarginate at base and apex, the wings thin, about equaling to much broader than the body; oil-tubes 1–3 in the intervals, 4–6 on the commissure.

TYPE LOCALITY: "Near Collin's Spring, Vaca Mountains," California, *Jepson*.

DISTRIBUTION: Inner Coast Ranges, northern Napa and southern Lake counties, California (*Howell 5358, Mathias 1293, 1319*).

3. *Lomatium Howellii* (S. Wats.) Jepson, Fl. Calif. 2: 637. 1936.

Peucedanum Howellii S. Wats. Proc. Am. Acad. 20: 369. 1885.

Euryptera Howellii Coult. & Rose, Contr. U. S. Nat. Herb. 7: 243. 1900.

Cogswellia Howellii M. E. Jones, Contr. W. Bot. 12: 31. 1908.

Plants acaulescent or short-caulescent, 2.5–4 dm. high, from a long slender branching taproot, glabrous; leaves obovate in general outline, excluding the petioles 4.5–11 cm. long, ternate, then 1–2-pinnate, the ultimate divisions deltoid, 10–25 mm. long, 8–30 mm. broad, entire to 3-lobed, sharply and regularly dentate; petioles 2.5–7.5 cm. long, sheathing below; peduncles exceeding the leaves; involucl of several lanceolate to filiform bractlets, about equaling the flowers; rays 10–15, spreading, 2.5–5.5 cm. long; pedicels 8–12 mm. long, the umbellets about 20-flowered; flowers yellow; fruit suborbicular, 7–11 mm. long, 7–11 mm. broad, deeply emarginate at base and apex, the wings about equaling the body; oil-tubes 2 or 3 in the intervals, 9 on the commissure.

TYPE LOCALITY: Near Waldo, Josephine County, Oregon, *Howell*.

DISTRIBUTION: Southwestern Oregon and adjacent California (*Howell 241, 302, 1153, Thompson 4610*).

ILLUSTRATION: Contr. U. S. Nat. Herb. 7: 243 (fr.).

4. *Lomatium parvifolium* (H. & A.) Jepson, Madroño 1: 150. 1924.

Ferula parvifolia H. & A. Bot. Beech. Voy. 348. 1838.

Peucedanum parvifolium T. & G. Fl. N. Am. 1: 628. 1840.

Peucedanum californicum Coult. & Rose, Bot. Gaz. 13: 143. 1888. Not *P. californicum* Nutt. 1840.

Euryptera parvifolia Coult. & Rose, Contr. U. S. Nat. Herb. 7: 241. 1900.

Cogswellia parvifolia K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 177. 1916.

Plants short-caulescent, 1.5–4 dm. high, from a long taproot, glabrous; leaves oblong in general outline, excluding the petioles 3–10 cm. long, ternate (rarely with confluent leaflets), then 1–2-pinnate, the ultimate divisions lanceolate to cuneate, 8–24 mm. long, 7–15 mm. broad,

irregularly and sharply pinnatifid-incised; petioles 3-15 cm. long, shortly sheathing below, purplish; peduncles exceeding the leaves; involucre of linear-lanceolate to filiform bractlets, about equaling the flowers; rays 8-14, spreading, 0.8-2.5 cm. long, subequal; pedicels 3-6 mm. long, the umbellets 14-20-flowered; flowers yellow; fruit orbicular to oblong, 7-10 mm. long, 6-10 mm. broad, emarginate at base and apex, the wings broader than the body; oil-tubes 1 or 2 (mostly 1) in the dorsal intervals, 2 or 3 in the lateral, 4-6 on the commissure.

TYPE LOCALITY: California, probably near Monterey, Douglas.

DISTRIBUTION: Coastal, Monterey County to San Luis Obispo County, California (Heller 6735, 8420).

4a. *Lomatium parvifolium* var. *pallidum* (Coulter & Rose) Jepson,
Madroño 1: 150. 1924.

Euryptera pallida Coulter & Rose, Contr. U. S. Nat. Herb. 7: 242. 1900.
Cogswellia pallida M. E. Jones, Contr. W. Bot. 12: 31. 1908.

Foliage paler; rays 3-6.5 cm. long; pedicels 7-17 mm. long.

TYPE LOCALITY: Santa Lucia Mountains, California, Vasey 232.

DISTRIBUTION: San Luis Obispo and Monterey counties, California.

5. *Lomatium insulare* (Eastw.) Munz, Man. S. Calif. Bot.
358. 1935.

Pucedanum insulare Eastw. Proc. Calif. Acad. III. 1: 106. 1898.
Euryptera insularis Coulter & Rose, Contr. U. S. Nat. Herb. 7: 243. 1900.
Cogswellia insularis M. E. Jones, Contr. W. Bot. 12: 31. 1908.

Plants acaulescent, 1-4 (?) dm. high, from a long stout taproot, glabrous; leaves ovate to obovate in general outline, excluding the petioles 6-9 cm. long, 2-3-ternate to biquinate, then pinnate, the ultimate divisions oblong to ovate-oblong, cuneate, 4-14 mm. long, 2-8 mm. broad, irregularly pinnatifid; petioles 2.5-3 cm. long, sheathing below; peduncles stout, exceeding the leaves; involucre of filiform bractlets, exceeding the flowers; rays 15-20, spreading, 3.5-8 cm. long, subequal; pedicels 6-12 mm. long, the umbellets many-flowered; flowers yellow; fruit oblong-ovate, 12-15 mm. long, 7-10 mm. broad, emarginate at base and apex, the wings thick, about equaling the body; oil-tubes 2 in the intervals, 4 on the commissure, rarely 1 in the wings.

TYPE LOCALITY: "Sand cliffs overhanging briny arroyos, San Nicholas Island," California, Trask.

DISTRIBUTION: Known only from the type locality (Howell 8207, Trask 51).

ILLUSTRATION: Proc. Calif. Acad. III. 1: pl. 8.

6. *Lomatium rigidum* (M. E. Jones) Jepson, Fl. Calif. 2:
637. 1936.

Cogswellia rigida M. E. Jones, Contr. W. Bot. 13: 11. 1910.

Plants acaulescent or short-caulescent, 2.5-4 dm. high, from a cluster of dried leaf-sheaths, glabrous; leaves oblong in general outline, excluding the petioles 8-12 cm. long, bipinnate (the lower leaflets elongate, appearing ternate), the ultimate divisions ovate to cuneate, 10-20 mm. long, 5-10 mm. broad, sharply pinnatifid, the lobes with acerose or spinulose teeth; petioles 5-10 cm. long, shortly sheathing below; peduncles exceeding the leaves; involucre of conspicuous, lanceolate, acuminate bractlets, about equaling the pedicels, reflexed in fruit; rays 10-20, spreading, 2.5-5 cm. long, subequal; pedicels 5-10 mm. long; flowers yellow; calyx-teeth conspicuous especially in the young fruit; fruit ovate to oblong, 7-9 mm. long, 5-7 mm. broad, emarginate at the base, rounded at the apex, the wings less than one-half the width of the body; oil-tubes 3 in the intervals, about 6 on the commissure.

TYPE LOCALITY: "Rocky point north of the town," Big Pine, Inyo County, California, 4000 ft., Hall & Chandler 7225.

DISTRIBUTION: Eastern slope of the Sierra Nevada, Inyo County, California (Austin 447a, Alexander & Kellogg 2546, 2546a).

7. *Lomatium Gormanii* (Howell) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 208. 1900.

Peucedanum Gormanii Howell, Fl. NW. Am. 1: 252. 1 Ap 1898.

Peucedanum confusum Piper, Erythraea 6: 29. 10 Ap 1898.

Cogswellia Gormanii M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Lomatium Gormanii f. *purpureum* St. John; St. John et al. Proc. Biol. Soc. Wash. 41: 196. 1928.

Plants acaulescent, 1-1.5 dm. high, from a shallow globose tuber up to 2.5 cm. in diameter, covered with fascicles of rootlets; leaves broadly oblong in general outline, excluding the petioles 3-5.5 cm. long, ternate, then 1-2-pinnate, the ultimate divisions oblong to linear, 2-13 mm. long, about 1 mm. broad, acute, glabrous or sparingly puberulent; petioles 2.5-7 cm. long, scarios, sheathing throughout; peduncles exceeding the leaves, glabrous or sparingly puberulent; involucrel wanting, or of a few setaceous, scarios-margined bractlets, exceeding the pedicels; rays 4-10, 0.6-3 cm. long, unequal; pedicels 0.5-3 mm. long, the umbellets 10-20-flowered; flowers white or rarely rose-purple, the anthers purple; fruit ovate, 5-7 mm. long, 4-5 mm. broad, puberulent, the wings about one-half the width of the body; oil-tubes 3 or 4 in the intervals, 4-6 on the commissure.

TYPE LOCALITY: "High hills opposite the Dalles," probably Klickitat County, Washington, Howell.

DISTRIBUTION: Idaho to central and southeastern Washington and central Oregon (*Cusick 3411, Elmer 73*).

8. *Lomatium Piperi* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 211. 1900.

Cogswellia Piperi M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Plants acaulescent or short-caulescent, 1-2.5 dm. high, from a small, globose, sometimes deep-seated tuber, glabrous or the foliage puberulent; leaves oblong-ovate in general outline, excluding the petioles 3-7.5 cm. long, ternate, then tripinnate, the ultimate divisions remote, linear, 3-30 mm. long, 1-2 mm. broad, obtuse to acute; petioles 3.5-10 cm. long, sheathing below; peduncles exceeding the leaves; involucrel wanting, or of a few inconspicuous, linear bractlets, shorter than the flowers; rays 3-20, spreading, 1-6 cm. long, unequal; pedicels obsolete to less than 2 mm. long, the umbellets 6-13-flowered; flowers white, the anthers purple; fruit ovate to oblong, 5-9 mm. long, 3-4 mm. broad, the wings one-half the width of the body; oil-tubes 1-8 in the intervals, 2-4 on the commissure.

TYPE LOCALITY: Ellensburg, Spokane (Kittitas) County, Washington, *Vasey*.

DISTRIBUTION: Western Idaho and central Washington to northern California (*Cusick 1687, Thompson 8188*).

9. *Lomatium oregonioides* (Coult. & Rose) Mathias, Ann. Mo. Bot. Gard. 25: 242. 1937.

Leibergia oregonioides Coult. & Rose, Contr. U. S. Nat. Herb. 3: 575. 1896.

Cogswellia oregonioides M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Plants acaulescent, slender, 1-4 dm. high, from a globose tuber 6-12 mm. in diameter; leaves oblong in general outline, excluding the petioles 5-11 cm. long, 2-3-ternate, glabrous, the ultimate divisions few, filiform, 10-45 mm. long, 1-2 mm. broad, acute, minutely apiculate; petioles 2-7 cm. long, usually sheathing to about the middle; peduncles exceeding the leaves; involucrel of a few, linear, acute bractlets, exceeding the pedicels; rays 3-10, ascending, 3-15 cm. long, unequal, glabrous or sparsely scaberulous; pedicels 1-3 mm. long, the umbellets about 10-flowered; flowers white; fruit linear, 8-10 mm. long, 1-1.5 mm. broad, constricted toward the apex, the wings narrow to almost obsolete; oil-tubes small, solitary in the intervals, 2 on the commissure.

TYPE LOCALITY: Santianne Creek bottoms, Coeur d'Alene Mountains, Idaho, 950 m., *Leiberg 1027*.

DISTRIBUTION: Northern Idaho and northeastern Washington (*Suksdorf 8645*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 3: pl. 27: E. & P. Nat. Pfl. 3^e: 175 (fr.); Contr. U. S. Nat. Herb. 7: pl. 3.

10. *Lomatium farinosum* (Geyer) Coult. & Rose, Contr. U. S. Nat.
Herb. 7: 210. 1900.

Peucedanum farinosum Geyer; Hook. Lond. Jour. Bot. 6: 235. 1847.
Cogswellia farinosa M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Plants short-caulescent, 1.5-3 dm. high, from a globose tuber 1-2 cm. in diameter, glabrous; leaves oblong in general outline, excluding the petioles 4-10 cm. long, biternate, the ultimate divisions linear, 15-80 mm. long, 1-3 mm. broad, acute, narrowed toward the base; petioles 1-7 cm. long, sheathing at the base; peduncles exceeding the leaves; involucre of 1-few linear, acuminate, sometimes scarious, deciduous bractlets, shorter than the pedicels; rays 3-12, weak, ascending, 1-7 cm. long, unequal; pedicels 6-17 mm. long, the umbellets 12-15-flowered; flowers white; fruit linear-oblong, 5-6 mm. long, about 3 mm. broad, the wings narrow, about one-half the width of the body; oil-tubes several in the intervals.

TYPE LOCALITY: "On an isolated rock in the Coeur d'Alene Mountains on wet clay," Idaho, Geyer 325.

DISTRIBUTION: Western Idaho and eastern Washington (Heller & Heller 3036, Sandberg & Leiberger 131).

11. *Lomatium Hamblenae* Math. & Const. Bull. Torrey Club 69:
153. 1942.

Plants acaulescent or short-caulescent, 1-3.5 dm. high, from a globose tuber about 1.5 cm. in diameter, glabrous; leaves obovate in general outline, excluding the petioles 4-12 cm. long, 1-2-ternate, then pinnate or pinnately lobed, the ultimate divisions remote, linear, 5-23 mm. long, 1-3 mm. broad, acute, apiculate; petioles 2-5 cm. long, scarious or broadly scarious-margined, sheathing at the base; peduncles exceeding the leaves; involucre of a few inconspicuous, linear or lanceolate bractlets, distinct or connate, very much shorter than the pedicels; rays 2-8, ascending, 4-8 cm. long, unequal; pedicels 15-25 mm. long, the umbellets 10-15-flowered; flowers bright yellow; fruit oblong-ovate, 5-8 mm. long, 2-3 mm. broad, glabrous, the wings much narrower than the body.

TYPE LOCALITY: "On level scab-rock bench at Dry Falls, Grand Coulee," Washington, Frances G. Hamblen.

DISTRIBUTION: Central Washington (Hoover 5606, 5815).

12. *Lomatium Geyeri* (S. Wats.) Coult. & Rose, Contr. U. S. Nat.
Herb. 7: 209. 1900.

Peucedanum ambiguum sensu Hook. Lond. Jour. Bot. 6: 235. 1847. Not *P. ambiguum* Nutt. 1840.

Peucedanum Geyeri S. Wats. Bibl. Ind. 428. 1878.

Orogenia fusiformis var. *Leibergeri* Coult. & Rose, Rev. N. Am. Umbell. 92. 1888.

Peucedanum evittatum Coult. & Rose, Bot. Gaz. 14: 277. 1889.

Cogswellia Geyeri M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Orogenia Leibergerii Rydb. Fl. Rocky Mts. 611, 1064. 1917.

Plants acaulescent, 2-4.5 dm. high, from a shallow or deep-seated small tuber less than 1 cm. in diameter, glabrous; leaves ovate-oblong in general outline, excluding the petioles 7-9 cm. long, ternate, then pinnate, the ultimate divisions few, remote, linear, 10-50 mm. long, 1.5-3 mm. broad, apiculate; petioles 7-13 cm. long, purplish, shortly sheathing below; peduncles exceeding the leaves; involucre of linear-lanceolate, acuminate, scarious-margined, connate bractlets, about equaling the flowers; rays 5-20, spreading to ascending, 1-6 cm. long, unequal; pedicels 2-5 mm. long, the umbellets several-flowered; flowers white, the anthers purple; fruit ovate-oblong, 6-13 mm. long, 4-5 mm. broad, the wings narrower than the body; oil-tubes small, obscure, 2-6 in the intervals, about 6 on the commissure.

TYPE LOCALITY: "Sandy woods and plains, Upper Columbia River," Geyer 458.

DISTRIBUTION: Eastern British Columbia to central Washington (Thompson 9594, 10,499).

13. *Lomatium Hendersonii* Coult. & Rose, Contr. U. S. Nat.

Herb. 7: 209. 1900.

Peucedanum Hendersonii Coult. & Rose, Bot. Gaz. 13: 210. 1888.
Leptotaenia Leibergii Coult. & Rose, Contr. U. S. Nat. Herb. 7: 202. 1900.
Cogswellia Hendersonii M. E. Jones, Contr. W. Bot. 12: 33. 1908.
Leptotaenia Hendersonii Math. & Const. Bull. Torrey Club 68: 123. 1941.

Plants short-caulescent, 0.8–2.5 dm. high, from large, shallow, subglobose tubers, glabrous; leaves ovate in general outline, excluding the petioles 4–8 cm. long, ternate, then pinnate or bipinnate, the ultimate divisions linear, acute, 4–10 mm. long; petioles 2–5 cm. long, narrowly sheathing at the base; cauline leaves few, like the basal, the sheaths scarious and broadly dilated; peduncles exceeding the leaves; involucrel of a few lanceolate bractlets, shorter than the pedicels; rays 5–6, spreading to ascending, 0.5–3 cm. long, unequal; pedicels 2–7 mm. long, few fertile, the umbellets few-flowered; flowers "deep yellow" (appearing white in dried specimens); fruit oblong-oval, 4–8 mm. long, 3–4 mm. broad, glabrous, the wings much narrower than and homochromous with the body, slightly corky-thickened; oil-tubes minute, solitary in the intervals, usually 2 on the commissure.

TYPE LOCALITY: "On high hilltops, John Day Valley, Oregon," Howell.

DISTRIBUTION: Central to southeastern Oregon (*Leach 3695*).

ILLUSTRATION: Contr. U. S. Nat. Herb. 7: pl. 7.

14. *Lomatium Canbyi* Coult. & Rose, Contr. U. S. Nat. Herb. 7:

210. 1900.

Peucedanum Canbyi Coult. & Rose, Bot. Gaz. 13: 78. 1888.
Cogswellia Canbyi M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Plants acaulescent, 1.5–2 dm. high, from a thick, elongate rootstock ending in a globose tuber 1–2.5 cm. in diameter, glabrous; leaves oblong-ovate in general outline, excluding the petioles 7–9 cm. long, ternate, then bipinnate, the ultimate divisions distinct, linear, 4–5 mm. long, about 1 mm. broad, obtuse, mucronulate; petioles 4–6 cm. long, forming a conspicuous, scarious, purple-veined sheath; peduncles solitary, exceeding the leaves; involucrel of linear, acute to subacuminate bractlets, about equaling the flowers; rays 12–17, spreading, 2.7–5.5 cm. long, subequal; pedicels 8–12 mm. long, the umbellets 13–16-flowered; flowers white; fruit oval-oblong, 7–10 mm. long, 4–6 mm. broad, the wings narrower than the body; oil-tubes 1 or 2 in the intervals, 2–4 on the commissure.

TYPE LOCALITY: "High ridges, Eastern Oregon," Howell 67.

DISTRIBUTION: Western Idaho to central Washington and Oregon and northeastern California (*Cusick 1834*, Howell 1367).

15. *Lomatium Watsoni* Coult. & Rose, Contr. U. S. Nat. Herb. 7:

211. 1900.

Peucedanum Watsoni Coult. & Rose, Bot. Gaz. 13: 209. 1888.
Cogswellia Watsoni M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Plants acaulescent, 0.8–1.5 dm. high, from a deep-seated, solitary, oblong tuber with clusters of rootlets on its surface, puberulent; leaves oblong in general outline, excluding the petioles 1.5–3.5 cm. long, 2–4-pinnate, the ultimate divisions crowded, linear, 1–5 mm. long, about 0.5 mm. broad, apiculate; petioles 3–4.5 cm. long, scarious, partially or wholly sheathing; peduncles exceeding the leaves; involucrel of dimidiate scarious bractlets, connate to near the apex, about equaling the flowers; rays 1–9, ascending, 0.5–2.5 cm. long, unequal; pedicels obsolete to 1 mm. long, the umbellets many-flowered; flowers yellow; fruit ovate, 6–7 mm. long, about 3 mm. broad, puberulent, the wings less than one-half the width of the body; oil-tubes obscure, several in the intervals, about 6 on the commissure.

TYPE LOCALITY: "On denuded hilltops near Alkali, Oregon," Howell 830.

DISTRIBUTION: Central Washington to northeastern Oregon (*Thompson 11,416*).

16. *Lomatium leptocarpum* (T. & G.) Coult. & Rose, Contr. U. S.
Nat. Herb. 7: 213. 1900.

- Peucedanum triternatum* var. *leptocarpum* T. & G. Fl. N. Am. 1: 626. 1840.
Peucedanum leptocarpum Nutt.; T. & G. Fl. N. Am. 1: 626, as syn. 1840.
Peucedanum bicolor S. Wats. Bot. King's Expl. 129. 1871.
Peucedanum ambiguum var. *leptocarpum* Coult. & Rose, Rev. N. Am. Umbell. 59. 1888.
Lomatium bicolor Coult. & Rose, Contr. U. S. Nat. Herb. 7: 237. 1900.
Peucedanum bicolor var. *gumbonis* M. E. Jones, Contr. W. Bot. 10: 55. 1902.
Cogswellia bicolor M. E. Jones, Contr. W. Bot. 12: 33. 1908.
Cogswellia leptocarpa M. E. Jones, Contr. W. Bot. 12: 33. 1908.
Lomatium ambiguum var. *leptocarpum* Jepson, Madroño 1: 159. 1924.

Plants short-caulescent, 1.5–5.5 dm. high, from elongate, moniliform, tuberous roots, glabrous to scaberulous; leaves broadly obovate in general outline, excluding the petioles 9–14 cm. long, 1–2-ternate, then 2–4-pinnate, the ultimate divisions filiform to linear, 0.5–4.5 mm. long, 0.1–2 mm. broad, mucronulate; petioles 2.2–7 cm. long, wholly sheathing; peduncles exceeding the leaves; involucre of several linear, acute bractlets, about equaling the flowers; rays 4–15, suberect, strict, 2–12 cm. long, unequal; pedicels 2–7 mm. long, the umbellets 10–16-flowered; flowers yellow; fruit narrowly oblong, 10–15 mm. long, 2–5 mm. broad, the wings less than one-half the width of the body; oil-tubes solitary in the intervals, 2–4 on the commissure.

TYPE LOCALITY: "Plains of the Oregon near the confluence of the Wahlamet" [mouth of the Willamette River], Oregon, Nuttall.

DISTRIBUTION: Northwestern Colorado to northern Idaho, south to northern Arizona and northeastern California (*Cusick 2381, 2414, Constance, Beetle & Ownbey 2738*).

17. *Lomatium ambiguum* (Nutt.) Coult. & Rose, Contr. U. S.
Nat. Herb. 7: 212. 1900.

- Eulophus ambiguus* Nutt. Jour. Acad. Phila. 7: 27. 1834.
Peucedanum ambiguum Nutt.; T. & G. Fl. N. Am. 1: 626. 1840.
Peucedanum tenuissimum Geyer; Hook. Lond. Jour. Bot. 6: 235. 1847.
Peucedanum abrotanifolium Nutt. Jour. Acad. Phila. II. 1: 184. 1848.
Cogswellia ambigua M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Plants caulescent, 0.6–4.4 dm. high, solitary or clustered at the base, alternately few-branched above, the stems purplish, especially above, from tuberous moniliform roots or elongate taproots, glabrous; leaves oblong-ovate in general outline, excluding the petioles 2.5–12 cm. long, the lower usually ternate-pinnate, the upper 2–3-pinnate, the ultimate divisions usually distinct, linear, 3–50 mm. long, 1–4 mm. broad, acute; petioles 1–6.5 cm. long, conspicuously sheathing at the base; peduncles 2–12 cm. long, the axillary umbels mostly sterile; involucre wanting; rays 5–17, spreading, 1.5–8 cm. long, unequal; pedicels 4–8 mm. long, the umbellets about 20-flowered; flowers yellow; fruit narrowly oblong, 8–10 mm. long, 1.5–3 mm. broad, glabrous, the wings very narrow; oil-tubes solitary in the intervals, 2 on the commissure.

TYPE LOCALITY: "Borders of Flat-Head River, Oregon" [now Montana], Wyeth.

DISTRIBUTION: Western Montana, Wyoming, and northern Utah to eastern British Columbia, central Washington, and Oregon (*Elmer 827, Constance & Beetle 2749, Nelson & Nelson 5782*).

ILLUSTRATIONS: Rep. Comm. Agr. U. S. 1870: 407. pl. 19.

18. *Lomatium Rollinsii* Math. & Const. Bull. Torrey Club 70:
59. 1942.

Plants slender, caulescent, alternately branched, 2.5–5 dm. high, from an elongate and often tuberous taproot, crisped-puberulent throughout; leaves oblong in general outline, excluding the petioles 5–15 cm. long, 3–5 cm. broad, bipinnate or partially tripinnate, the ultimate divisions linear, acute or obtuse, 2–30 mm. long, 0.5–2 mm. broad, puberulent; petioles 5–15 cm. long, narrowly short-sheathing at the base, those of the cauline leaves narrowly and wholly sheathing; involucre of minute, filiform bractlets; rays 4–8, ascending, 1.5–5 cm. long, unequal, slender, puberulent; pedicels filiform, 6–15 mm. long, the umbellets 8–15-flowered; flowers yellow; fruit oblong-ovate, 6–7 mm. long, 3–4 mm. broad, glabrous, the wings one-half

the width of the body; oil-tubes solitary in the dorsal intervals, 2 in the lateral, 4 on the commissure.

TYPE LOCALITY: "Near Deep Creek, Snake River Canyon, Wallowa County, Oregon," *Constance, Rollins & Dillon 1573*.

DISTRIBUTION: Drainage system of the Snake and Salmon rivers, Oregon and Idaho (*Christ 10,877, 10,899, Christ & Ward 7300*).

19. *Lomatium Cous* (S. Wats.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 214. 1900.

Peucedanum Cous S. Wats. Proc. Am. Acad. 21: 453. 1886.

Cogswellia Cous M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Plants acaulescent or short-caulescent, 2-2.5 dm. high, from a globose, sometimes elongate tuber; leaves oblong to obovate in general outline, excluding the petioles 5.5-9.5 cm. long, usually glabrous, ternate, then 2-3-pinnate or pinnately decomposed, the ultimate divisions crowded, ovate to oblong, 1-5 mm. long, 1-2 mm. broad, mucronulate; petioles 3-6 cm. long, sheathing to above the middle; peduncles exceeding the leaves, scaberulous; involucre of oblanceolate, shortly connate bractlets, about equaling the flowers; rays 10-20, spreading, 1-5 cm. long, unequal; pedicels 2-4 mm. long, the umbellets about 20-flowered; flowers yellow; fruit oblong-oval, 7-10 mm. long, 3-5 mm. broad, granular-roughened, the wings narrower than the body; oil-tubes usually solitary in the intervals, 4 on the commissure.

TYPE LOCALITY: "John Day's Valley, eastern Oregon," *Howell 270*.

DISTRIBUTION: Western Idaho to southeastern Washington and central Oregon (*Cusick 1837, Heller & Heller 3052*).

20. *Lomatium montanum* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 214. 1900.

Lomatium purpureum A. Nelson, Bull. Torrey Club 28: 226. 1901.

Peucedanum montanum Blankinship, Mont. Agr. Coll. Stud. 1: 93. 1905.

Cogswellia montana M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Plants acaulescent, 1-3 dm. high, caespitose from a thickened taproot or a subglobose tuber, glabrous; leaves usually oblong in general outline, excluding the petioles 2.5-12 cm. long, ternate, then 2-3-pinnate, the ultimate divisions crowded, oblong, 2-10 mm. long, 0.5-3 mm. broad, apiculate; petioles 1.5-7 cm. long, sheathing to above the middle, purplish; peduncles exceeding the leaves; involucre of conspicuous, obovate, purplish bractlets, distinct or united below; rays 5-15, spreading, 1-6.5 cm. long, unequal; pedicels 2-3 mm. long, the umbellets about 20-flowered; flowers yellow; fruit oval-oblong, 5-12 mm. long, 3-5 mm. broad, the wings narrower than or about equaling the body; oil-tubes 2-4 in the intervals, 6 on the commissure.

TYPE LOCALITY: "Mountain ridges in Yellowstone National Park," *Rose 479*.

DISTRIBUTION: Western Montana and Wyoming to northern Idaho and eastern Oregon (*Blankinship 223, Nelson & Nelson 5496*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 7: *pl. 9*; Bull. U. S. Dep. Agr. Bot. 26: *pl. 21*.

21. *Lomatium circumdatum* (S. Wats.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 213. 1900.

Peucedanum circumdatum S. Wats. Proc. Am. Acad. 22: 474. 1887.

Cogswellia circumdata M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Plants caulescent, 1.5-3.5 dm. high, from an elongate to subglobose tuber, glabrous to somewhat pubescent; leaves broadly oblong in general outline, excluding the petioles 5-6 cm. long, ternate, then 1-2-pinnate, the ultimate divisions distinct, linear, 6-10 mm. long, 1-2 mm. broad, apiculate; petioles 3-6 cm. long, those of the cauline leaves wholly scarious-sheathing; peduncles exceeding the leaves; involucre of conspicuous, obovate, acute, prominently nerved, sometimes connate bractlets, much longer than the flowers; rays 7-12, ascending, 2-8 cm. long; pedicels 2-3 mm. long, the umbellets many-flowered; fruit oblong, 6-9 mm. long, 3-4 mm. broad, glabrous, the wings much narrower than the body; oil-tubes solitary in the intervals, 4 on the commissure.

TYPE LOCALITY: "Abundant on hillsides in the Wallowa region of eastern Oregon," *Cusick*.

DISTRIBUTION: Western Idaho to adjacent Washington, southeastern Oregon, and northeastern Nevada (*Heller & Heller 4043, Sandberg, MacDougal & Leiberg 21*).

22. *Lomatium vaginatum* Coult. & Rose, Contr. U. S. Nat. Herb.

7: 223. 1900.

Cogswellia vaginata M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Lomatium Plummerae var. *Helleri* Mathias, Ann. Mo. Bot. Gard. 25: 258. 1937.

Plants caulescent, 2.3–4.5 dm. high, from an elongate thickened root, scabrous; leaves ovate in general outline, excluding the petioles 5–13 cm. long, ternate, then 1–2-pinnate, the ultimate divisions crowded, oblong, 1–5 mm. long, about 1 mm. broad, apiculate; petioles 1.5–10 cm. long, those of the cauline leaves wholly sheathing; peduncles exceeding the leaves; involucrel of conspicuous, oblanceolate to obovate, acute bractlets; rays 6–15, ascending, 1–8 cm. long, unequal; pedicels 3–12 mm. long, the umbellets many-flowered; flowers yellow; fruit broadly oval to obovate, 8–12 mm. long, 5–8 mm. broad, granulate-roughened, the wings nearly as broad as the body; oil-tubes 1–4 in the intervals, 4 or 5 on the commissure.

TYPE LOCALITY: Logan Valley, Union County, Oregon, *Cusick 1655*.

DISTRIBUTION: Central Oregon to northeastern California (*Cusick 2563, Leiberg 2293*).

23. *Lomatium utriculatum* (Nutt.) Coult. & Rose, Contr. U. S.

Nat. Herb. 7: 215. 1900.

Peucedanum utriculatum Nutt.; T. & G. Fl. N. Am. 1: 628. 1840.

Cogswellia utriculata M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Cogswellia caruifolia var. *patens* M. E. Jones, Contr. W. Bot. 12: 41. 1908.

Cogswellia Chandleri M. E. Jones, Contr. W. Bot. 13: 11. 1910.

Lomatium Chandleri F. Macbr. Contr. Gray Herb. 53: 15. 1918.

Lomatium utriculatum var. *glabrum* Jepson, Madroño 1: 152. 1924.

Lomatium utriculatum var. *anthemifolium* Jepson, Fl. Calif. 2: 639. 1936.

Plants caulescent, 1–5 dm. high, purplish below, from a long slender taproot, glabrous to pubescent; leaves oblong in general outline, excluding the petioles 2.5–16 cm. long, tripinnate, sometimes ternate and then tripinnate, the ultimate divisions linear, 2–25 mm. long, 0.5–3 mm. broad, apiculate; petioles 1–10 cm. long, wholly sheathing except those of some basal leaves; terminal peduncles exceeding the leaves; involucrel of obovate, entire to cleft bractlets, green with a scarious margin to purplish and subscarious, occasionally prominently nerved, about equaling the flowers; rays 5–13, spreading to ascending, 1–12 cm. long, unequal; pedicels 2–9 mm. long, the umbellets about 20-flowered; flowers yellow; fruit ovate to oblong, 5–11 mm. long, 3–8 mm. broad, puberulent when young, glabrate, the wings thin, usually broader than the body; oil-tubes 1–3 in the dorsal intervals, 1–4 in the lateral, 2–6 on the commissure, or rarely obscure.

TYPE LOCALITY: "Rocky plains, particularly near the confluence of the Wahlamet and Oregon Rivers" [mouth of the Willamette River], Oregon, *Nuttall*.

DISTRIBUTION: British Columbia to southern California, west of the Cascade Mountains and the Sierra Nevada (*Heller & Brown 5542, Thompson 6041*).

ILLUSTRATION: Clements, Fl. Coast & Sierra pl. 22, f. 6.

23a. *Lomatium utriculatum* var. *papillatum* (Henderson) Mathias,

Ann. Mo. Bot. Gard. 25: 251. 1937.

Cogswellia utriculata var. *papillata* Henderson, Rhodora 33: 204. 1931.

Mature fruit roughened with budlike, one-celled to several-celled papillae.

TYPE LOCALITY: "South slope of Siskiyou Mountains, in copses near the California line, Jackson County, Oregon," *Henderson 12,614*.

DISTRIBUTION: Known only from the region of the type locality.

24. *Lomatium Vaseyi* Coult. & Rose, Contr. U. S. Nat. Herb. 7:

216. 1900.

Peucedanum Vaseyi Coult. & Rose, Bot. Gaz. 13: 144. 1888.

Cogswellia caruifolia var. *Vaseyi* M. E. Jones, Contr. W. Bot. 12: 41. 1908.

Cogswellia Vaseyi Coult. & Rose, Contr. U. S. Nat. Herb. 12: 451. 1909.

Plants caulescent, 2.5–3.5 dm. high, from a long thickened taproot, sparsely to densely pubescent with pilose hairs; leaves broadly oblong in general outline, excluding the petioles 4–8 cm. long, ternate, then bipinnate, the ultimate divisions oblong, 3–17 mm. long, 0.5–1 mm. broad, apiculate; petioles 1.5–7 cm. long, those of the cauline leaves partially to wholly sheathing; peduncles exceeding the leaves; involucre of obovate, scarious-margined bractlets, entire or lobed toward the apex, glabrous or villosulose, about equaling the flowers; rays 10–20, ascending, 2–7.5 cm. long, unequal; pedicels 3–8 mm. long, the umbellets about 30-flowered; flowers yellow; calyx-teeth prominent, especially in the young fruit; fruit ovate to obovate, 9–15 mm. long, 5–10 mm. broad, glabrous, the wings thin, usually broader than the body, the dorsal ribs filiform; oil-tubes solitary in the intervals, 4 on the commissure.

TYPE LOCALITY: San Bernardino Mountains, California, *Vasey 231*.

DISTRIBUTION: Mountain foothills and plains, south-central to southern California (*Jones 3172*, *Parish 4699*).

25. *Lomatium ciliolatum* Jepson, *Madroño* 1: 155. 1924.

Plants acaulescent, 0.9–1.6 dm. high, from a long slender taproot, hoary-pubescent; leaves ovate-oblong to ovate-deltoid in general outline, excluding the petioles 3–7 cm. long, 2–6 cm. broad, somewhat succulent, ternate, then 1–2-pinnate, the ultimate divisions oblong to ovate, 5–20 mm. long, irregularly pinnatifid, the lobes oblong to ovate, 1–5 mm. long, 2–5 mm. broad, obtuse, mucronulate, densely hoary-pubescent throughout or only near the margins; petioles 2–3 cm. long, scarious-margined, wholly sheathing; peduncles exceeding the leaves, 7–14 cm. long; involucre of obovate to lanceolate, sessile or petiolulate, entire, purplish, scarious-margined, prominently veined bractlets, equaling the flowers; rays 7–12 (the fertile 2–5), spreading-ascending, 0.8–4 cm. long, unequal, pubescent to glabrate; pedicels 2–4 mm. long, the umbellets many-flowered; flowers purple or yellow; fruit oval, 7–9 mm. long, 4–5 mm. broad, glabrous, the wings thickish, about 1 mm. broad, much narrower than the body; oil-tubes obscure, 4 or 5 in the intervals, apparently confluent, 2 on the commissure.

TYPE LOCALITY: "Soldiers Ridge near South Yollo Bolly," California, ca. 7000 feet, *Jepson 14,319*.

DISTRIBUTION: Mountains of the inner northern Coast Ranges, California, at about 7000 feet (*Baker 3525, 9858*).

25a. *Lomatium ciliolatum* var. *Hooveri* Math. & Const. Bull. Torrey Club 69: 153. 1942.

Much more slender throughout, 1.5–3 dm. high, densely scaberulous; leaves 6–13 cm. long, the ultimate divisions or lobes linear, 1–10 mm. long, 1 mm. or less broad; petioles 3–7 cm. long; peduncles 8–25 cm. long; rays 3–14, 3–10 cm. long; pedicels 3–8 mm. long; fruit-wings thin.

TYPE LOCALITY: Rocky hillside, 1.9 miles southeast of Napa-Lake county line, on road to Knox-ville, Napa County, California, *Mathias 1298*.

DISTRIBUTION: Inner northern Coast Ranges of California (*Hoover 4987*).

26. *Lomatium Tracyi* Math. & Const. Bull. Torrey Club 69: 154. 1942.

Plants acaulescent, 1–3.5 dm. high, from a long slender taproot, glabrous to sparsely scaberulous-puberulent; leaves oblong to ovate in general outline, excluding the petioles 4–10 cm. long, ternate, then 1–2-pinnate, the ultimate divisions linear to oblong, acute or obtuse, apiculate, 1–7 mm. long, 0.4–2 mm. broad; petioles 2–5 cm. long, scarious, wholly sheathing; peduncles exceeding the leaves; involucre of oblanceolate to linear, acuminate, often petiolulate, scarious-margined bractlets, about equaling the flowers; rays 4–9, the fertile 1–6, strictly ascending, 0.5–8 cm. long, very unequal, glabrous or scaberulous; pedicels 1–5 mm. long, few fertile, the umbellets 10–15-flowered; flowers yellow; fruit oblong-ovate to oval, 6–10 mm. long, 3–5 mm. broad, usually acute at base and apex, glabrous, the wings thin, much narrower than the body; oil-tubes obscure.

TYPE LOCALITY: Serpentine gravel flats, especially under yellow pines, 5000 feet, Grouse Mountain, Humboldt County, California, *Tracy 12,895*.

DISTRIBUTION: Mountains of northwestern California, in Humboldt and Trinity counties, to adjacent Oregon, 1500-6400 feet. (*Tracy 7610, 8869, 6457*).

27. *Lomatium marginatum* (Benth.) Coult. & Rose, Contr. U. S.

Nat. Herb. 7: 223. 1900.

Peucedanum marginatum Benth. Pl. Hartw. 312. 1849.

Cogswellia marginata M. E. Jones, Contr. W. Bot. 12: 35. 1908.

Lomatium alatum var. *purpureum* Jepson, Madroño 1: 158. 1924.

Lomatium alatum sensu Jepson, Man. Fl. Pl. Calif. 724. 1925. Not *L. alatum* Coult. & Rose, 1900.

Lomatium marginatum var. *purpureum* Jepson, Fl. Calif. 2: 645. 1936.

Lomatium caruifolium var. *marginatum* Mathias, Ann. Mo. Bot. Gard. 25: 253. 1937.

Lomatium caruifolium var. *purpureum* Mathias, Ann. Mo. Bot. Gard. 25: 254. 1937.

Plants acaulescent or short-caulescent, 1.5-6.5 dm. high, from a long slender taproot, densely scaberulous to glabrate; leaves obovate in general outline, excluding the petioles 6-21 cm. long, 1-3-ternate, or simply ternate, then pinnate or bipinnate, the ultimate divisions linear to filiform, elongate, 5-80 mm. long, 0.5-2.5 mm. long, apiculate; petioles 3-8 (or 13) cm. long, usually purplish, wholly sheathing or nearly so; peduncles exceeding the leaves; involucre of several, distinct, filiform, rarely lanceolate-acuminate, scarious-margined bractlets, exceeding the flowers, or wanting; rays 3-15, ascending to spreading, 1.5-15 cm. long, unequal, glabrous or scaberulous; pedicels 3-15 mm. long, few fertile, the umbellets many-flowered; flowers yellow or purple; fruit oval to slightly obovate, 9-12 mm. long, 5-7 mm. broad, glabrous, the wings thin, narrower than or equaling the body; oil-tubes obscure.

TYPE LOCALITY: "In valle Sacramento," California, *Hartweg 1752 (260)*.

DISTRIBUTION: Northern Coast Ranges and western foothills of the northern Sierra Nevada, California (*Heller 11,769, Stanford 1207*).

28. *Lomatium caruifolium* (H. & A.) Coult. & Rose, Contr. U. S.

Nat. Herb. 7: 216. 1900.

Ferula caruifolia H. & A. Bot. Beech. Voy. 348. 1838.

Peucedanum caruifolium T. & G. Fl. N. Am. 1: 628. 1840.

Peucedanum californicum Nutt.; Torr. & Gray, Fl. N. Am. 1: 628, as syn. 1840. Not *P. californicum* Coult. & Rose, 1888.

Cogswellia caruifolia M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Lomatium caruifolium var. *solanense* Jepson, Madroño 1: 151. 1924.

Lomatium caruifolium var. *erythropodium* Jepson, Fl. Calif. 2: 638. 1936.

Plants acaulescent or short-caulescent, 1.5-4.5 dm. high, from a long slender taproot, glabrous to pubescent; leaves broadly ovate to obovate in general outline, excluding the petioles 5-30 cm. long, 1-3-ternate, or simply ternate, then bipinnate, the ultimate divisions linear, 2-17 mm. long, 1-3 mm. broad, apiculate; petioles 4-7 cm. long, wholly sheathing; peduncles exceeding the leaves; involucre of obovate, sessile or petiolulate, entire or toothed, usually obtuse, green to purplish, scarious-margined, prominently veined bractlets, equaling the flowers; rays 6-15, spreading to ascending, 1-13 cm. long, unequal; pedicels 2-8 (or 12) mm. long, the umbellets many-flowered; fruit narrowly ovate to obovate, 8-13 mm. long, 4-7 mm. broad, usually obtuse at base and apex, glabrous, the wings thickish, narrower than the body; oil-tubes obscure.

TYPE LOCALITY: California, *Douglas*.

DISTRIBUTION: Coast Ranges, from Mendocino County to San Luis Obispo County, California (*Baker 426, Jones 3600, Mathias 1163, 1164, 1165*).

ILLUSTRATIONS: Madroño 1: 151; Jepson, Man. Fl. Pl. Calif. 721.

29. *Lomatium humile* (Coult. & Rose) Hoover; Math. & Const.

Bull. Torrey Club 69: 246. 1942.

Leptotaenia anomala Coult. & Rose, Rev. N. Am. Umbell. 53. 1888. Not *Lomatium anomalum* M. E. Jones, 1900.

Leptotaenia humilis Coult. & Rose, Contr. U. S. Nat. Herb. 7: 200. 1900.

Leptotaenia humilis var. *denticulata* Jepson, Madroño 1: 146. 1923.

Lomatium caruifolium var. *denticulatum* Jepson, Madroño 1: 151. 1924.

Plants acaulescent, 1.5–5.5 dm. high, from a long slender taproot, glabrous or the inflorescence slightly scaberulous; leaves oblong to ovate in general outline, excluding the petioles 5–14 cm. long, ternate, then pinnate or bipinnate, the ultimate divisions linear to filiform, acute or obtuse, apiculate, 2–60 mm. long, 0.5–3 mm. broad; petioles 1–10 cm. long, purplish or scarious, sheathing to the middle or throughout; peduncles exceeding the leaves; involucre of several orbicular to lanceolate, often petiolulate, scarious or scarious-margined, entire or toothed bractlets, conspicuously purple-veined, longer than the pedicels, usually deciduous in fruit; rays 3–10 (2–5 fertile), spreading to ascending, 1.5–7 cm. long, unequal; pedicels 1–4 mm. long, the umbellets about 20-flowered; flowers light yellow (or purple?); fruit oval to orbicular, 6–12 mm. long, 5–8 mm. broad, glabrous or denticulate on the margins, the wings somewhat thick and corky, narrower than the body; oil-tubes obscure.

TYPE LOCALITY: Plains near Chico, Butte County, California, Mrs. C. C. Bruce 2661.

DISTRIBUTION: Western foothills of the Sierra Nevada, California, from Tehama County to Tulare County (Hoover 1038, 2257).

30. *Lomatium Bradshawii* (Rose) Math. & Const. Bull. Torrey Club 69: 246. 1942.

Leptotaenia Bradshawii Rose; Mathias, Leaf. W. Bot. 1: 101. 1934.

Plants acaulescent or short-caulescent, 2–6.5 dm. high, from a long slender taproot, glabrous; leaves oblong in general outline, excluding the petioles 7–15 cm. long, ternate, then pinnate or bipinnate, the ultimate divisions filiform to linear, 3–8 mm. long, 0.5–1 mm. broad; petioles 3–30 cm. long, wholly sheathing or nearly so; peduncles exceeding the leaves; involucre of several orbicular, scarious-margined, 1–2-ternate bractlets, about equaling the flowers; rays 10–25 (2–5 fertile), spreading, 5–13 cm. long, unequal; pedicels 2–5 mm. long, few fertile, the umbellets many-flowered; flowers light yellow; fruit oblong to oblong-oval, 8–13 mm. long, 5–7 mm. broad, glabrous, the wings thick and corky, narrower than the body; oil-tubes obscure.

TYPE LOCALITY: "In low swales near the High School," Eugene, Lane County, Oregon, R. V. Bradshaw 2047.

DISTRIBUTION: Swales of the Willamette Valley, western Oregon (Constance & Beetle 2783, Constance, Beetle & Delling 2790).

31. *Lomatium Peckianum* Math. & Const. Bull. Torrey Club 69: 155. 1942.

Plants acaulescent, 1–3 dm. high, from a long, very slender taproot, scaberulous to glabrous; leaves ovate-oblong in general outline, excluding the petioles 2.5–10 cm. long, ternate, then 1–2-ternate, the ultimate divisions remote to confluent, oblong to linear, 1–18 mm. long, 0.5–1.5 mm. broad, apiculate; petioles 2–4 cm. long, about equaling the blade, scarious-margined, wholly sheathing; peduncles arising from a cluster of leaf-sheaths, exceeding the leaves, 6–25 cm. long; involucre wanting, or of a few, inconspicuous, distinct, linear, sub-acuminate, subscarious bractlets, shorter than the pedicels; rays 1–5, ascending, obsolete to 5 cm. long, very unequal; pedicels 2–7 mm. long, the umbellets with 1–7 fertile flowers and a few sterile flowers, one umbellet usually sessile, sterile; flowers not seen; ovaries granulate-roughened; fruit oblong-oval, 2–15 mm. long, 4–8 mm. broad, granulate-roughened to glabrate, narrowed toward base and apex, the wings less than one-half the width of the body; oil-tubes obscure, several in the intervals, about 6–8 on the commissure.

TYPE LOCALITY: Dry sterile hillside three miles east of Blye, Klamath County, Oregon, Peck 15,213.

DISTRIBUTION: Siskiyou County, California, and adjacent Oregon (Eggleston 7094, Constance & Rollins 2918).

32. *Lomatium nevadense* (S. Wats.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 220. 1900.

Peucedanum nevadense S. Wats. Proc. Am. Acad. 11: 143. 1876.

Peucedanum nevadense var. *cupulatum* M. E. Jones, Contr. W. Bot. 8: 29. 1898.

Lomatium nevadense var. *cupulatum* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 221. 1900.

Cogswellia nevadensis M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Cogswellia nevadensis var. *cupulata* M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Plants acaulescent or short-caulescent, 1–4.5 dm. high, from a long slender taproot or a deep-seated tuber, pubescent; leaves oblong to obovate in general outline, excluding the petioles 5–6 cm. long, tripinnate, the ultimate divisions crowded, oblong, 2–3 mm. long, about 1 mm. broad, apiculate; petioles 4–6 cm. long, sheathing to above the middle, purplish; peduncles exceeding the leaves; involucre of conspicuous, linear and distinct or obovate and connate, scarious-margined bractlets, about equaling the flowers; rays 8–22, spreading, 1–2.5 cm. long, unequal; pedicels 3–10 mm. long, the umbellets about 20-flowered; flowers white; fruit ovate to oblong-obovate, 6–8 mm. long, 4–6 mm. broad, puberulent, the wings narrower than the body; oil-tubes 2–9 in the intervals, 4–12 on the commissure.

TYPE LOCALITY: "Very frequent in western Nevada from the Washoe to the West Humboldt Mountains," 4500–6000 feet, *Watson 469*.

DISTRIBUTION: Western Utah to central Oregon, south to southern Arizona and California, mostly east of the Sierra Nevada (*Heller 10,243, Jones 3880*).

32a. *Lomatium nevadense* var. *Parishii* (Coul. & Rose) Jepson,
Madroño 1: 156. 1924.

Peucedanum Parishii Coul. & Rose, Bot. Gaz. 13: 209. 1888.

Lomatium Parishii Coul. & Rose, Contr. U. S. Nat. Herb. 7: 235. 1900.

Cogswellia nevadensis var. *Parishii* M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Cogswellia decipiens M. E. Jones, Contr. W. Bot. 12: 38. 1908.

Cogswellia Parishii Coul. & Rose, Contr. U. S. Nat. Herb. 12: 450. 1909.

Usually higher; leaf-divisions sometimes elongate, up to 35 mm. long; involucre sometimes reduced to a sheath, or a single bractlet; rays usually longer, 1.5–5.5 cm. long; pedicels 3–12 mm. long; ovaries glabrous; fruit 7–10 mm. long, 3–6 mm. broad, glabrous; oil-tubes 1–4 in the intervals, 4–7 on the commissure.

TYPE LOCALITY: Bear Valley, San Bernardino Mountains, California, *Parish 1828*.

DISTRIBUTION: Southeastern Oregon and adjacent Nevada to western New Mexico, Sonora, and southeastern California (*Jones 5072f, Purpus 5288*).

ILLUSTRATION: E. Jaeger, Des. Wild Fl. 178.

32b. *Lomatium nevadense* var. *pseudorientale* (M. E. Jones)

Munz, Man. S. Calif. Bot. 360. 1935.

Cogswellia nevadensis var. *pseudorientalis* M. E. Jones, Contr. W. Bot. 12: 37. 1908.

Lomatium nevadense var. *holopterum* Jepson, Madroño 1: 156. 1924.

Similar to var. *Parishii*, but the petioles more prominently scarious-margined; wings broader than the body, the dorsal ribs evident.

TYPE LOCALITY: Skull Valley, northwestern Arizona, 4300 feet, *Jones*.

DISTRIBUTION: Northwestern Arizona to adjacent Nevada and California (*Munz, Johnston & Harwood 4236, Purpus 7092a*).

33. *Lomatium Plummerae* Coul. & Rose, Contr. U. S. Nat. Herb.
7: 232. 1900.

Peucedanum Plummerae Coul. & Rose, Bot. Gaz. 14: 278. 1889.

Cogswellia Plummerae M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Plants short-caulescent, 2–3.5 dm. high, from a long slender taproot, glabrous; leaves crowded near the base, oblong in general outline, excluding the petioles 5–10 cm. long, ternate, then bipinnate, the ultimate divisions linear to oblong, 3–7 mm. long, 0.5–1 mm. broad, apiculate; petioles 3–6 cm. long, scarious-margined, wholly sheathing; peduncles exceeding the leaves; involucre of dimidiate, linear-lanceolate, acute bractlets, distinct or connate to above the middle, scarious at least on the margin, prominently nerved, entire or toothed, equaling or exceeding the flowers; rays 10–25, ascending, 0.5–7.5 cm. long, unequal; pedicels 3–8 mm. long, the umbellets many-flowered; flowers yellow or purplish (white?); fruit oblong to oblong-ovate, usually acute at the apex, 9–13 mm. long, 4–7 mm. broad, glabrous, the wings narrower than the body; oil-tubes 1, rarely 2 or 3, in the intervals, 4–8 on the commissure.

TYPE LOCALITY: Sierra Valley, Sierra County, and near Shasta, Shasta County, California, *Lemmon & Lemmon 32, 40*.

DISTRIBUTION: Northern Sierra Nevada, California, and adjacent Nevada (*Mathias 1207*).

33a. *Lomatium Plummerae* var. *Sonnei* (Coul. & Rose) Jepson,
Madroño 1: 157. 1924.

Lomatium Sonnei Coul. & Rose, Contr. U. S. Nat. Herb. 7: 236. 1900.
Cogswellia Sonnei M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Pubescent; pedicels up to 10 mm. long; fruit glabrous.

TYPE LOCALITY: "Sandy soil among sagebrush," Verdi, Washoe County, Nevada, *Sonnei*.
DISTRIBUTION: Western Nevada and adjacent California (*Kennedy 1338, Mathias 1215*).

33b. *Lomatium Plummerae* var. *Austinae* (Coul. & Rose) Mathias,
Ann. Mo. Bot. Gard. 25: 257. 1937.

Peucedanum Austinae Coul. & Rose, Bot. Gaz. 13: 208. 1888.
Lomatium Austinae Coul. & Rose, Contr. U. S. Nat. Herb. 7: 236. 1900.
Cogswellia Austinae M. E. Jones, Contr. W. Bot. 12: 35. 1908.

Pubescent; fruit ovate, not pointed at the apex, about 8 mm. long, about 5 mm. broad.

TYPE LOCALITY: Plumas County, California, *Austin*.
DISTRIBUTION: Known only from the region of the type locality (*Lemmon 23*).

34. *Lomatium MacDougalii* Coul. & Rose, Contr. U. S. Nat. Herb.
7: 233. 1900.

Lomatium Jonesii Coul. & Rose, Contr. U. S. Nat. Herb. 7: 233. 1900.
Cogswellia MacDougalii M. E. Jones, Contr. W. Bot. 12: 34. 1908.
Cogswellia Jonesii M. E. Jones, Contr. W. Bot. 12: 34. 1908.
Lomatium semiseptulatum M. E. Peck, Proc. Biol. Soc. Wash. 50: 122. 1937.

Plants acaulescent, 0.7-3 dm. high, from a long slender taproot, villous; leaves oblong-ovate in general outline, excluding the petioles 2-15 cm. long, ternate, then tripinnate, the ultimate divisions crowded, linear to ovate, 1-5 mm. long, 0.5-1 mm. broad, apiculate; petioles 1-2.5 cm. long, shorter than the blades, usually wholly sheathing, purplish; peduncles exceeding the leaves; involucre of scarious, linear, villous, usually distinct bractlets; rays 2-14, spreading, 0.5-6 cm. long; pedicels 3-10 mm. long, the umbellets about 20-flowered; flowers yellow, somewhat purplish-tinged; fruit ovate to suborbicular, 6-11 mm. long, 4-7 mm. broad, pubescent, the wings narrower than the body; oil-tubes 1-4 in the intervals, 4-6 on the commissure.

TYPE LOCALITY: Mormon Lake, Arizona, 1800 m., *MacDougal 84*.
DISTRIBUTION: Great Basin, from western Wyoming to central Oregon, south to central Arizona (*Goodding 13, Jones 5435, Purpus 20*).

35. *Lomatium juniperinum* (M. E. Jones) Coul. & Rose, Contr.
U. S. Nat. Herb. 7: 235. 1900.

Peucedanum juniperinum M. E. Jones, Contr. W. Bot. 8: 29. 1898.
Cogswellia juniperina M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Plants acaulescent or short-caulescent, 1.2-2.2 dm. high, from a long slender taproot, the stems purplish below, puberulent; leaves broadly ovate in general outline, excluding the petioles 3-6 cm. long, 1-2-ternate or quinate, then 2-3-pinnate, the ultimate divisions crowded, filiform to linear, 1-4 mm. long, 0.5-1 mm. broad, entire, apiculate; petioles 1.5-3 cm. long, wholly sheathing; peduncles exceeding the leaves; involucre of filiform-subulate, scarious bractlets, about equaling the flowers; rays 8-20 (the fertile 3-8), ascending, 1-5 cm. long, unequal; pedicels 5-10 mm. long, the umbellets many-flowered; flowers yellow, the ovaries glabrous; fruit oblong, 5-8 mm. long, 3-4 mm. broad, glabrous, the wings about one-half the width of the body; oil-tubes 2 or 3 in the intervals, 4 on the commissure.

TYPE LOCALITY: "Among junipers," Coalville, Utah, *Jones*.
DISTRIBUTION: Northern Utah and adjacent Idaho and Wyoming (*Nelson 3016, Graham 9577*).

36. *Lomatium foeniculaceum* (Nutt.) Coult. & Rose, Contr. U. S.
Nat. Herb. 7: 222. 1900.

?*Ferula pubescens* Nutt. Fraser's Cat. No. 36. 1813. (Nomen nudum.)

Ferula foeniculacea Nutt. Gen. 1: 183. 1818.

Lomatium villosum Raf. Jour. de Phys. 89: 101. 1819.

Pastinaca foeniculacea Spreng. in R. & S. Syst. Veg. 6: 587. 1820.

Cogswellia villosa Spreng. in R. & S. Syst. Veg. 6: 588. 1820.

Lomatium pubescens Raf. Bull. Bot. Seringe 216. 1830.

Lomatium athamantoides Raf. Good Book 55. 1840.

Peucedanum foeniculaceum Nutt.; T. & G. Fl. N. Am. 1: 627. 1840.

Peucedanum foeniculaceum var. *daucifolium* Nutt.; T. & G. Fl. N. Am. 1: 627, in part. 1840.

Peucedanum (?) *villosum* Nutt.; S. Wats. Bot. King's Expl. 131. 1871.

Cogswellia villosa M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Cogswellia foeniculacea Coult. & Rose, Contr. U. S. Nat. Herb. 12: 449. 1909.

Plants acaulescent, 1-5 dm. high, from a long thickened taproot, villous to glabrate; leaves ovate to oblong in general outline, excluding the petioles 4.5-13 cm. long, 3-4-pinnate, the ultimate divisions crowded, linear, 2-4 mm. long, about 0.5-1 mm. broad, apiculate; petioles 3-8 cm. long, sheathing to about the middle, purplish, subscarios; peduncles exceeding the leaves; involucl of dimidiate, lanceolate, acute to acuminate, entire or lobed bractlets, connate below, scarios-margined, about equaling the flowers; rays 8-24, spreading to erect, 0.7-12.5 cm. long, subequal; pedicels 2-13 mm. long, the umbellets 25-50-flowered; flowers yellow; fruit ovate-oblong, 7-10 mm. long, 4-6 mm. broad, pubescent, the wings narrower than the body; oil-tubes 3 in the intervals, 4 on the commissure.

TYPE LOCALITY: "On the high plains of the Missouri, commencing about the confluence of the river Jauke" [probably the James (Jacques) River, South Dakota], Nuttall.

DISTRIBUTION: Manitoba to northern Oklahoma, western Missouri, western Montana, and Wyoming (Carr 1, Nelson 4335).

ILLUSTRATION: Britt. & Brown, Ill. Fl. 2: 516, 517; ed. 2. 2: 632.

37. *Lomatium daucifolium* (Nutt.) Coult. & Rose, Contr. U. S.
Nat. Herb. 7: 221. 1900.

Peucedanum foeniculaceum var. *daucifolium* Nutt.; T. & G. Fl. N. Am. 1: 627, in part. 1840.

Peucedanum daucifolium Nutt.; T. & G. Fl. N. Am. 1: 627, as syn. 1840.

Cogswellia daucifolia M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Peucedanum foeniculaceum sensu later authors. Not *P. foeniculaceum* Nutt. 1840.

Plants acaulescent, 1-4.5 dm. high, from a long, usually swollen taproot, villous-tomentose to glabrate; leaves broadly ovate to obovate in general outline, excluding the petioles 5-19 cm. long, ternate, then 3-4-pinnate, the ultimate divisions linear, 2-8 mm. long, about 0.5 mm. broad, crowded, entire, apiculate; petioles 3-13 cm. long, sheathing below, purplish; peduncles exceeding the leaves; involucl of subdimidiate, lanceolate, acute to acuminate, subscarios bractlets, conspicuously nerved, connate to above the middle, equaling the flowers; rays 12-30, erect to spreading, 1.5-7 cm. long, subequal; pedicels 4-13 mm. long, the umbellets 20-40-flowered; flowers yellow; fruit ovate-oblong, 6-9 mm. long, 3-6 mm. broad, glabrous, the wings narrower than the body; oil-tubes 1-3 in the intervals, 2-4 on the commissure, occasionally solitary near the base of each wing.

TYPE LOCALITY: "On the Platte" [probably in Nebraska], Nuttall.

DISTRIBUTION: Southern South Dakota to Texas (*Bush 322, Norton 190*).

ILLUSTRATION: Britt. & Brown, Ill. Fl. ed. 2. 2: 632.

38. *Lomatium orientale* Coult. & Rose, Contr. U. S. Nat. Herb. 7:
220. 1900.

Peucedanum nudicaule Nutt.; T. & G. Fl. N. Am. 1: 627, in large part. 1840; and of all later authors.

Not *Smyrniium nudicaule* Pursh, 1814.

Peucedanum orientale Blankinship, Mont. Agr. Coll. Stud. 1: 93. 1905.

Cogswellia orientalis M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Plants short-caulescent, 1-4 dm. high, from a long slender taproot, soft-puberulent; leaves ovate to oblong in general outline, excluding the petioles 4-11 cm. long, tripinnate, the ultimate divisions crowded, the uppermost confluent, linear, 1-12 mm. long, 0.5-2 mm. broad, apicu-

late; petioles 2–12 cm. long, sheathing below, those of the cauline leaves wholly sheathing; peduncles exceeding the leaves; involucre of linear-lanceolate to obovate, distinct, scarious-margined bractlets, about equaling the flowers; rays 6–21, 1.2–5.5 cm. long, subequal; pedicels 3–9 mm. long, the umbellets about 20-flowered; flowers white; fruit ovate-oblong, 5–10 mm. long, 3–7 mm. broad, glabrous, the wings narrower than the body; oil-tubes 1–4 in the intervals, 2–8 on the commissure, rarely 1 or 2 near the base of the wings.

TYPE LOCALITY: Plains around Denver, Colorado, *Bethel*.

DISTRIBUTION: Western Minnesota to Montana, south to western Missouri and Colorado (*Baker 203, Nelson 7013*).

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. 2: 631; Rydb. Fl. Pr. & Pl. 601.

39. *Lomatium dasycarpum* (T. & G.) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 218. 1900.

Peucedanum dasycarpum T. & G. Fl. N. Am. 1: 628. 1840.

Peucedanum Pringlei Coult. & Rose, Bot. Gaz. 13: 209. 1888.

Peucedanum Jaredii Eastw. Zoe 5: 88. 1900.

Cogswellia dasycarpa M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Cogswellia Jaredii Coult. & Rose, Contr. U. S. Nat. Herb. 12: 450. 1909.

Lomatium dasycarpum var. *decorum* Jepson, Madroño 1: 154. 1924.

Lomatium dasycarpum var. *medium* Jepson, Madroño 1: 154. 1924.

Plants acaulescent or short-caulescent, 1–4 dm. high, purplish, especially below, from a long slender taproot, villous-tomentose to glabrate; leaves oblong to ovate in general outline, excluding the petioles 3–13.5 cm. long, quadripinnate, occasionally ternate, then pinnately decomposed, the ultimate divisions crowded, not confluent, linear, 1–3 mm. long, about 0.5 mm. broad, entire, obtuse to acute; petioles 2.5–10 cm. long, sheathing to near the middle; peduncles exceeding the leaves; involucre of linear-lanceolate, acute, sometimes connate bractlets, about equaling the flowers; rays 10–20, spreading, 1–8.5 cm. long; pedicels 7–20 mm. long, usually longer than the fruit, the umbellets many-flowered; flowers greenish (appearing white because of the pubescent petals) or purplish; fruit orbicular to ovate-oblong, 8–15 mm. long, 7–10 mm. broad, the body tomentulose to glabrate, the wings sparingly villous to glabrate, broader than the body; oil-tubes 1–4 in the intervals, occasionally with smaller accessory tubes, 2–4 on the commissure, rarely 1 at the base of each wing.

TYPE LOCALITY: California, *Douglas*.

DISTRIBUTION: Coast Ranges, northwestern California to Baja California (*Chandler 1445, Heller & Brown 5088a*).

ILLUSTRATIONS: Madroño 1: 153; Jepson, Man. Fl. Pl. Calif. 722; Munz, Man. S. Calif. Bot. 359.

40. *Lomatium mohavense* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 234. 1900.

Peucedanum mohavense Coult. & Rose, Rev. N. Am. Umbell. 62. 1888.

Peucedanum argense M. E. Jones, Contr. W. Bot. 8: 30. 1898.

Lomatium argense Coult. & Rose, Contr. U. S. Nat. Herb. 7: 234. 1900.

Cogswellia mohavensis M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Cogswellia argensis Coult. & Rose, Contr. U. S. Nat. Herb. 12: 449. 1909.

Plants acaulescent, 1–3 dm. high, from a long slender taproot, short-hoary-pubescent; leaves oblong in general outline, excluding the petioles 2–9 cm. long, 3–4-pinnate, the ultimate divisions crowded, linear, 2–5 mm. long, 0.5–1.5 mm. broad, mucronulate; petioles 2.5–12 cm. long, longer than the blade, shortly sheathing below; peduncles exceeding the leaves; involucre of linear, acute, sometimes inconspicuously scarious-margined bractlets, shorter than or equaling the pedicels; rays 10–16, 1–4.5 cm. long, subequal; pedicels 1–10 mm. long, the umbellets many-flowered; flowers purple, rarely yellow; fruit ovate to orbicular, 4.5–9 mm. long, 4–9 mm. broad, pubescent, the wings narrower than or equaling the body; oil-tubes 1–4 in the intervals, 4–6 on the commissure.

TYPE LOCALITY: Yucca, Mohave Desert, California, *Curran*.

DISTRIBUTION: Deserts, southern California and adjacent Nevada, especially in the Mohave Desert (*Parish 4929, Purpus 5352*).

ILLUSTRATIONS: Madroño 1: 155; E. Jaeger, Des. Wild Fl. 179.

41. *Lomatium tomentosum* (Benth.) Coult. & Rose, Contr. U. S.

Nat. Herb. 7: 219. 1900.

Peucedanum tomentosum Benth. Pl. Hartw. 312. 1849.
Cogswellia tomentosa M. E. Jones, Contr. W. Bot. 12: 35. 1908.

Plants short-caulescent, 2.5–5 dm. high, from a long slender taproot, villous-tomentose throughout; leaves oblong to obovate in general outline, excluding the petioles 5–11 cm. long, pinnately decomposed or ternate, then quadripinnate, the ultimate divisions crowded, filiform, 2–6 mm. long, 0.2–0.3 mm. broad, acute, sometimes apiculate; petioles 4–9 cm. long, sheathing below; peduncles exceeding the leaves; involucre of lanceolate to ovate-lanceolate, acute to acuminate bractlets, entire or cleft above, distinct or connate below, equaling or exceeding the flowers; rays 12–21, spreading, 2.5–8.5 cm. long, subequal; pedicels 5–20 mm. long, shorter than the mature fruit, the umbellets many-flowered; flowers white or purplish; fruit ovate-oblong, 16–22 mm. long, 8–18 mm. broad, tomentulose, the wings about equaling the body, tomentulose; oil-tubes 1–3 in the intervals, 3 on the commissure, usually 1 at the base of each wing.

TYPE LOCALITY: "In amnibus exsiccatis fluviorum vallis, Sacramento," California, Hartweg 257 (1751).

DISTRIBUTION: Great Valley and the Sierra Nevada foothills and Tehachapi Mountains, California (Heller 11,281, Heller & Brown 5552).

42. *Lomatium macrocarpum* (H. & A.) Coult. & Rose, Contr. U. S.

Nat. Herb. 7: 217. 1900.

Ferula macrocarpa H. & A. Bot. Beech. Voy. 348. 1838.
Peucedanum macrocarpum Nutt.; T. & G. Fl. N. Am. 1: 627. 1840.
Peucedanum macrocarpum var. *eurycarpum* A. Gray, Proc. Am. Acad. 8: 385. 1872.
Peucedanum eurycarpum Coult. & Rose, Rev. N. Am. Umbell. 61. 1888.
Lomatium macrocarpum var. *artemisiarum* Piper, Bull. Torrey Club 29: 223. 1902.
Lomatium macrocarpum var. *semivittatum* Piper, Bull. Torrey Club 29: 224. 1902.
Lomatium flavum Suksd. Allg. Bot. Zeits. 12: 6. 1906.
Lomatium artemisiarum Piper, Contr. U. S. Nat. Herb. 11: 423. 1906.
Cogswellia macrocarpa M. E. Jones, Contr. W. Bot. 12: 33. 1908.
Cogswellia artemisiarum Coult. & Rose, Contr. U. S. Nat. Herb. 12: 449. 1909.
Cogswellia flava Coult. & Rose, Contr. U. S. Nat. Herb. 12: 449. 1909.
Cogswellia simulans Coult. & Rose, Contr. U. S. Nat. Herb. 12: 451. 1909.
Lomatium macrocarpum var. *Douglasii* Jepson, Madroño 1: 153. 1924.
Cogswellia macrocarpa var. *artemisiarum* St. John, Fl. SE. Wash. 292. 1937.

Plants short-caulescent, 1–5 dm. high, purplish, especially below, from a slender or swollen taproot, densely tomentose to villous, or glabrate; leaves oblong to obovate in general outline, excluding the petioles 2.5–12 cm. long, ternate, then 2–3-pinnate, the ultimate divisions confluent, oblong to linear, 1–7 mm. long, 0.5–2 mm. broad, entire, mucronulate; petioles 1.5–7 cm. long, sheathing about to the middle, subscariosus; peduncles exceeding the leaves; involucre of dimidiate, linear-lanceolate, acute bractlets, equaling to greatly exceeding the flowers, becoming reflexed in the mature plant; rays 5–25, spreading, 1–8.5 cm. long; pedicels 1–14 mm. long, spreading, the umbellets many-flowered; flowers white, yellow, or purplish; fruit narrowly oblong, 9–20 mm. long, 2–8 mm. broad, the ovaries and young fruit glabrous to villous, the mature fruit glabrous or glabrate, the wings narrower than the body; oil-tubes 1, rarely 2 or 3, in the dorsal intervals, 1–3 in the lateral, sometimes obscure, 2–6 on the commissure.

TYPE LOCALITY: California, Douglas.

DISTRIBUTION: Manitoba to North Dakota, west to British Columbia, south to central Nevada and California (Jones 3883, Nelson & Nelson 5733).

42a. *Lomatium macrocarpum* var. *ellipticum* (T. & G.) Jepson,

Madroño 1: 153. 1924.

Peucedanum nudicaule var. *ellipticum* T. & G. Pacif. R. R. Rep. 2: 121. 1855.
Lomatium ellipticum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 217. 1900.
Cogswellia elliptica M. E. Jones, Contr. W. Bot. 12: 33. 1908.

Pedicels often longer, up to 16 mm. long; fruit oblong-oval, 16–18 mm. long, 6–10 mm. broad, glabrous, the wings twice as broad as the body.

TYPE LOCALITY: "Round Valley, near the sources of the Sacramento, in the Sierra Nevada," California, *Snyder*.

DISTRIBUTION: Northern Sierra Nevada, California.

43. *Lomatium Congdoni* Coult. & Rose, Contr. U. S. Nat. Herb. 7:
232. 1900.

Cogswellia Congdoni M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Plants acaulescent or short-caulescent, 1.8–3.6 dm. high, from a cluster of old leaf-sheaths, from a long taproot; leaves broadly oblong in general outline, excluding the petioles 6.5–15 cm. long, ternate to quinate, then 2–3-pinnate, the rachises scaberulent, the ultimate divisions distinct, linear, 3–10 mm. long, about 0.5 mm. broad, apiculate; petioles 2–6 cm. long, white-scarious, wholly sheathing; peduncles exceeding the leaves, purplish especially below; involucre wanting; rays 6–16, ascending, 3–13.5 cm. long; pedicels 6–15 mm. long, the umbellets about 30-flowered; flowers white; fruit oblong to subobovate, 7–10 mm. long, 5–6 mm. broad, the wings about one-half the width of the body; oil-tubes obscure, usually solitary in the intervals, 2–4 on the commissure.

TYPE LOCALITY: "West Water Ditch, Mariposa County," California, *Congdon 114*.

DISTRIBUTION: Central Sierra Nevada foothills, California (*Hoover 2448*).

44. *Lomatium Sandbergii* Coult. & Rose, Contr. U. S. Nat. Herb.
7: 230. 1900.

Peucedanum Sandbergii Coult. & Rose, Bot. Gaz. 13: 79. 1888.

Cogswellia Sandbergii M. E. Jones, Contr. W. Bot. 12: 35. 1908.

Plants caulescent, 7–30 cm. high, from a long slender taproot, rough-puberulent to glabrate; leaves suborbicular in general outline, excluding the petioles 3–7 cm. long, ternate, then tripinnate, the ultimate divisions linear to filiform, 2–4 mm. long, about 0.5 mm. broad, entire, apiculate; petioles 1–2.5 cm. long, wholly sheathing, the sheaths with a conspicuous white margin; peduncles 1.5–15 cm. long; involucre of filiform to linear bractlets, about equaling the flowers; rays 5–14, erect, 1–11.5 cm. long, unequal; pedicels 2–7 mm. long, the umbellets many-flowered; flowers yellow; fruit oblong, 7–10 mm. long, 4–5 mm. broad, puberulent, the wings narrower than the body; oil-tubes 4 or 5 in the intervals, 6 on the commissure.

TYPE LOCALITY: "Bare mountain tops along snowdrifts, Kootenai County, northern Idaho," *Sandberg 47*.

DISTRIBUTION: Western Montana and northern Idaho (*Leiberg 1235, Williams 969*).

45. *Lomatium Torreyi* Coult. & Rose, Contr. U. S. Nat. Herb. 7:
229. 1900.

Peucedanum Torreyi Coult. & Rose, Bot. Gaz. 14: 276. 1889.

Cogswellia Torreyi M. E. Jones, Contr. W. Bot. 12: 35. 1908.

Plants acaulescent or caulescent, 1–2.5 dm. high, from a cluster of dried leaf-sheaths, glabrous to sparingly scaberulous; leaves oblong in general outline, excluding the petioles 2–15 cm. long, ternate, then tripinnate, the ultimate divisions filiform, 3–8 mm. long, 0.2–1 mm. broad, entire, acute, mucronulate; petioles 2–5 cm. long, sheathing throughout, the sheath with a white scarious margin; peduncles equaling or exceeding the leaves; involucre wanting; rays 5–9, erect, 1–4 cm. long, unequal; pedicels 1–4 mm. long, the umbellets 10–30-flowered; flowers yellow; fruit narrowly oblong, narrowed toward the base, 10–16 mm. long, 3–4 mm. broad, the wings less than one-half the width of the body; oil-tubes solitary in the intervals.

TYPE LOCALITY: Yosemite Valley, *Curran 16*.

DISTRIBUTION: Southern Sierra Nevada, California, 6000–11,000 feet (*Ferris 8926, Purpus 1531*).

46. *Lomatium Engelmanni* Mathias, Ann. Mo. Bot. Gard. 25:
268. 1937.

Plants acaulescent, 1–3 dm. high, from a long slender taproot, pubescent to glabrate; leaves oblong to ovate in general outline, excluding the petioles 2.5–15 cm. long, ternate or

quinate, then 1-2-pinnate, the ultimate divisions confluent or distinct, ovate-oblong to linear-lanceolate, 1-15 mm. long, 0.5-2 mm. broad, apiculate; petioles 2-10 cm. long, wholly sheathing, purplish; peduncles exceeding the leaves; involucre usually wanting; rays 2-12 (the fertile 1-4), spreading or ascending, 1-10 cm. long, unequal; pedicels 2-12 mm. long, the umbellets few-flowered; flowers yellow; fruit ovate-oblong, 9-14 mm. long, 2-5 mm. broad, glabrous, the wings one-half the width of the body, the dorsal ribs filiform; oil-tubes 1 or 2 in the intervals, 2-6 on the commissure.

TYPE LOCALITY: Scott's Mountain, Siskiyou County, northern California, 6000-7000 feet, Engelmann.

DISTRIBUTION: High mountains, southwestern Oregon and northwestern California (Heller 13,676, Howell 13,656).

47. *Lomatium angustatum* (Coulter & Rose) St. John; St. John & Hardin, *Mazama* 11: 83. 1929.

Peucedanum Martindalei var. *angustatum* Coulter & Rose, Bot. Gaz. 13: 143. 1888.

Lomatium Martindalei var. *angustatum* Coulter & Rose, Contr. U. S. Nat. Herb. 7: 225. 1900.

Cogswellia Martindalei var. *angustata* M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Cogswellia angustata Coulter & Rose, Contr. U. S. Nat. Herb. 12: 449. 1909.

Lomatium Hallii of authors. Not *Peucedanum Hallii* S. Wats. 1876.

Plants short-caulescent, 1.5-2 dm. high, from a long slender taproot, glabrous; leaves broadly oblong-ovate in general outline, excluding the petioles 6.5-15 cm. long, ternate, then 2-3-pinnate, the ultimate divisions confluent and overlapping, ovate, 1-2 mm. long, 1-1.5 mm. broad, somewhat obtuse, minutely mucronulate; petioles 1.5-3 cm. long, forming a conspicuous scarious sheath; peduncles exceeding the leaves; involucre wanting; rays 6-16, 0.5-7 cm. long, unequal; pedicels 1-6 mm. long, the umbellets about 20-flowered; flowers creamy-white; fruit narrowly oblong, 6-10 mm. long, 3-5 mm. broad, the wings very narrow; oil-tubes 1, rarely 2, in the intervals, 2-4 on the commissure.

TYPE LOCALITY: Cascade Mountains, Oregon, Howell.

DISTRIBUTION: Mountains of western British Columbia, to the Cascade Mountains, Oregon, 3000-9000 feet (Cusick 2687, Thompson 5319).

47a. *Lomatium angustatum* var. *flavum* G. N. Jones, Univ. Wash. Publ. Biol. 5: 202. 1936.

Leaves sometimes fleshier; pedicels 8-16 mm. long; flowers lemon-yellow.

TYPE LOCALITY: Olympic Mountains, Washington, Piper 897.

DISTRIBUTION: Olympic Mountains, Washington, 4500-6500 feet (Thompson 5591, 9445).

48. *Lomatium dissectum* (Nutt.) Math. & Const. Bull. Torrey Club 69: 246. 1942.

Leptaena dissecta Nutt.; T. & G. Fl. N. Am. 1: 630. 1840.

Leptaena dissecta var. *foliosa* Hook. Lond. Jour. Bot. 6: 236. 1847.

Cynapium? *Bigelovii* Torr. Pacif. R. R. Rep. 4: 94. 1857.

Ferula dissecta A. Gray, Proc. Am. Acad. 7: 348. 1868.

Ferula dissoluta S. Wats. in Brewer & Wats. Bot. Calif. 1: 271. 1876.

Leptaena foliosa Coulter & Rose, Contr. U. S. Nat. Herb. 7: 198. 1900.

Plants caulescent, rarely acaulescent, 3-14 dm. high, from a stout thickened root bearing a stout caudex, the foliage puberulent or rarely glabrate, otherwise glabrous; leaves deltoid-orbicular in general outline, excluding the petioles 15-35 cm. long, ternate, then 2-4-pinnate, the ultimate divisions linear-oblong, obtuse or acute, 2-8 mm. long, 1.5-3 mm. broad, puberulent beneath, especially on the veins and margins; petioles 5-25 cm. long, broadly sheathing at the base; cauline leaves few, like the basal, short-petiolate with dilated sheaths; peduncles stout, fistulose, the terminal exceeding the leaves; involucre wanting, or of a few scarious, setaceous, or foliaceous bracts; involucre of several linear, entire bractlets, shorter or longer than the flowers; rays numerous, spreading, 3-13 cm. long, subequal; pedicels 1-3 mm. long, shorter than the sterile flowers; flowers purple or yellow; fruit oblong-oval, 12-16 mm. long,

6-10 mm. broad, glabrous, the wings much narrower than the body, very thick and corky; oil-tubes obscure.

TYPE LOCALITY: "Plains of the Oregon near the confluence of the Wahlamet" [Willamette], Oregon, *Nuttall*.

DISTRIBUTION: Northwestern Idaho to western Washington and northern California (*Elmer 2764*, *Heller & Heller 3174*).

48a. *Lomatium dissectum* var. *multifidum* (Nutt.) Math. & Const.
Bull. Torrey Club 69: 246. 1942.

Phellandrium aquaticum Pursh, Fl. Am. Sept. 195. 1814. Not *P. aquaticum* L. 1753.

Leptotaenia multifida Nutt.; T. & G. Fl. N. Am. 1: 630. 1840.

Ferula multifida A. Gray, Proc. Am. Acad. 7: 348. 1868.

Leptotaenia Eatoni Coult. & Rose, Rev. N. Am. Umbell. 52. 1888.

Leptotaenia multifida var. *Eatoni* M. E. Jones, Contr. W. Bot. 12: 40. 1908.

Leptotaenia dissecta var. *multifida* Jepson, Madroño 1: 145. 1923.

Leaf-divisions 2-22 mm. long, 0.5-2 mm. broad; petioles 3-30 cm. long; pedicels 4-20 mm. long, exceeding the sterile flowers.

TYPE LOCALITY: "Plains of the Oregon [Columbia River] east of Wallawallah [Walla Walla, Washington] and in the Blue Mountains," *Nuttall*.

DISTRIBUTION: Alberta to Colorado, west to British Columbia, Arizona, and southern California (*Heller & Heller 3138*, *Payson & Payson 2613*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 7: 198 (fr.); Clements & Clements, Rocky Mt. Fl. pl. 35, f. 20 (fr.); Carn. Inst. Wash. Publ. 286: 34.

49. *Lomatium columbianum* Math. & Const. Bull. Torrey Club 69:
246. 1942.

Ferula purpurea S. Wats. Proc. Am. Acad. 21: 453. 1886. Not *Lomatium purpureum* A. Nelson, 1901.

Leptotaenia purpurea Coult. & Rose, Rev. N. Am. Umbell. 52. 1888.

Plants acaulescent, 3-5 dm. high, from a stout thickened root bearing a caudex clothed with purplish, broadly dilated, bladeless sheaths, glabrous; leaves crowded, deltoid-orbicular in general outline, excluding the petioles 5-20 cm. long, ternate, then 2-4-pinnate, the ultimate divisions linear to filiform, apiculate, 3-20 mm. long, 0.5-2 mm. broad; petioles 10-20 cm. long, obscurely sheathing at the base; peduncles stout, fistulose, exceeding the leaves; involucre of several linear to lanceolate, acute bractlets, shorter than the flowers; rays 6-10, spreading, 3-20 cm. long, unequal; pedicels 15-25 mm. long, the umbellets 15-20-flowered; flowers purple; fruit oblong-oval, 16-24 mm. long, 8-12 mm. broad, glabrous, the wings thick and corky, much narrower than the body; oil-tubes 2 or 3 in the intervals, 4 on the commissure.

TYPE LOCALITY: "On rocky hillsides near the lower Columbia River, in Klickitat County, Washington," *Suksdorf 281*.

DISTRIBUTION: Columbia River gorge and vicinity, Oregon and Washington (*Brandege 319*, *Thompson 4055*).

50. *Lomatium Grayi* Coult. & Rose, Contr. U. S. Nat. Herb. 7:
229. 1900.

Peucedanum millefolium S. Wats. Bot. King's Expl. 129. 1871. Not *P. millefolium* Sonder 1861-1862.

Peucedanum Grayi Coult. & Rose, Bot. Gaz. 13: 209. 1888.

Peucedanum Grayi var. *aberrans* M. E. Jones, Contr. W. Bot. 10: 55. 1902.

Leptotaenia filicina M. E. Jones, Contr. W. Bot. 10: 56. 1902.

Cogsuella millefolia M. E. Jones, Contr. W. Bot. 12: 35. 1908.

Cogsuella Grayi Coult. & Rose, Contr. U. S. Nat. Herb. 12: 450. 1909.

Lomatium millefolium F. Macbr. Contr. Gray Herb. 53: 15. 1918.

Plants acaulescent or short-caulescent, 2-6.1 dm. high, from a long thickened taproot; leaves broadly obovate in general outline, excluding the petioles 10.5-26 cm. long, glabrous to scaberulous, 1-2-ternate or quinate, then 2-3-pinnate, the ultimate divisions crowded, linear to filiform, 1-11 mm. long, 0.1-0.25 mm. broad, entire, mucronulate; petioles 3.5-22 cm. long, sheathing at the base; peduncles exceeding the leaves; involucre of filiform, entire, occasionally toothed bractlets, usually shorter than the flowers, rarely deciduous; rays 7-22, spreading, 2-15 cm. long; pedicels 6-22 mm. long, the umbellets 15-30-flowered; flowers yellow; fruit

ovate-oblong to oblong, 7-16 mm. long, 5-8 mm. broad, the wings much narrower than to equaling the body; oil-tubes solitary in the intervals, rarely 2 or 3, especially in the lateral, 2-4, rarely 6, on the commissure.

TYPE LOCALITY: Antelope Island, Salt Lake, Utah, *Watson 466*.

DISTRIBUTION: Western Wyoming and Colorado to eastern Washington and Oregon and north-eastern Nevada, 750-8400 feet (*Heller & Heller 3043, Jones 5548*).

50a. *Lomatium Grayi* var. *depauperatum* (M. E. Jones) Mathias,
Ann. Mo. Bot. Gard. 25: 270. 1937.

Cogswellia millefolia var. *depauperata* M. E. Jones, Contr. W. Bot. 12: 38. 1908.

Usually lower; leaves dissected into few, small, remote, linear ultimate divisions.

TYPE LOCALITY: Dugway, Utah, *Jones*.

DISTRIBUTION: Western Utah and adjacent Nevada (*Cottam 4533, Jones 25,253*).

51. *Lomatium salmoniflorum* (Coul. & Rose) Math. & Const.
Bull. Torrey Club 69: 246. 1942.

Peucedanum salmoniflorum Coul. & Rose; Holz. Contr. U. S. Nat. Herb. 3: 228. 1895.

Leptotaenia salmoniflora Coul. & Rose, Contr. U. S. Nat. Herb. 7: 201. 1900.

Plants caulescent, 2-5 dm. high, from a stout thickened root, glabrous; leaves deltoid in general outline, excluding the petioles 1-3.5 dm. long, ternate, then 2-4-pinnate, the ultimate divisions filiform to linear, 1-7 mm. long, 0.5-1 mm. broad; petioles 5-15 cm. long, sheathing at the base; cauline leaves few, like the basal, short-petiolate with dilated sheaths; peduncles exceeding the leaves; involucrel of a few filiform bractlets, shorter than the flowers, or wanting; rays 4-13, spreading, 1-6 cm. long, subequal; pedicels 2-14 mm. long, the umbellets 10-20-flowered; flowers salmon-yellow; fruit oblong-oval, 10-14 mm. long, 5-6 mm. broad, glabrous, the wings much narrower than and homochromous with the body, slightly corky-thickened; oil-tubes solitary in the intervals, 2 on the commissure.

TYPE LOCALITY: "On basaltic rocks near upper ferry, Clearwater River above Lewiston, Nez Perce County," Idaho, *Sandberg 24*.

DISTRIBUTION: Drainage system of the Snake River in northwestern Idaho and adjacent Washington and Oregon (*Heller & Heller 3060, Piper 2781, 2782*).

52. *Lomatium minus* (Rose) Math. & Const. Bull. Torrey Club 69:
246. 1942.

Leptotaenia minor Rose; Howell, Fl. NW. Am. 1: 251. 1898.

Cusickia minor M. E. Jones, Contr. W. Bot. 12: 40. 1908.

Plants short-caulescent, 1.5-3 dm. high, from stout thickened roots bearing a caudex clothed with a few scarios, dilated, bladeless sheaths, glabrous; leaves ovate in general outline, excluding the petioles 5-12 cm. long, ternate, then 2-4-pinnate, the ultimate divisions linear to filiform, 1-3 mm. long, about 1 mm. broad; petioles 4-5 cm. long, broadly sheathing at the base; cauline leaves like the basal, short-petiolate, the sheaths conspicuous; peduncles stout and somewhat inflated, exceeding the leaves; involucrel of several linear, acute, scarios bractlets, shorter than the flowers; rays 6-9, stout, spreading, 2-6 cm. long, subequal; pedicels 4-14 mm. long, the umbellets about 10-flowered; flowers light purple; fruit oblong-oval, 12-16 mm. long, 5-7 mm. broad, glabrous, the wings much narrower than and homochromous with the body, slightly corky-thickened; oil-tubes large, solitary in the intervals, 3 or 4 on the commissure.

TYPE LOCALITY: Near Rock Creek, Morrow County, "John Day Country," Oregon, *Leiberg 98*.

DISTRIBUTION: Central to southeastern Oregon (*Cusick 2373*).

ILLUSTRATION: Contr. U. S. Nat. Herb. 7: pl. 8.

53. *Lomatium tuberosum* Hoover, Leaf. W. Bot. 4: 39. 1944.

Plants short-caulescent, 1-2.5 dm. high, from a tuberous horizontal or vertical root bearing leaf-sheaths which are neither fibrous nor persistent, glabrous and glaucous; leaves cuneate in general outline, excluding the petioles 4-8 cm. long, ternate, then 3-4-pinnate, the ultimate

divisions linear, herbaceous, 3-6 mm. long; petioles 7-12 cm. long, sheathing at the base; cauline leaf solitary or wanting, reduced or bladeless; peduncles exceeding the leaves; involucler of few, inconspicuous, narrowly linear bractlets; rays 5-8, divergent, 2-8 cm. long; pedicels 7-14 mm. long, the umbellets 8-12-flowered; flowers purple, the anthers yellow; fruit oblong-oval, 9-11 mm. long, 4.5-6.5 mm. broad, glabrous, the wings less than 1 mm. broad, fleshy.

TYPE LOCALITY: "Hills south of White Swan," Yakima County, Washington, *R. F. Hoover 5726*.

DISTRIBUTION: Known only from the vicinity of the type locality (*Hoover 5603*).

54. *Lomatium cuspidatum* Math. & Const. Bull. Torrey Club 69:
246. 1942.

Leptotaenia Watsoni Coult. & Rose, Rev. N. Am. Umbell. 52. 1888. Not *Peucedanum Watsoni* Coult. & Rose, 1888.

Plants acaulescent or short-caulescent, 2-6 dm. high, from a stout thickened root bearing a caudex clothed with dilated bladeless sheaths, glabrous; leaves ovate to orbicular in general outline, excluding the petioles 7-30 cm. long, ternate, then 2-3-pinnate, the ultimate divisions ovate to lanceolate, rigid, cuspidate, 1-5 mm. long, 1-2 mm. broad; petioles 2-10 cm. long, sheathing at the base; cauline leaves like the basal, short-petiolate with broad sheaths; peduncles exceeding the leaves; involucler of several linear-lanceolate to filiform, acuminate, scarious bractlets, shorter than the flowers; rays 5-12, spreading, 3-10 cm. long, unequal; pedicels 8-28 mm. long, the umbellets about 10-flowered; flowers purple, the anthers purple; fruit narrowly oblong-oval, 9-13 mm. long, 5 mm. broad, glabrous, the wings much narrower than and homochromous with the body, slightly corky-thickened; oil-tubes usually 3 in the intervals, several on the commissure.

TYPE LOCALITY: "In the Wenatchee Region, Kittitas County, Washington," *Brandegee 801*.
DISTRIBUTION: Wenatchee region of Central Washington (*Sandberg & Leiber 808, Thompson 9311*).

55. *Lomatium serpentinum* (M. E. Jones) Mathias, Ann. Mo. Bot.
Gard. 25: 271. 1937.

Cogswellia serpentina M. E. Jones, Contr. W. Bot. 12: 42. 1908.
Cogswellia fragrans St. John, Fl. SE. Wash. 290. 1937.

Plants acaulescent, 2.5-3 dm. high, from a thick and woody root with a multicapital caudex, essentially glabrous; leaves oblong in general outline, excluding the blades 8.5-15 (30?) cm. long, 1-2-ternate, then bipinnate, the ultimate divisions crowded, lanceolate to oblanceolate, 2-5 mm. long, 1-2 mm. broad, entire, apiculate, minutely papillose above; petioles 2-6 cm. long, partially to wholly sheathing with scarious-winged margins; peduncles exceeding the leaves; involucler of linear-lanceolate, finely puberulent bractlets, up to 5 mm. long; rays 10-17, spreading to ascending, 1.5-7 cm. long, unequal, glabrate; pedicels 3-15 mm. long, the umbellets many-flowered; flowers bright yellow; fruit oblong, 6-8 (10?) mm. long, 3-4 (5?) mm. broad, glabrous, the wings from one-half of to equaling the width of the body; oil-tubes solitary in the intervals, 2 on the commissure.

TYPE LOCALITY: "Rocky banks of the Snake River near the mouth of McDougal Creek," Oregon, *Cusick 3532c*.

DISTRIBUTION: Snake River Canyon, Idaho, Washington, and Oregon (*Constance, Rollins & Dillon 1559, 1591*).

56. *Lomatium Donnellii* Coult. & Rose, Contr. U. S. Nat. Herb. 7:
231. 1900.

Peucedanum Donnellii Coult. & Rose, Bot. Gaz. 13: 143. 1888.
Cogswellia Donnellii M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Plants acaulescent or caulescent with the development of a pseudoscape, 1.3-3.3 dm. high, from a long, rather stout taproot, glabrous; leaves ovate to oblong in general outline, excluding the petioles 4-10.5 cm. long, ternate, then 2-3-pinnate, the ultimate divisions confluent, linear, 1-7 mm. long, 1-2 mm. broad, entire, acute, apiculate; petioles 1-9 cm. long,

sheathing below, sometimes wholly so; peduncles exceeding the leaves; involucre of filiform to linear-lanceolate bractlets, equaling the flowers; rays 8-30, spreading to suberect, 1-9 cm. long, unequal; pedicels 3-15 mm. long, the umbellets about 20-flowered; flowers yellow; fruit ovate to ovate-oblong, 5-9 mm. long, 4-5 mm. broad, the wings less than one-half the width of the body; oil-tubes 3-6 in the intervals, 4-6 on the commissure.

TYPE LOCALITY: John Day Valley, Oregon, *Howell 829*.

DISTRIBUTION: Northern Idaho to northern Utah, west to central Washington and Oregon (*Cusick 1587, 2615*).

57. *Lomatium Nelsonianum* F. Macbr. Contr. Gray Herb. 53:
15. 1918.

Plants short-caulescent, 2.5-4 dm. high; leaves ovate in general outline, excluding the petioles up to 2.5 (?) dm. long, ternately to ternately-pinnately decomposed, the ultimate divisions linear or filiform (?), about 3 mm. long, less than 0.5 mm. broad, glabrous or sparingly hispid (?); petioles 2.5-5 cm. long, sheathing at the base; peduncles exceeding the leaves; involucre of filiform, sparingly hispid bractlets, up to one-half the length of the pedicels; rays 8-15, ascending, 2.5-7 cm. long, unequal; pedicels 8-16 mm. long, minutely pubescent to glabrate, spreading, the umbellets 15-20-flowered; flowers yellow (?); fruit oblong-oval, 7-9 mm. long, 4-6.5 mm. broad, glabrous, the wings slightly narrower than the body; oil-tubes 3 in the intervals, 6 on the commissure.

TYPE LOCALITY: "Dry rocky hillside near Mule Creek, Curry County, Oregon," *J. C. Nelson 1419* (in part).

DISTRIBUTION: Known only from the region of the type collection (which is apparently a mixture of this and of *L. dissectum*) (*Leach 3419*).

58. *Lomatium minimum* Mathias, Ann. Mo. Bot. Gard. 25:
273. 1937.

Cogswellia minima Mathias, Ann. Mo. Bot. Gard. 19: 497. 1932.

Plants acaulescent, 1-3.5 cm. high, glabrous or scabrous-puberulent; leaves narrowly oblong in general outline, excluding the petioles 0.5-2.5 cm. long, simply pinnate with 4-6 pairs of acute, distinct, entire or once-lobed leaflets, 2-10 mm. long, 1-1.5 mm. broad; petioles 1-6 mm. long, wholly sheathing; peduncles equaling or slightly exceeding the leaves; involucre of several submidiate, distinct, narrow, acute, foliaceous, scarious-margined bractlets, shorter than or equaling the flowers; rays few, 3-12 mm. long, unequal; pedicels 1-2 mm. long, the umbellets few-flowered; flowers yellow; fruit oblong, 4-7 mm. long, 3-4 mm. broad, glabrous, the wings well developed, about equaling the body; oil-tubes more or less obsolete.

TYPE LOCALITY: "Near the hotel, dry slopes bordering Bryce Canyon," Utah, 8600 feet, *Mathias 670*.

DISTRIBUTION: Bryce Canyon and the Panguitch Plateau, southwestern Utah (*Mathias 734*).

59. *Lomatium oreganum* Coult. & Rose, Contr. U. S. Nat. Herb. 7:
224. 1900.

Peucedanum oreganum Coult. & Rose, Rev. N. Am. Umbell. 64. 1888.

Cogswellia oregana M. E. Jones, Contr. W. Bot. 12: 35. 1908.

Plants very low, acaulescent, 0.25-0.6 dm. high, from a multicapital woody caudex, villosulose throughout; leaves oblong in general outline, excluding the petioles 1-3 cm. long, bipinnate, the ultimate divisions crowded, oblong, 2-3 mm. long, about 1 mm. broad, apiculate; petioles 0.5-2 cm. long, sheathing below; peduncles exceeding the leaves; involucre of linear, acute bractlets, not scarious-margined, longer than the flowers; umbels greatly reduced, with one fertile umbellet (the fertile rays 1-5 mm. long) and 2 or 3 sessile sterile umbellets; pedicels 1-1.5 mm. long, the umbellets few-flowered; flowers yellow; fruit oblong, about 5 mm. long, 2.5 mm. broad, villosulose, the wings much narrower than the body; oil-tubes 2 or 3 in the intervals, 4 on the commissure.

TYPE LOCALITY: "Alpine rocks, Blue and Eagle Creek [Wallowa] Mountains, Oregon," *Cusick 1300*.

DISTRIBUTION: High mountains of northeastern Oregon (*Cusick 2247*).

60. *Lomatium Greenmanii* Mathias, Ann. Mo. Bot. Gard. 25:
274. 1937.

Plants low, caulescent, 0.5–0.8 dm. high, from a multicapital woody caudex; leaves oblong in general outline, excluding the petioles 1.5–2.5 cm. long, 1–2-pinnate, the ultimate divisions oblong, distinct, 5–10 mm. long, 2–2.5 mm. broad, apiculate, the margins slightly roughened; petioles 1.5–3 cm. long, purplish, sheathing below; cauline leaf 1, much reduced, pinnate; peduncles exceeding the leaves; involucre of a few, filiform, white-scarious bractlets, about equaling the pedicels; umbels reduced to 1–3 fertile umbellets, the rays 1.5–2 mm. long, and 1 or 2 sessile sterile umbellets; pedicels about 1 mm. long, the umbellets few-flowered; flowers white; fruit ovate, 3.5 mm. long, 2 mm. broad, glabrous, the wings much narrower than the body, the dorsal ribs filiform; oil-tubes solitary in the intervals, 2 on the commissure.

TYPE LOCALITY: Wallowa Mountains, head of Keystone Creek, Oregon, 9000 feet, *Cusick 2458*.
DISTRIBUTION: Known only from the type locality.

61. *Lomatium Eastwoodae* (Coulter & Rose) F. Macbr. Contr. Gray
Herb. 56: 35. 1918.

Cynomarathrum Eastwoodae Coulter & Rose, Contr. U. S. Nat. Herb. 7: 247. 1900.
Cogswellia Eastwoodae M. E. Jones, Contr. W. Bot. 12: 35. 1908.

Plants acaulescent, 1–1.5 dm. high, from a subwoody caudex covered with old leaf-sheaths; leaves narrowly oblong in general outline, excluding the petioles 2.5–7 cm. long, scaberulous, 1–2-pinnate, with 5–7 remote pairs of oblong-lanceolate leaflets, 2–4 mm. long, 1–1.5 mm. broad, crowded, apiculate; petioles 1.5–4.5 cm. long, shortly sheathing below; peduncles exceeding the leaves; involucre of a few, linear, entire bractlets, much shorter than the pedicels; rays 4–6, ascending, 1–3 cm. long, unequal; pedicels 6–17 mm. long, ascending, the umbellets 2–15-flowered; flowers yellow (?); fruit oblong, 8–10 mm. long, about 6 mm. broad, glabrous, the wings equaling or broader than the body; oil-tubes 3 or 4 in the intervals, 6–8 on the commissure.

TYPE LOCALITY: Grand Junction, Colorado, *Eastwood*.
DISTRIBUTION: Known only from the region of the type locality (*Bethel 24*).
ILLUSTRATION: Contr. U. S. Nat. Herb. 7: 244 (fr.).

62. *Lomatium scabrum* (Coulter & Rose) Mathias, Ann. Mo. Bot.
Gard. 25: 275. 1937.

Cynomarathrum scabrum Coulter & Rose, Contr. U. S. Nat. Herb. 7: 247. 1900.
Cogswellia scabra M. E. Jones, Contr. W. Bot. 12: 35. 1908.

Plants acaulescent, 1–3.5 dm. high, from a subwoody caudex covered with old leaf-sheaths; leaves narrowly oblong in general outline, excluding the petioles 5.5–10 cm. long, sparsely to densely scaberulous, 2–3-pinnate, the ultimate divisions crowded, linear, 2–4 mm. long, 1–1.5 mm. broad, apiculate; petioles 3–10 cm. long, sheathing below, glabrous to scaberulous; peduncles exceeding the leaves, sparsely scaberulous to glabrate, especially above; involucre of linear, setaceous, distinct or shortly connate bractlets, shorter than or equaling the flowers; rays 7–14, ascending, 1.5–4 cm. long, glabrous; pedicels 5 (2?)–9 mm. long, ascending, the umbellets many-flowered; flowers yellow; fruit oblong-ovate, 7–9 mm. long, 4–6 mm. broad, glabrous, the wings one-half the width of the body or less; oil-tubes 3–5 in the intervals, 4–10 on the commissure.

TYPE LOCALITY: Frisco, Utah, 2400 m., *Jones 1864*.
DISTRIBUTION: Southwestern Utah (*Gooding 799*, *Jones 5125g*).

63. *Lomatium concinnum* (Osterhout) Mathias, Ann. Mo. Bot.
Gard. 25: 276. 1937.

Cogswellia concinna Osterhout, *Muhlenbergia* 8: 44. 1912.

Plants short-caulescent, 1.2–2.5 dm. high, purplish below, from a long slender taproot, glabrous; leaves oblong in general outline, excluding the petioles 2–7 cm. long, bipinnate with

the lower leaflets sometimes pinnately lobed, the ultimate divisions distinct, linear, 2-11 mm. long, 1-2 mm. broad, rounded at the apex, sometimes apiculate; petioles 1.5-5.5 cm. long, sheathing below; peduncles exceeding the leaves; involucre of conspicuous, dimidiate, foliaceous, ovate-lanceolate, acute bractlets, entire or rarely lobed toward the apex, usually many-nerved, connate below, equaling or exceeding the flowers; rays 8-13 (the fertile 5-6), spreading, 2.5-4 cm. long, subequal; pedicels 1-2 mm. long, the umbellets many-flowered; flowers yellow; fruit ovate, 5-8 mm. long, 4-5 mm. broad, the wings less than one-half the width of the body; oil-tubes 4 or 5 in the intervals, about 10 on the commissure.

TYPE LOCALITY: Paonia, Delta County, Colorado, *Osterhout 4515*.
DISTRIBUTION: Southwestern Colorado (*Baker 22, Purpus 587*).

64. *Lomatium Parryi* (S. Wats.) F. Macbr. Contr. Gray Herb. 56:
35. 1918.

Peucedanum macrocarpum sensu Parry, Am. Nat. 9: 272. 1875. Not *P. macrocarpum* Nutt. 1840.
Peucedanum Parryi S. Wats. Proc. Am. Acad. 11: 143. 1876.
Peucedanum scopulorum M. E. Jones, Contr. W. Bot. 8: 31. 1898.
Cynomarathrum Parryi Coult. & Rose, Contr. U. S. Nat. Herb. 7: 246. 1900.
Cogswellia Parryi M. E. Jones, Contr. W. Bot. 12: 32. 1908.
Cogswellia Cottami M. E. Jones, Contr. W. Bot. 16: 36. 1930.

Plants acaulescent, 2-4 dm. high, from a long somewhat stout taproot, glabrous; leaves narrowly oblong in general outline, excluding the petioles 10-20 cm. long, 2-3-pinnate, the lowermost leaflets more divided than the upper, the ultimate divisions linear, 2-9 mm. long, about 1 mm. broad, entire, cuspidate; petioles 6-10.5 cm. long, shortly sheathing below; peduncles clustered from the old sheaths, equaling or exceeding the leaves; involucre of several, linear, acute, subscariosus, sometimes cleft bractlets, equaling or exceeding the flowers; rays about 15, suberect, 2-4.5 cm. long, subequal; pedicels 10-17 mm. long, the umbellets about 10-flowered; flowers yellow; fruit oblong, 9-12 mm. long, 4-6 mm. broad, the wings equaling or somewhat broader than the body; oil-tubes 2 or 3 in the intervals, 4 on the commissure.

TYPE LOCALITY: Southern Utah, *Parry 85* (in part).
DISTRIBUTION: Mountains, southeastern Utah to eastern California (*Gooding 629, Jones 5149s*).
ILLUSTRATION: E. Jaeger, Des. Wild Fl. 178.

65. *Lomatium Nuttallii* (A. Gray) F. Macbr. Contr. Gray Herb. 56:
35. 1918.

Seseli Nuttallii A. Gray, Proc. Am. Acad. 8: 287, in part. 1870.
Cynomarathrum saxatile Nutt.; A. Gray, Proc. Am. Acad. 8: 287, as syn. 1870.
Peucedanum graveolens S. Wats. Bot. King's Expl. 128. 1871. Not *P. graveolens* Benth. & Hook. 1867.
Peucedanum Kingii S. Wats. Proc. Am. Acad. 22: 474. 1887.
Cynomarathrum Nuttallii Coult. & Rose, Contr. U. S. Nat. Herb. 7: 245. 1900.
Cogswellia Nuttallii M. E. Jones, Contr. W. Bot. 12: 32. 1908.

Plants acaulescent, 1.5-4.2 dm. high, from a multicapital, subwoody caudex covered with old leaf-sheaths, glabrous; leaves oblong in general outline, excluding the petioles 5.5-13 cm. long, 1-2-pinnate or ternate- or quinate-pinnate, the ultimate divisions remote, linear, 10-50 mm. long, 1-2 mm. broad, entire, cuspidate; petioles 3-15 cm. long, shortly sheathing below; peduncles stout, usually greatly exceeding the leaves; involucre of distinct or shortly connate, linear, acute to acuminate bractlets, entire or once-lobed near the base, longer than or equaling the flowers, sometimes reflexed; rays 5-16, erect to suberect, 1.5-4.3 cm. long; pedicels 3-7 mm. long, suberect, the umbellets 15-20-flowered; flowers yellow; fruit narrowly oblong, 9-13 mm. long, 3-4 mm. broad, the wings about one-half the width of the body; oil-tubes 3-5 in the intervals, 6-10 on the commissure.

TYPE LOCALITY: "Rocky Mountains," *Nuttall*.
DISTRIBUTION: Southwestern Wyoming to eastern Nevada, south to northwestern New Mexico; one collection from Nebraska. (*Payson & Payson 2707, 4887*).
ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. 2: 633; Rydb. Fl. Pr. & Pl. 602.

65a. **Lomatium Nuttallii** var. **alpinum** (S. Wats.) Mathias, Ann.
Mo. Bot. Gard. 25: 279. 1937.

Peucedanum graveolens var. *alpinum* S. Wats. Bot. King's Expl. 129. 1871.
Peucedanum Kingii var. *alpinum* Coult. & Rose, Rev. N. Am. Umbell. 71. 1888.
Cynomaraltrum alpinum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 245. 1900.
Cogswellia Nuttallii var. *alpina* M. E. Jones, Contr. W. Bot. 12: 32. 1908.
Lomatium alpinum F. Macbr. Contr. Gray Herb. 56: 35. 1918.

Usually lower, up to 3 dm. high; leaves usually less divided; rays 3-6; pedicels 4-10 mm. long.

TYPE LOCALITY: East Humboldt Mountains, Nevada, *Watson 464*.
DISTRIBUTION: Western Utah and adjacent Nevada (*Purpus 6282*).

66. **Lomatium Hallii** (S. Wats.) Coult. & Rose, Contr. U. S. Nat.
Herb. 7: 224. 1900.

Peucedanum nudicaule A. Gray, Proc. Am. Acad. 8: 385. 1872. Not *Smyrniium nudicaule* Pursh, 1814.
Peucedanum Hallii S. Wats. Proc. Am. Acad. 11: 141. 1876.
Peucedanum microcarpum Howell; Coult. & Rose, Rev. N. Am. Umbell. 65. 1888.
Lomatium Leibergii Coult. & Rose, Contr. U. S. Nat. Herb. 7: 224. 1900.
Lomatium microcarpum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 230. 1900.
Cogswellia Hallii M. E. Jones, Contr. W. Bot. 12: 35. 1908.
Cogswellia microcarpa M. E. Jones, Contr. W. Bot. 12: 35. 1908.
Cogswellia Leibergii M. E. Jones, Contr. W. Bot. 12: 35. 1908.

Plants short-caulescent, 2-3.5 dm. high, glabrous except for an occasional slight scaberrulence in the inflorescence; leaves oblong in general outline, excluding the petioles 4.5-10 cm. long, tripinnate, the ultimate divisions (except the uppermost) distinct, linear or oblong, 2-4 mm. long, less than 1 mm. broad, entire, apiculate; petioles 3-6 cm. long, sheathing to about the middle, purplish, scarious-margined; peduncles exceeding the leaves; involucre of linear-lanceolate, acuminate bractlets, equaling the flowers; rays 9-17, spreading, 1.3-5 cm. long, unequal, glabrous or scaberulous below; pedicels 4-7 mm. long, glabrous or scaberulous, the umbellets about 30-flowered; flowers yellow; fruit oblong, 5-7 mm. long, about 3 mm. broad, the wings about one-half the width of the body; oil-tubes 2 or 3 in the intervals, 5 on the commissure.

TYPE LOCALITY: Oregon, probably Silver Creek, Marion County, *Hall 211*.
DISTRIBUTION: Western slope of the Cascade Mountains, Oregon (*Thompson 10,174*, *Constance, Henderson & Rollins 1471*).

67. **Lomatium Martindalei** Coult. & Rose, Contr. U. S. Nat. Herb.
7: 225. 1900.

Peucedanum Martindalei Coult. & Rose, Bot. Gaz. 13: 142. 1888.
Cogswellia Martindalei M. E. Jones, Contr. W. Bot. 12: 34. 1908.

Plants short-caulescent, 1.5-2.5 dm. high, purplish, from a long, thickened taproot; leaves oblong to ovate-oblong in general outline, excluding the petioles 2.5-5 cm. long, 1-2-pinnate, minutely roughened to glabrous on the margins and veins beneath, the leaflets oblong to cuneate, 5-10 mm. long, 2-7 mm. broad, pinnately lobed to serrate above; petioles 2.5-5 cm. long, sheathing below; peduncles exceeding the leaves; involucre of a few filiform bractlets, shorter than the pedicels; rays 4-7, suberect, 1-5.5 cm. long, unequal; pedicels (the fertile 2-3) 7-10 mm. long, the umbellets 10-20-flowered; flowers yellow; fruit oblong, 13-16 mm. long, 7-8 mm. broad, the wings about equaling the body; oil-tubes solitary in the intervals, 2 on the commissure.

TYPE LOCALITY: Rocky places, Cascade Mountains, Oregon, *Howell*.
DISTRIBUTION: Cascade Mountains and southwestern Coast Ranges, Oregon (*Heller 13,462*, *Thompson 12,286*).

68. *Lomatium latilobum* (Rydb.) Mathias, Ann. Mo. Bot. Gard. 25:
281. 1937.

Cynomarathrum latilobum Rydb. Bull. Torrey Club 40: 73. 1913.

Plants acaulescent, 0.8–1.8 dm. high, from a semiwoody deep-seated root with a multicapital caudex, broadly cespitose, the branches several, clothed with old leaf-sheaths, glabrous; leaves several from each crown, erect, oblong in general outline, excluding the petioles 2–8 cm. long, pinnate or rarely bipinnate, the leaflets lanceolate, sessile, in 3–5 pairs 3–30 mm. apart, 5–28 mm. long, 2–6 mm. broad, entire, acute, mucronulate; petioles 2–10.5 cm. long, shortly sheathing below; peduncles equaling or exceeding the leaves; involucrel of dimidiate, linear to lanceolate, acute, prominently nerved bractlets, distinct or connate below, usually exceeding the pedicels, sometimes reflexed; rays 4–10 (the fertile 2–5), spreading, 0.5–1.2 cm. long, subequal; pedicels 1–4 mm. long, the umbellets few-flowered; flowers yellow (?); fruit oblong, 7–12 mm. long, 3–5 mm. broad, the wings narrower than or equaling the body; oil-tubes 1 or 2 in the intervals, 2–4 on the commissure.

TYPE LOCALITY: "Proposed dam site, near Wilson Mesa, Grand County, Utah," Rydberg & Garrett 8371.

DISTRIBUTION: Southeastern Utah (*Purpus* 7150).

69. *Lomatium megarrhizum* (A. Nelson) Mathias, Ann. Mo. Bot.
Gard. 25; 282. 1937.

Musenium tenuifolium sensu Hook. Lond. Jour. Bot. 6: 237. 1847. Not *M. tenuifolium* Nutt. 1840.

Pucedanum megarrhiza A. Nelson, Bull. Torrey Club 26: 130. 1899.

Cynomarathrum megarrhizum Rydb. Fl. Rocky Mts. 629, 1064. 1917.

Plants acaulescent, 1–3 dm. high, clustered from a broad, semiwoody, deep-seated root, the caudex multicapital, broadly cespitose, the branches numerous, crowded, thickly clothed with old leaf-sheaths, glabrous; leaves few to several from each crown, rigidly erect, linear-oblong in general outline, excluding the petioles 5.5–9.5 cm. long, pinnate, the leaflets in 2–5 remote pairs, 11–25 mm. long, about 1 mm. broad, entire and narrowly linear and cuspidate to irregularly and remotely pinnatifid, the lobes few, linear, 1–10 mm. long, 1 mm. broad, cuspidate; petioles 4.5–8 cm. long, shortly sheathing below; peduncles equaling or shortly exceeding the leaves; involucrel of subdimidiate, linear, acute to short-acuminate bractlets, connate below, longer than the pedicels; rays 10–11, spreading to reflexed, 0.8–2.3 cm. long, subequal; pedicels 1–2 mm. long, spreading to reflexed, the umbellets about 20-flowered; flowers yellow; fruit oblong, 5–8 mm. long, 2.5–3 mm. broad, the wings narrower than the body; oil-tubes about 3 in the intervals, 6–10 on the commissure.

TYPE LOCALITY: Point of Rocks, Wyoming, A. Nelson 4769.

DISTRIBUTION: Southwestern Wyoming (*Nelson* 7080, *Payson* & *Payson* 2596).

70. *Lomatium simplex* (Nutt.) F. Macbr. Contr. Gray Herb. 56:
34. 1918.

*Pucedanum triternatum** var. ? *platycarpum* Torr. in Stansb. Expl. Utah 389. 1852.

Pucedanum simplex Nutt.; S. Wats. Bot. King's Expl. 129. 1871.

Lomatium platycarpum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 226, in part. 1900.

Cogsuwellia platycarpa M. E. Jones, Contr. W. Bot. 12: 32. 1908.

Cogsuwellia simplex M. E. Jones, Bull. Univ. Mont. Biol. 15: 41. 1910.

Plants caulescent or acaulescent, 2–6 dm. high, clustered from a long slender taproot, the stems usually simple, few-leaved, densely puberulent; leaves obovate in general outline, excluding the petioles 11–20 cm. long, biternate, the ultimate divisions linear, acute, 25–115 mm. long, 3–6 mm. broad, glabrous above, glabrous to densely puberulent below; petioles 6–14 cm. long, sheathing to near the middle, glabrous to puberulent; involucrel of linear or filiform, acute to acuminate, glabrous or puberulent bractlets, shorter than the pedicels; rays 8–17, spreading to ascending, 1.5–5.8 cm. long, unequal; pedicels 1–9 mm. long, the umbellets 10–30-flowered;

* "citrinatum," an orthographic error.

flowers yellow; fruit broadly oblong to suborbicular, 7-14 mm. long, 7-10 mm. broad, glabrous, the wings broader than the body; oil-tubes solitary in the intervals, 2 on the commissure.

TYPE LOCALITY: "Rocky Mountains," Nuttall.

DISTRIBUTION: Western Montana to central Washington, south to southwestern Colorado, Utah, and central Oregon (*Macbride 1722, Payson & Payson 4866*).

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 26: pl. 22; Armstrong, Field Book W. Wild Fl. 335.

70a. *Lomatium simplex* var. *leptophyllum* (Hook.) Mathias, Ann. Mo. Bot. Gard. 25: 283. 1937.

Peucedanum triternatum var. *leptophyllum* Hook. Lond. Jour. Bot. 6: 235. 1847.

Cogswellia leptophylla Rydb. Bull. Torrey Club 40: 74. 1913.

Ovaries and young fruit puberulent.

TYPE LOCALITY: "Crevices of Trappe masses, on the slopes of the high plains of Koonskookee [Clearwater] River," Idaho, Geyer 505.

DISTRIBUTION: Alberta, western Montana, and Wyoming to British Columbia and eastern Oregon (*Blankinship 705, Payson & Payson 4454*).

71. *Lomatium triternatum* (Pursh) Coult. & Rose, Contr. U. S. Nat. Herb. 7: 227. 1900.

Seseli triternatum Pursh, Fl. Am. Sept. 197. 1814.

Eulophus triternatus Nutt., Jour. Acad. Phila. 7: 27. 1834.

Peucedanum triternatum Nutt.; T. & G. Fl. N. Am. 1: 626. 1840.

Peucedanum Nuttallii Walp., Rep. 2: 411. 1843. Not *Seseli Nuttallii* A. Gray, 1870.

Cogswellia triternata M. E. Jones, Contr. W. Bot. 12: 32. 1908.

Cogswellia triternata f. *lanatifolia* St. John, Fl. SE. Wash. 293. 1937.

Plants caulescent or acaulescent, 1.7-8 dm. high, from a long, slender, taproot, puberulent to glabrate; leaves broadly obovate in general outline, excluding the petioles 7-15 cm. long, ternate or quinate, then 1-2-pinnate, the ultimate divisions few, linear to linear-lanceolate, 15-126 mm. long, 0.5-7 (rarely 10) mm. broad, entire, acute; petioles 7-20 cm. long, purplish below, sheathing to about the middle; cauline leaves 1 or 2, smaller, the petioles wholly sheathing; peduncles exceeding the leaves; involucre of several filiform bractlets, about equaling the pedicels; rays 10-20, spreading to suberect, 1.2-5.5 cm. long, unequal; pedicels 3-5 mm. long, the umbellets many-flowered; flowers yellow, the ovaries glabrous; fruit oblong, 9-13 mm. long, 3-5 mm. broad, glabrous, the wings narrower than the body; oil-tubes solitary in the intervals, 2 on the commissure.

TYPE LOCALITY: "On the waters of Columbia River" [probably on the Clearwater River near the mouth of Potlatch Creek, Idaho], Lewis.

DISTRIBUTION: Alberta and western Montana and Wyoming to western Washington and northern California (*Elmer 846, Macbride & Payson 3587*).

71a. *Lomatium triternatum* var. *anomalum* (M. E. Jones) Mathias, Ann. Mo. Bot. Gard. 25: 285. 1937.

Lomatium anomalum M. E. Jones; Coult. & Rose, Contr. U. S. Nat. Herb. 7: 237. 1900.

? *Lomatium giganteum* Coult. & Rose, Contr. U. S. Nat. Herb. 7: 240. 1900.

Cogswellia anomala M. E. Jones, Contr. W. Bot. 12: 32. 1908.

? *Cogswellia gigantea* M. E. Jones, Contr. W. Bot. 12: 32. 1908.

? *Lomatium nudicaule* var. *puberulum* Jepson, Madroño 1: 159. 1924.

? *Peucedanum nudicaule* var. *puberulum* A. Gray; Jepson, Madroño 1: 159, as syn. 1924.

Plants caulescent; leaf-divisions ovate-lanceolate to narrowly obovate, 15-65 mm. long, 3-8 mm. broad, acute, entire or the uppermost rarely 3-toothed to deeply lobed; rays 10-22, 1.5-8 cm. long, puberulent to glabrate; pedicels 2-8 mm. long; ovaries glabrous; fruit 13-22 mm. long, 8-16 mm. broad, glabrous.

TYPE LOCALITY: "Rocky gumbo soil, slopes of Indian Valley, Washington County, Idaho," 1200 meters, Jones.

DISTRIBUTION: Western Idaho to Oregon and northwestern California (?) (*Constance, Beetle & Ownbey 2730, 2737, Heller & Heller 3132, Leiberg 1128*).

71b. *Lomatium triternatum* var. *macrocarpum* (Coul. & Rose)

Mathias, Ann. Mo. Bot. Gard. 25: 286. 1937.

- Peucedanum triternatum* var. *macrocarpum* Coul. & Rose, Rev. N. Am. Umbell. 70. 1888.
Peucedanum triternatum var. *alatum* Coul. & Rose, Rev. N. Am. Umbell. 70. 1888.
Peucedanum triternatum var. *robustius* Coul. & Rose; Holz. Contr. U. S. Nat. Herb. 3: 228. 1895.
Lomatium robustius Coul. & Rose, Contr. U. S. Nat. Herb. 7: 228. 1900.
Lomatium alatum Coul. & Rose, Contr. U. S. Nat. Herb. 7: 228. 1900.
Cogswellia triternata var. *robustior* M. E. Jones, Contr. W. Bot. 12: 32. 1908.
Cogswellia triternata var. *alata* M. E. Jones, Contr. W. Bot. 12: 32. 1908.
Cogswellia robustior Coul. & Rose, Contr. U. S. Nat. Herb. 12: 451. 1909.
Cogswellia alata Coul. & Rose, Contr. U. S. Nat. Herb. 12: 448. 1909.
Lomatium triternatum var. *alatum* Mathias, Ann. Mo. Bot. Gard. 25: 287. 1937.

Leaves 12-22 cm. long, ternate or quinate, then biternate to bipinnate, the ultimate divisions linear to ovate-lanceolate, 15-145 mm. long, 1-11 mm. broad, entire; involucrel of several bractlets, equaling the pedicels, or conspicuously shorter, or obsolete; rays 5-18, 0.6-10.5 cm. long, unequal; pedicels 2.5-9 mm. long; ovaries puberulent; fruit oblong, 8-20 mm. long, 4-6 mm. broad, glabrous or sparsely puberulent, the wings much narrower than to equaling the body.

TYPE LOCALITY: "Low grounds, W. Klickitat County, Washington," *Suksdorf 502*.

DISTRIBUTION: Alberta to British Columbia, south to northwestern Nevada and northern California (*Cusick 2700*, *Macbride 107*).

71c. *Lomatium triternatum* var. *brevifolium* (Coul. & Rose)

Mathias, Ann. Mo. Bot. Gard. 25: 286. 1937.

- Peucedanum triternatum* var. *brevifolium* Coul. & Rose, Rev. N. Am. Umbell. 70. 1888.
Lomatium brevifolium Coul. & Rose, Contr. U. S. Nat. Herb. 7: 232. 1900.
Cogswellia brevifolia M. E. Jones, Contr. W. Bot. 12: 32. 1908.

Plants caulescent, 1.5-3.5 dm. high, densely soft-puberulent; leaves quinately compound, the ultimate divisions remote, linear, pinnate, 3-22 mm. long, 1-3 mm. broad; rays 9-11; pedicels 1-4 mm. long; fruit linear-oblong, 6-8 mm. long, about 2 mm. broad, densely puberulent.

TYPE LOCALITY: Klickitat County, Washington, *Howell 379*.

DISTRIBUTION: Columbia River Valley, Washington and adjacent Oregon (*Howell 1368*, *Thompson 8176*).

72. *Lomatium Cusickii* (S. Wats.) Coul. & Rose, Contr. U. S. Nat.

Herb. 7: 226. 1900.

- Peucedanum Cusickii* S. Wats. Proc. Am. Acad. 21: 453. 1886.
Cogswellia Cusickii M. E. Jones, Contr. W. Bot. 12: 32. 1908.
Cogswellia brecciarum M. E. Jones, Contr. W. Bot. 12: 37. 1908.
Cogswellia altensis M. E. Jones, Bull. Univ. Mont. Biol. 15: 41. 1910.
Cynomarathrum brecciarum Rydb. Fl. Rocky Mts. 630, 1064. 1917.

Plants caulescent, 1-2.2 dm. high, caespitose, from a long, slender, fusiform taproot; leaves obovate to elliptic in general outline, excluding the petioles 3.5-12 cm. long, glabrous to slightly scaberulous, ternately compound, the leaflets few, filiform to linear, 6-75 mm. long, 0.5-2 mm. broad, apiculate; petioles 1-9 cm. long, sheathing, purplish; peduncles exceeding the leaves, glabrous; involucrel of filiform to linear-acuminate, scarious-margined bractlets, about equaling the flowers; rays 5-12, 1-3.5 cm. long, unequal; pedicels 2-6 mm. long, the umbellets about 10-flowered; flowers white or purplish; fruit oblong, 11-13 mm. long, 4-6 mm. broad, glabrous, the wings about equaling the body; oil-tubes 1-3 in the intervals, 5 on the commissure.

TYPE LOCALITY: "On the highest summits of the Eagle Creek [Wallowa] Mountains, Union County, Oregon," *Cusick*.

DISTRIBUTION: Mountains, western Montana to northeastern Oregon, 6000-9300 feet (*Cusick 3335*, *Piper 2333*).

73. *Lomatium idahoense* Math. & Const. Bull. Torrey Club 70:
58. 1942.

Plants caulescent or short-caulescent, 2-4 dm. high, from a long slender taproot, the stems slender, few-leaved, glabrous; leaves obovate in general outline, excluding the petioles 4-12 cm. long, ternate-pinnate or partially biternate, the ultimate divisions narrowly linear to oblong, acute or obtuse, 1-10 cm. long, 1-4 mm. broad, glabrous; petioles 1.5-12 cm. long, narrowly sheathing in the lower one-third or two-thirds, glabrous; involucre wanting; rays 3-7, ascending, 2-8 cm. long, unequal, slender; pedicels filiform, 5-15 mm. long, the umbellets 7-20-flowered; flowers yellow; fruit narrowly oblong, acute at the apex, 10-12 mm. long, 3-4 mm. broad, glabrous, the wings much narrower than the body; oil-tubes solitary in the intervals, 2 on the commissure.

TYPE: "Gravelly granitic hillside along Beaver Creek, near Marsh Creek, 25 miles N.W. of Stanley, Custer County, Idaho." 6400 feet, *Cronquist 2856*.

DISTRIBUTION: Mountains of the Salmon River drainage, Idaho (*R. J. Davis 3060, 3113*).

74. *Lomatium laevigatum* (Nutt.) Coult. & Rose, Contr. U. S. Nat.
Herb. 7: 225. 1900.

Peucedanum laevigatum Nutt.; T. & G. Fl. N. Am. 1: 627. 1840.
Cogswellia laevigata M. E. Jones, Contr. W. Bot. 12: 32. 1908.

Plants caulescent, 2.5-3.7 dm. high, tufted at the base, glabrous; leaves ovate in general outline, excluding the petioles 7-12 cm. long, ternate, then 2-3-pinnate, the ultimate divisions distinct, linear, 5-35 mm. long, 1-3 mm. broad, acute, minutely apiculate; petioles 0.5-1.5 dm. long, sheathing below; peduncles exceeding the leaves; involucre usually wanting; rays 9-20, ascending, 0.7-4.5 cm. long, unequal; pedicels 4-10 mm. long, the umbellets 10-30-flowered; flowers yellow; fruit oblong, 6-10 mm. long, 4-6 mm. broad, the wings slightly narrower than or equaling the body; oil-tubes solitary in the intervals, 2 on the commissure.

TYPE LOCALITY: Blue Mountains, Oregon, *Nuttall*.

DISTRIBUTION: Columbia River Valley, Washington and Oregon (*Howell, 1505, Thompson 6388*).

75. *Lomatium Suksdorfii* (S. Wats.) Coult. & Rose, Contr. U. S.
Nat. Herb. 7: 239, in part. 1900.

Peucedanum Suksdorfii S. Wats. Proc. Am. Acad. 20: 369. 1885.
Cogswellia Suksdorfii M. E. Jones, Contr. W. Bot. 12: 32. 1908.

Plants caulescent, 9-21 dm. high, the stems from a cluster of old leaf-sheaths, glabrous; leaves obovate in general outline, excluding the petioles about 20 cm. long, quinate, biquinate, or biternate, then 1-2-pinnate, the ultimate divisions remote, linear, acute, 10-30 mm. long, 1-4 mm. broad; petioles 14-15 cm. long, sheathing below; cauline leaves similar or with a wholly sheathing petiole; peduncles exceeding the leaves; involucre of several linear, acuminate, subscurious bractlets, about equaling the flowers, deciduous in the mature plant; rays 13-25, spreading, 3-11 cm. long, unequal; pedicels 6-17 mm. long, the umbellets many-flowered; fruit linear-oblong, 15-32 mm. long, 7-8 mm. broad, the wings narrower than the body; oil-tubes 1, rarely 3 or 4, in the intervals, 2 on the commissure.

TYPE LOCALITY: "On dry rocky mountain sides, W. Klickitat County, Washington," *Suksdorf*.

DISTRIBUTION: Klickitat County, Washington (*Suksdorf 503*).

75a. *Lomatium Suksdorfii* var. *Thompsonii* Mathias, Ann. Mo.
Bot. Gard. 25: 289. 1937.

Foliage and stems finely and sparingly pubescent; leaves biternate, rarely quinate, then bipinnate, the ultimate divisions short, 8-16 mm. long, 1-2 mm. broad; bractlets filiform, longer than the flowers; ovaries and young fruit puberulent; fruit 24-28 mm. long, 8-10 mm. broad, glabrate.

TYPE LOCALITY: Peshastin, Okanogan County, Washington, 340 meters, *Sandberg & Leiber 489*.

DISTRIBUTION: Wenatchee region, north-central Washington (*Constance & Beelle 2757, Thompson 5989, 9000*).

76. *Lomatium Brandegei* (Coul. & Rose) F. Macbr. Contr. Gray
Herb. 56: 35. 1918.

Peucedanum Brandegei Coul. & Rose, Bot. Gaz. 13: 210. 1888.

Cynomarathrum Brandegei Coul. & Rose, Contr. U. S. Nat. Herb. 7: 246. 1900.

Cogswellia Brandegei M. E. Jones, Contr. W. Bot. 12: 32. 1908.

Plants caulescent, 1.5-6 dm. high, from an elongate taproot, the stems alternately few-branched, glabrous; leaves mostly basal from a cluster of dried sheaths, obovate in general outline, excluding the petioles 8-20 cm. long, ternate, then 2-3-pinnate, the ultimate divisions remote, linear-lanceolate to oblanceolate, 10-40 mm. long, 1.5-8 mm. broad, acute, mucronate, the margins glabrous to granulate-roughened; petioles 1.5-14 cm. long, shortly sheathing below; peduncles exceeding the leaves; involucre of several linear, acute, subscurious bractlets, longer than the pedicels; rays 10-21, spreading, sometimes reflexed, 0.4-4.3 cm. long, subequal; pedicels 0.5-5 mm. long, the umbellets 10-25-flowered, the fertile flowers 1-5; flowers yellow; fruit linear-oblong, 9-12 mm. long, about 4 mm. broad, usually reflexed, the wings narrower than the body; oil-tubes 1-4 (usually 3) in the intervals, 6 or 7 on the commissure.

TYPE LOCALITY: "Walla Walla region," Washington, *Brandegee 799*.

DISTRIBUTION: Wenatchee region, north-central Washington (*Thompson 7728, 9310*).

77. *Lomatium californicum* (Nutt.) Math. & Const. Bull. Torrey
Club 69: 246. 1942.

Leptotaenia ? californica Nutt.; T. & G. Fl. N. Am. 1: 630. 1840. Not *Peucedanum californicum* Nutt. 1840, nor Coul. & Rose, 1888.

Ferula californica A. Gray, Proc. Am. Acad. 7: 348. 1868.

Leptotaenia californica var. *platycarpa* Jepson, Erythra 1: 8. 1893.

Leptotaenia californica var. *dilatata* Jepson, Erythra 1: 63. 1893.

Plants caulescent, 3-12 dm. high, from stout thickened roots, the stem arising from a cluster of fibrous sheaths, glabrous and glaucous; leaves ovate to deltoid in general outline, excluding the petioles 10-30 cm. long, ternate or biternate, or ternate-pinnate, the ultimate divisions cuneate to obovate, thickish, usually 3-cleft and coarsely toothed or lobed, 20-50 mm. long, the teeth or lobes usually obtuse; petioles 5-25 cm. long, sheathing at the base; cauline leaves few, like the basal, short-petiolate with dilated sheaths; peduncles exceeding the leaves, 1.5-3 dm. high; involucre wanting, or of 1 or 2 narrow bracts; involucre of a few, linear, scarious bractlets, about equaling the flowers, or wanting; rays numerous, spreading, 3-8 cm. long, usually subequal, often dilated at the base to form a prominent disc; pedicels 4-12 mm. long, often dilated at the base into a disc, the umbellets many-flowered; flowers yellow; fruit oblong-oval, 10-15 mm. long, 5-8 mm. broad, glabrous, the wings thin to thick and corky, narrower than the body; oil-tubes 3 or 4 in the intervals, 6-10 on the commissure, or obscure.

TYPE LOCALITY: "Santa Barbara, Upper California," *Nuttall*.

DISTRIBUTION: Coast Ranges, southern Oregon to southern California (*Elmer 4347, Purpus 5092*).

ILLUSTRATION: Jepson, Man. Fl. Pl. Calif. 718.

78. *Lomatium nudicaule* (Pursh) Coul. & Rose, Contr. U. S. Nat.
Herb. 7: 238. 1900.

Smyrniun nudicaule Pursh, Fl. Am. Sept. 196. 1814.

Ferula nudicaulis Nutt. Gen. 1: 183. 1818.

Pastinaca nudicaulis Spreng. in R. & S. Syst. Veg. 6: 587. 1820.

Ferula Nuttallii DC. Prodr. 4: 174. 1830.

Seseli leiocarpum Hook. Fl. Bor. Am. 1: 263. 1832.

Peucedanum latifolium Nutt.; T. & G. Fl. N. Am. 1: 625. 1840. Not *P. latifolium* DC. 1830.

Peucedanum leiocarpum Nutt.; T. & G. Fl. N. Am. 1: 626. 1840.

Peucedanum leiocarpum var. *campestre* Nutt.; T. & G. Fl. N. Am. 1: 626. 1840.

Peucedanum nudicaule Nutt.; T. & G. Fl. N. Am. 1: 627. 1840. Not *P. nudicaule* of later authors.

Peucedanum Nuttallii S. Wats. Bot. King's Expl. 128. 1871. Not *Seseli Nuttallii* A. Gray, 1870.

Peucedanum robustum Jepson, Erythra 1: 9. 1893.

Lomatium platyphyllum Coul. & Rose, Contr. U. S. Nat. Herb. 7: 238. 1900.

Cogswellia nudicaulis M. E. Jones, Contr. W. Bot. 12: 31. 1908.

Cogswellia latifolia M. E. Jones, Contr. W. Bot. 12: 31. 1908.

Cogswellia platyphylla Coul. & Rose, Contr. U. S. Nat. Herb. 12: 450. 1909.

Plants acaulescent, rarely with 1 cauline leaf, 2.5–7 dm. high, from a long thickened taproot, glabrous; leaves broadly ovate in general outline, excluding the petioles 9–18 cm. long, 1–2-ternate, then pinnate, the ultimate divisions distinct, lanceolate to broadly ovate, entire or toothed and lobed at the apex, 15–90 mm. long, 5–40 mm. broad; petioles 4–25 cm. long, sheathing to above the middle; peduncles exceeding the leaves, swollen at the apex; involucre wanting; rays 10–20, ascending, 1–20 cm. long, somewhat swollen at the apex; pedicels 3–15 mm. long, the umbellets many-flowered; flowers yellow; fruit oblong, 10–14 mm. long, 3–5 mm. broad, the wings narrower than the body; oil-tubes solitary in the dorsal intervals, 1–several in the lateral, 4–7 on the commissure.

TYPE LOCALITY: "On the Columbia River [Rock Fort Camp, at The Dalles]," Oregon, *Lewis*.

DISTRIBUTION: Alberta and Idaho to British Columbia, south to western Utah and central California (*Elmer 475, Heller 10,834*).

ILLUSTRATIONS: Britt. & Brown, III. Fl. 2: 516; Clements & Clements, Rocky Mt. Fl. pl. 35, f. 22 (fr.); Madroño 1: 159; Jepson, Man. Fl. Pl. Calif. 725.

88. POLYTAENIA DC. Coll. Mém. 5: 53. 1829.

Phaiosperma Raf. Herb. Raf. 77. 1833.

Pachiloma Raf. New Fl. 4: 33. 1838.

Pleioleptia Coult. & Rose, Contr. U. S. Nat. Herb. 12: 447. 1909.

Phanerotaenia St. John, Rhodora 21: 181. 1919.

Stout, erect, herbaceous, caulescent, branching, puberulent perennials, from subfusiform taproots. Leaves petiolate, membranaceous, bipinnate or ternate-pinnate with large, crenate to incised or lobed leaflets. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral, longer than the blades. Involucre wanting. Involucel of several linear to filiform, entire, puberulent bractlets, shorter than the flowers. Rays rather few, spreading-ascending, puberulent. Pedicels spreading-ascending, puberulent. Flowers yellow; petals oblong to oblong-oval with a narrower inflexed apex; calyx-teeth ovate, acute or acuminate; styles slender, spreading, the stylopodium lacking. Carpophore 2-cleft to the base. Fruit broadly oval to orbicular or obovate, strongly flattened dorsally, glabrous; dorsal ribs filiform to obscure, the lateral corky-winged; oil-tubes distinct or indistinct, solitary or several in the intervals, 2–several on the commissure and scattered throughout the pericarp; seed strongly flattened dorsally in cross section, the face plane.

Type species, *Polytaenia Nuttallii* DC.

Fruit 5–11 mm. long, 4–7 mm. broad; lateral wings narrower and thicker than the body; oil-tubes indistinct, several in the intervals.

1. *P. Nuttallii*.

Fruit 9–11 mm. long, 6–7 mm. broad; lateral wings broader and thinner than the body; oil-tubes distinct, solitary in the intervals.

2. *P. texana*.

1. *Polytaenia Nuttallii* DC. Coll. Mém. 5: 54. 1829.

Tordylium americanum Nutt.; DC. Prodr. 4: 198, as syn. 1830.

Phaiosperma trifida Raf. Herb. Raf. 77. 1833.

Polytemia trifida Raf. Herb. Raf. 77, as syn. 1833.

Phaiosperma verticillata Raf. Herb. Raf. 77. 1833.

Polytemia verticillata Raf. Herb. Raf. 77, as syn. 1833.

Ferula Drummondii H. & A.; Hook. Comp. Bot. Mag. 1: 47. 1835.

Phaiosperma pulverulenta Raf. New Fl. 4: 32. 1838.

Pachiloma verticillata Raf. New Fl. 4: 33. 1838.

Pachiloma Nuttali Raf. New Fl. 4: 33. 1838.

Zosima (as "*Zozimia*") *Nuttallii* D. Dietr. Syn. Pl. 2: 973. 1840.

Pleioleptia Nuttallii Coult. & Rose, Contr. U. S. Nat. Herb. 12: 448. 1909.

Plants 5–10 dm. high, puberulent especially in the inflorescence; leaves oblong to ovate in general outline, excluding the petioles 10–18 cm. long, 8–15 cm. broad, bipinnate or ternate-pinnate, the leaflets ovate to oblong, 2–3.5 cm. long, 1–2.5 cm. broad, obtuse at the apex, rounded or cuneate at the base, sessile, distinct or the terminal confluent; petioles 4–13 cm. long; upper cauline leaves ternate with conspicuously dilated sheaths; peduncles 2–10 cm. long; bractlets 2–5 mm. long; rays 10–20, 1–4 or 6 cm. long, subequal to unequal; pedicels 3–5 mm. long; fruit 5–11 mm. long, 4–7 mm. broad, the dorsal ribs filiform to obscure, the lateral narrowly corky-winged, the wings narrower and thicker than the body; oil-tubes indistinct, several in the intervals and on the commissure.

TYPE LOCALITY: "Territoire de l'Arkansa," Nuttall.

DISTRIBUTION: Wisconsin and Michigan to Kentucky and Louisiana, west to Nebraska and Texas (*Bush 159, Demaree 17,610, Mathias 1398, 1400*).

ILLUSTRATIONS: DC. Coll. Mém. 5: pl. 13; Bot. Gaz. 12: pl. 2, f. 25, 26 (fr.); Contr. U. S. Nat. Herb. 7: 191 (fr.); Britt. & Brown, Ill. Fl. 2: 515; ed. 2: 2: 635.

2. *Polytaenia texana* (Coul. & Rose) Math. & Const. Bull. Torrey Club 68: 123. 1941.

Polytaenia Nuttallii var. *texana* Coul. & Rose, Contr. U. S. Nat. Herb. 7: 192. 1900.

Pleiolaenia Nuttallii var. *texana* Coul. & Rose, Contr. U. S. Nat. Herb. 12: 448. 1909.

Phaneroaenia texana St. John, Rhodora 21: 182. 1919.

Plants 5-8 dm. high; leaves ovate or oblong in general outline, excluding the petioles 8-13 cm. long, 8-10 cm. broad, ternate-pinnate, the leaflets broadly ovate to oblong, 2-4 cm. long, 1-2.5 cm. broad, obtuse at the apex, truncate at the base, sessile, distinct or confluent; petioles 8-10 cm. long; upper cauline leaves ternate with broadly cuneate divisions and sheathing petioles; peduncles 1-5 cm. long; bractlets 2-5 mm. long; rays 10-15, subequal, 1-2.5 cm. long; pedicels 2-6 mm. long; fruit 9-11 mm. long, 6-7 mm. broad, the dorsal ribs filiform, the lateral broadly corky-winged, the wings broader but thinner than the body; oil-tubes distinct, solitary in the intervals and 2 on the commissure.

TYPE LOCALITY: Near Industry, Texas, *WurLOW*.

DISTRIBUTION: Southern Texas (*Cory 20,267, Heller 1669*).

89. IMPERATORIA L. Sp. Pl. 259. 1753.

Stout, erect, herbaceous, caulescent, branching, glabrous or pubescent perennials. Leaves ternately divided or 2-pinnate, the divisions broad, petiolulate, serrate and lobed, often 3-parted. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre usually wanting. Involucel of several narrow entire bractlets. Rays numerous, spreading-ascending. Pedicels spreading-ascending. Flowers white; petals obovate with a narrower inflexed apex; calyx-teeth obsolete; styles slender, spreading, the stylopodium conic. Carpophore 2-cleft to the base. Fruit oval to orbicular, emarginate at apex and base, strongly flattened dorsally, glabrous; dorsal ribs filiform, the lateral broadly thin-winged; oil-tubes small, solitary in the intervals, 2 on the commissure; seed flattened dorsally in cross section, the face plane.

Type species, *Imperatoria Ostruthium* L.

1. *Imperatoria Ostruthium* L. Sp. Pl. 259. 1753.

Selinum Imperatoria Crantz, Stirp. Austr. 3: 42. 1767.

Selinum Ostruthium Wallr. Annus Bot. 41. 1815.

Peucedanum Ostruthium Koch, Nova Acta Acad. Leop.-Carol. 12: 95. 1825.

Peucedanum Imperatoria Endl. Med. Pfl. 395. 1842.

Stout, glabrous to puberulent, 3-15 dm. high; basal leaves deltoid in general outline, excluding the petioles 1.5-3 dm. long, ternate, the leaflets petiolulate, lanceolate to orbicular, 5-30 cm. long, 4-35 cm. broad, usually 3-parted and sharply serrate and incised; petioles 3-6 dm. long; cauline leaves reduced, with dilated sheaths; peduncles 1-2 dm. long; involucre wanting, or of 1 or 2 lanceolate bracts; involucel of a few filiform, setaceous, deciduous bractlets, 2-8 mm. long; rays numerous, unequal, 2-4.5 cm. long; pedicels numerous, 3-10 mm.; fruit 4-5 mm. long.

TYPE LOCALITY: "Ad radices Alpium Helvetiae, Austriae," collector unknown.

DISTRIBUTION: Central Europe; adventive in Newfoundland, New York, Pennsylvania, and Michigan.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: pl. 1964; Benth. Handb. Brit. Fl. ed. 2, f. 430; E. & P. Nat. Pfl. 3: 71 (veg.); Coste, Fl. Fr. 2: 174; Britt. & Brown, Ill. Fl. ed. 2: 2: 638.

90. PASTINACA L. Sp. Pl. 262. 1753.

Pastinacha Hill, Herb. Brit. 1: 132. 1769.

Tall, stout, erect, herbaceous, caulescent, glabrous to pubescent biennials or perennials, usually from taproots. Leaves petiolate, membranaceous, pinnately compound, the leaflets

broad, serrate to pinnatifid. Petioles sheathing. Inflorescence of loose compound umbels; peduncles terminal and lateral. Involucre usually wanting. Involucel usually wanting. Rays rather few, spreading-ascending. Pedicels slender, spreading-ascending. Flowers yellow or red; petals oval with a narrower inflexed apex; calyx-teeth minute or obsolete; styles short, spreading, the stylopodium depressed-conic. Carpophore 2-cleft to the base. Fruit oval to obovate, strongly flattened dorsally, glabrous; dorsal ribs filiform, the lateral broadly thin-winged and nerved near the outer margins; oil-tubes large, solitary in the intervals, 2-4 on the commissure, extending the full length of the mericarp and not visible from the dorsal surface; seed flattened dorsally in cross section, the face plane; strengthening cells in the dorsal ribs and near the outer wing-margins.

Type species, *Pastinaca sativa* L.

1. *Pastinaca sativa* L. Sp. Pl. 262. 1753.

Anethum Pastinaca Wibel, Prim. Pl. Werth. 195. 1799.

Peucedanum Pastinaca Baillon, Hist. Pl. 7: 96, 188. 1879.

Plants 3-10 dm. high; leaves oblong to ovate in general outline, excluding the petioles 15-25 cm. long, 10-15 cm. broad, cordate, the leaflets oblong to ovate, 5-10 cm. long, 2.5-8 cm. broad, coarsely serrate and lobed or divided, puberulent or glabrate; petioles 1-1.5 cm. long; cauline leaves with conspicuously dilated sheaths; peduncles stout, 7-15 cm. long; rays 15-25, unequal, 2-10 cm. long; pedicels 5-10 mm. long; petals yellow; fruit 5-6 mm. long, 4-5 mm. broad.

TYPE LOCALITY: "In Europae australioris ruderatis et pascuis," collector unknown.

DISTRIBUTION: Europe; widely naturalized in the United States and Canada; West Indies.

ILLUSTRATIONS: Benth. Handb. Brit. Fl. ed. 2, f. 431; Reichenb. Ic. Fl. Germ. 21: pl. 1982; Baillon, Hist. Pl. 7: 96 (fr.); Coste, Fl. Fr. 2: 180; Britt. & Brown, Ill. Fl. 2: 514; ed. 2: 2: 634; Madroño 1: 160.

91. *HERACLEUM* L. Sp. Pl. 249. 1753.

Sphondylium Mill. Gard. Dict. Abr. ed. 4. 1754.

Tall, stout, erect, herbaceous, caulescent, pubescent biennials or perennials, from taproots or fascicled fibrous roots. Leaves petiolate, membranaceous, ternately or pinnately compound, the leaflets broad, serrate to variously cleft and lobed. Petioles sheathing and usually conspicuously dilated. Inflorescence of loose compound umbels; peduncles terminal and axillary. Involucre wanting or of a few deciduous bracts. Involucel of numerous narrow, entire bractlets, or rarely wanting. Rays numerous, spreading-ascending. Pedicels spreading-ascending. Flowers white, or rarely yellow, or tinged with green or red; calyx-teeth minute or obsolete; petals oval to orbiculate with a narrower inflexed apex, the outer radiant and often 2-cleft; styles short, erect or recurved, the stylopodium conic. Carpophore 2-cleft to the base. Fruit orbicular to obovate or elliptic, strongly flattened dorsally, usually pubescent; dorsal ribs filiform, the lateral broadly thin-winged and nerved near the outer margin of the wings; oil-tubes large, visible from the dorsal surface, solitary in the intervals, 2-4 on the commissure, extending only part-way from the stylopodium to the base of the mericarp; seed flattened dorsally in cross section, the face plane; strengthening cells continuous about the seed cavity and under the ribs.

Type species, *Heracleum Sphondylium* L.

Basal leaves pinnately lobed or compound; plants short-pubescent to glabrate. 1. *H. Sphondylium*.
Basal leaves ternately compound; plants more or less tomentose. 2. *H. lanatum*.

1. *Heracleum Sphondylium* L. Sp. Pl. 249. 1753.

Sphondylium vulgare S. F. Gray, Nat. Arr. Brit. Pl. 2: 520. 1821.

Selinum Sphondylium E. H. L. Krause in Sturm, Fl. Deuts. ed. 2: 136. 1904.

Plants 0.6-2 m. high, short-pubescent to glabrate; leaves ovate to orbicular in general outline, excluding the petioles 16-20 cm. long, 18-25 cm. broad, pinnately lobed or compound, the leaflets ovate to orbicular, 10-15 cm. long, 8-15 cm. broad, cordate, serrate to incised or lobed; petioles 2-6 dm. long, the upper cauline leaves with conspicuously dilated sheaths;

peduncles 5–20 cm. long, short-pubescent but villous below the umbels; involucre of 1–6 deciduous, lanceolate or linear bracts, 2–5 mm. long; involucre of 1–6 linear-acuminate bractlets, or wanting; rays 10–30, unequal, 3–8 cm. long; pedicels 5–10 mm. long; petals white to greenish-yellow, obovate; fruit orbicular to obovate, 5–11 mm. long, 6–10 mm. broad, pubescent to glabrate.

TYPE LOCALITY: "In Europae nemoralis," collector unknown.

DISTRIBUTION: Eurasia; adventive in Nova Scotia and at New York City and Seattle.

ILLUSTRATIONS: Benth. Handb. Brit. Fl. ed. 2, f. 432; Reichenb. Ic. Fl. Germ. 21: pl. 1969, 1970; Karst. Fl. Deuts. ed. 2: 414; Coste, Fl. Fr. 2: 183; Hegi, Ill. Fl. Mittel-Eur. 5: f. 2545; pl. 203, f. 1–1b.

2. *Heracleum lanatum* Michx. Fl. Bor. Am. 1: 166. 1803.

Heracleum maximum Bartr. Trav. 344. 1791. (Nomen illegitimum.)

Heracleum Douglasii DC. Prodr. 4: 193. 1830.

Sphondylium lanatum Greene, Man. Bay Reg. 157. 1894.

Pastinaca lanata K.-Pol. Bull. Soc. Nat. Mosc. II. 29: 113. 1916.

Plants 1–3 m. high, tomentose; leaves orbicular to reniform in general outline, excluding the petioles 20–50 cm. long, 25–50 cm. broad, ternately compound, the leaflets ovate to orbicular, 15–40 cm. long, 10–35 cm. broad, cordate, coarsely serrate and variously lobed; petioles 1–4 dm. long, the upper cauline leaves with conspicuously dilated sheaths; peduncles 5–20 cm. long, tomentose but densely villous below the umbels; involucre of 5–10 deciduous, lanceolate-acuminate bracts, 5–20 mm. long; involucre of bractlets similar to the bracts; rays 15–30, unequal, 5–10 cm. long; pedicels 8–20 mm. long; petals white, obovate; fruit obovate to orbiculate, 8–12 mm. long, 6–9 mm. broad, somewhat pubescent.

TYPE LOCALITY: "Canada," Michaux.

DISTRIBUTION: Newfoundland and Labrador to Georgia, west to Alaska, California, and Arizona; Siberia and the Kurile Islands. (*Elmer 5073, Payson & Payson 2299.*)

ILLUSTRATIONS: Miller & Whiting, Wild Fl. 212; Contr. U. S. Nat. Herb. 7: 248 (fr.); Britt. & Brown, Ill. Fl. ed. 2: 2: 635; Georgia, Man. Weeds 306; Madroño 1: 144; Jepson, Man. Fl. Pl. Calif. 717, f. 702; Rydb. Fl. Pr. & Pl. 603; Sharples, Alaska Wild Fl. 63.

92. *ERYNGIUM* L. Sp. Pl. 232. 1753.

Eryngium Neck. Delic. 138. 1768.

Strebanthus Raf. Bull. Bot. Seringe 218. 1830.

Streblanthus Raf. Atl. Jour. 149. 1832.

Lessonia Bert.; H. & A. Bot. Misc. 3: 352, as syn. 1833.

Klonion Raf. New Fl. 4: 35, as subgenus. 1838.

Reilia Steud. Syn. Cyp. 311. 1855.

Creeping to erect, herbaceous, caulescent or acaulescent, usually glabrous biennials or perennials, from stout taproots or rootstocks bearing fibrous roots. Leaves coriaceous or membranaceous, entire or pinnately or palmately lobed to divided, often ciliate to spinose, the venation parallel or reticulate. Petioles sheathing, sometimes septate. Inflorescence capitate, the heads solitary, or in cymes or racemes. Involucre of one or more series of entire or lobed bracts subtending the head. Involucre of entire or lobed bractlets subtending the flowers. Flowers white to purple, sessile; petals ovate to oblong with variously inflexed and lobed to fimbriate tips; sepals ovate to lanceolate, acute to obtuse, entire or rarely spinescent; styles shorter than to exceeding the sepals, the stylopodium lacking; carpophore absent. Fruit globose to obovoid, scarcely flattened laterally, variously covered with scales or tubercles; ribs obsolete; commissure broad; oil-tubes mostly 5, inconspicuous. Seed subterete in cross section, the face plane or slightly concave.

Type species, *Eryngium foetidum* L.

Leaves parallel-veined; plants with a monocotyledonous habit.

Leaves procumbent, stoloniferous; leaves fistulose, fasciated.

Plants erect, not stoloniferous; leaves neither fistulose nor fasciated.

Bracts much shorter than the heads.

Bracts equaling or exceeding the heads.

Leaves reticulate-veined; plants not monocotyledonoid.

Heads with a more or less conspicuous coma.

Heads without a definite coma.

Stems very slender; peduncles axillary, filiform; heads few-flowered.

Bracts shorter than the heads; bractlets exceeding the fruit; fruit

1 mm. in diameter.

1. *E. pilularioides*.

KEY 1.

KEY 2.

KEY 3.

39. *E. Baldwini*.

- Bracts equaling the heads; bractlets shorter than the fruit; fruit 2 mm. in diameter.
 Stems stouter; peduncles terminal or axillary in the branches of the inflorescence, not filiform; heads many-flowered.
 Bracts chartaceous, greenish or bluish beneath, silvery-white, yellowish, amethystine, or conspicuously glaucous above.
 Bracts herbaceous or coriaceous, greenish above and below, never bicolorous.
 Heads pale blue to conspicuously amethystine.
 Heads greenish, never blue.

40. *E. prostratum*.

KEY 4.

KEY 5.

KEY 6.

KEY 1.

Heads cylindrical, more than twice as long as broad.

Bracts 1-1.5 mm. long; heads 3-4 mm. broad.

Bracts about 5 mm. long; heads 6-8 mm. broad.

2. *E. ebracteatum*.3. *E. Boissieuanum*.

Heads globose to oblong-ovoid, usually about as long as broad.

Basal leaves distichous.

Basal leaves not distichous.

4. *E. globosum*.

Bracts in one series, not imbricated.

Basal leaves entire, obsolete spinulose-dentate, setose-ciliate,

or spinulose-serrate, neither lobed nor with strong spines.

Leaves narrow, 3-7 mm. broad, setose-ciliate; heads small,

globose-ovoid, 5-8 mm. in diameter.

5. *E. Pringlei*.

Leaves broader, 5-30 mm. broad; heads larger, subglobose

to ovoid-cylindrical, 8-30 mm. long, 8-25 mm. broad.

Leaves entire or nearly so; heads ovoid or ovoid-oblong,

about twice as long as broad.

Leaves weakly spinose-ciliate, bristly, or spinulose-dentate;

heads subglobose to ovoid-cylindrical, about

as long as broad.

6. *E. sparganophyllum*.

Petals oval to obovate, about 1 mm. long; fruit tur-

binate, 2-4 mm. long; Mexico.

Heads greenish, 10-15 mm. long; fruit 2-3 mm.

long, the calyx scales lanceolate.

Leaves broadly linear, 1-2 cm. broad, the

sheaths 6-12 cm. long; bractlets usually

glabrous; sepals 1 mm. long.

Leaves narrowly linear, 0.5-1.5 cm. broad, the

sheaths 2-6 cm. long; bractlets usually

densely puberulent; sepals 1.5-2 mm. long.

Heads deep blue, 20-30 mm. long; fruit 3-4 mm.

long, the calyx scales obsolete.

Petals oblong, 1.5 mm. long; fruit oblong, 4-8 mm.

long; United States.

Leaves 10-30 mm. broad, the setae usually soli-

tary; bracts ovate-lanceolate.

Leaves 5-10 mm. broad, the setae 2-4; bracts

linear-lanceolate.

7. *E. longifolium*.8. *E. gramineum*.10. *E. montanum*.9. *E. yuccifolium*.9a. *E. yuccifolium* var.
synchaetum.

Basal leaves coarsely spinose-lobed.

Inflorescence spreading; heads numerous.

Plants slender; leaves 1.5-3.5 dm. long, the sheaths 2-4

cm. long; heads greenish, 15-22 mm. long.

Plants stout; leaves 3-8 dm. long, the sheaths 4-12 cm.

long; heads purple, 8-15 mm. long.

Inflorescence compact or with a few short branches; heads

few.

Plants slender; leaves coriaceous; heads 1.5-2 cm. long.

Plants stout; leaves herbaceous; heads 2-4 cm. long.

Bracts in 2 or more series, imbricated.

Cauline leaves recurved; bracts biseriate; heads ovoid, 1-2.5 cm.

long, 1-1.5 cm. broad, pedunculate.

Cauline leaves ascending; bracts multiseriate; heads ovoid-

cylindrical, 2-6 cm. long, 1.5-3 cm. broad, nearly sessile.

11. *E. Hemsleyanum*.14. *E. crassisquamosum*.12. *E. Purpusii*.13. *E. columnare*.19. *E. monocephalum*.20. *E. proleaefflorum*.

KEY 2.

Basal leaves distichous.

Spines 5-15 mm. long, weak; bracts 5-30 mm. long; heads globose or

globose-ovoid; sepals obtuse, glabrous.

Spines 10-32 mm. long, stout; bracts 25-50 mm. long; heads hemi-

spherical; sepals acute, puberulent.

4. *E. globosum*.18. *E. Palmeri*.

Basal leaves not distichous.

Leaves spinulose-ciliate; United States.

9a. *E. yuccifolium* var.
synchaetum.

Leaves spinose-serrate to coarsely spinose-lobed; Mexico and Central America.

Bracts in 2 or more series, imbricated.

Cauline leaves recurved; bracts biseriata; heads ovoid, 1-2.5 cm. long, 1-1.5 cm. broad, pedunculate.

Cauline leaves ascending; bracts multiseriata; heads ovoid-cylindric, 2-6 cm. long, 1.5-3 cm. broad, nearly sessile.

Bracts in one series, not imbricated.

Inflorescence simple or sparingly branched with 1-5 heads.

Leaves with small proximate lobes, 2-5 mm. long, without axillary spines; bracts entire or with 1 or 2 lateral spines at the base.

Leaves with large remote lobes, 4-17 mm. long, and axillary spines; bracts conspicuously spinose-dentate toward the base.

Inflorescence divaricately or widely cymosely branched with numerous heads.

Heads hemispheric or globose, about as long as broad.

Plants 6-8 dm. high; sepals acute; fruit 2-2.5 mm. long.

Plants 10-15 dm. high; sepals obtuse; fruit 3-4 mm. long.

Heads ovoid to ovoid-oblong, longer than broad.

Leaf-lobes long, equaling to much exceeding the width of the blade; upper branches of the inflorescence not whorled.

Heads greenish, small, 8-15 mm. long.

Heads blue or purple, larger, 15-25 mm. long.

Sheaths broader than the blades, vaginate, 4-12 cm. long; bracts 1-2 cm. long; fruit 2-3 mm. long.

Sheaths about equaling the blades, plane, 2-5 cm. long; bracts 2-5 cm. long; fruit 3-4 mm. long.

Leaf-lobes shorter, mostly shorter than the width of the blade; upper branches of the inflorescence whorled.

19. *E. monocephalum*.

20. *E. proteaeflorum*.

10. *E. montanum*.

13. *E. columnare*.

16. *E. cymosum*.

17. *E. guatemalense*.

11. *E. Hensleyanum*.

14. *E. crassisquamosum*.

15. *E. pectinatum*.

21. *E. Deppeanum*.

KEY 3.

Heads small, 2 cm. or less long; bractlets entire.

Petioles fistulose, septate.

Inflorescence successively cymosely trifurcate; coma of a single entire or lobed bractlet.

Stems weakly erect or ascending; cauline leaves with weak herbaceous, elongate divisions; coma filiform, entire or shallowly parted.

Stems strictly erect; cauline leaves with rigid pungent divisions; coma stout, rigid, deeply parted.

Inflorescence few-branched; coma of 3-5 subequal bractlets, entire or remotely spinulose-serrate.

Petioles neither fistulose nor septate.

Bracts chartaceous, green or blue beneath, silvery-white or yellowish-white above.

Plants low, usually prostrate, short-caulescent or acaulescent; cauline leaves few or none; bractlets short, 2-3 mm. long; styles shorter than the sepals.

Plants mostly taller, erect or spreading, caulescent; cauline leaves several to many; bractlets longer, 3-5 mm. long; styles longer than the sepals.

Bracts trifurcate to pinnatifid, usually shorter than the heads; heads cylindric.

Bracts entire or with few spinose teeth, usually exceeding the heads; heads ovoid to ovoid-cylindric.

Plants slender, biennial from a fascicle of fibrous roots; basal leaves setose-serrate to subpinnatifid; heads ovoid-cylindric; bracts 8-15 mm. long; coma 2-6 mm. long.

Plants stout, perennial from a stout taproot; basal leaves deeply spinose-serrate to bipinnatisect; heads ovoid; bracts 12-25 mm. long; coma 5-15 mm. long.

Bracts herbaceous or coriaceous, green above and below or scarcely whitish above.

Inflorescence cymosely branched with few short branches; heads few; lower cauline leaves with a pair of small lacinate segments at the base.

Inflorescence divaricately trifurcate, usually with the lateral branches forming elongate monochasia; lower cauline leaves entire or shallowly lobed.

Heads globose-ovoid, about as long as broad; bracts whitish toward the base above; fruit densely covered with fleshy, papillose, setiform scales.

22. *E. fluitans*.

23. *E. madrense*.

24. *E. phyteumae*.

26. *E. carlinae*.

25. *E. comosum*.

27. *E. Beecheyanum*.

28. *E. heterophyllum*.

33. *E. Hookeri*.

34. *E. spiculosum*.

Heads cylindric or ovoid-cylindric, about twice as long as broad; bracts green above; fruit-scales flattened or utriculose, not setiform.

Stems several, branching from the base; leaves coarsely dentate to runcinate-pinnatifid; bracts rigid, 8-20 mm. long, about equaling the heads; bractlets 4-9 mm. long, exceeding the fruit.

Stems mostly solitary; leaves crenate to finely spinulose-serrate; bracts foliaceous, 10-40 mm. long, greatly exceeding the heads; bractlets 2-3 mm. long, about equaling the fruit.

Heads large, 2-3.5 cm. long; bractlets spinescent with 3-7 prominent teeth.

35. *E. nasturtiifolium*.38. *E. foetidum*.31. *E. Leavenworthii*.

KEY 4.

Upper cauline leaves and leaves subtending the inflorescence variously incised or parted.

Basal leaves setose-serrate or setose-dentate to bipinnatisect; dorsal surface of the fruit densely papillose or more or less utriculose. Plants low, short-caulescent or acaulescent; styles shorter than the sepals.

Plants taller, caulescent; bractlets exceeding the flowers and fruit; styles longer than the sepals.

Stems leafy below the inflorescence; inflorescence paniculately cymose-branched; bracts linear-lanceolate to lanceolate, yellowish-white above.

Plants slender, biennial, from a fascicle of fibrous roots; basal leaves setose-serrate to subpinnatifid; bracts 8-15 mm. long; heads ovoid-cylindric; coma 2-6 mm. long.

Plants stout, perennial, from a stout taproot; basal leaves deeply spinose-serrate to bipinnatisect; bracts 12-25 mm. long; heads ovoid; coma 5-15 mm. long.

Stems few-leaved below the inflorescence; inflorescence sparingly cymose-branched or successively trifurcate; bracts mostly broadly lanceolate to oblanceolate, white or silvery above.

Plants 3-8 dm. high; basal leaves coriaceous, 5-20 cm. long; bracts 15-30 mm. long, 4-8 mm. broad, with 2 or 3 pairs of teeth; heads ovoid, 10-15 mm. long; sepals 2-3 mm. long.

Plants 1.5-2.5 dm. high; basal leaves thin, 5-8 cm. long; bracts 10-15 mm. long, 3-5 mm. broad, with 3-6 pairs of teeth; heads globose, 5-7 mm. long; sepals about 1 mm. long.

Basal leaves crenate or crenate-serrate; dorsal scales of the fruit few or none.

Upper cauline leaves and leaves subtending the inflorescence entire, crenate, spinulose-serrate, or spinulose-ciliate, neither incised nor parted.

Leaf-margins spinose-ciliate, the cilia 2-5 mm. long; plants subscapose. Leaf-margins entire, crenate, or serrate, never ciliate; plants with several cauline leaves.

Leaves callous-margined, cuneate to cordate or rounded at the base; fruit with few scales.

Sepals ovate; bracts 15-30 mm. long, 4-8 mm. broad, spinose-serrate with 2 or 3 pairs of teeth.

Sepals lanceolate; bracts 4-15 mm. long, 1-5 mm. broad, entire or obsoletely spinulose.

Leaves obtuse or abruptly acute at the apex; bracts exceeding the heads.

Plants short-caulescent or acaulescent; basal leaves cuneate at the base, 1-3.5 cm. long; heads ovoid.

Plants caulescent; basal leaves deeply cordate or rounded at the base, 3-8 cm. long; heads globose.

Leaves acuminate at the apex; bracts shorter than the heads.

Leaves not callous-margined, deeply caudate at the base; fruit densely covered with scales.

26. *E. carlinae*.27. *E. Beecheyanum*.28. *E. heterophyllum*.29. *E. Lemmonii*.30. *E. calaster*.47. *E. scaposum*.42. *E. Rosei*.29. *E. Lemmonii*.43. *E. ranunculoides*.46. *E. gracile*.45. *E. Galeottii*.44. *E. Ghiesbreghtii*.

KEY 5.

Plants more or less fleshy, glaucous or bluish throughout; basal leaves suborbicular-reniform; sepals 5 mm. long; fruit 8-15 mm. long.

Plants neither fleshy nor glaucous; basal leaves oval to oblanceolate; sepals mostly shorter; fruit 1-4 mm. long.

Basal leaves with short non-septate petioles shorter than or equaling the blades.

Bracts and bractlets not callous-margined.

50. *E. maritimum*.

- Bracts shorter than the heads; Mexico.
 Bracts longer than the heads; southern United States or introduced.
- Bractlets all entire; leaves not cordate.
 Plants diffusely branched; basal leaves deeply palmately parted, sessile or nearly so.
 Plants erect; basal leaves serrate or dentate, petiolate.
- Bractlets, at least the lower, tricuspidate; leaves often cordate.
 Basal leaves entire to shallowly crenate; bractlets all tricuspidate.
 Basal leaves crenate to spinulose-serrate; lower bractlets tricuspidate, the upper entire.
- Bracts and bractlets callous-margined; coastal California.
 Basal leaves with elongate septate petioles greatly exceeding the small lanceolate to ovate blades.
48. *E. Bonplandi*.
 32. *E. diffusum*.
 33. *E. Hookeri*.
 54. *E. integrifolium*.
 49. *E. planum*.
 58. *E. armatum*.
 57. *E. articulatum*.
- KEY 6.
- Heads narrowly cylindrical, about twice as long as broad; bracts herbaceous.
 Stems prostrate or ascending; basal leaves pinnate or pinnately lobed; bracts shorter than the heads.
 Stems erect; basal leaves crenate to finely spinulose-serrate; bracts greatly exceeding the heads.
- Heads globose to ovoid, about as long as broad; bracts coriaceous.
 Cauline leaves 3-5-palmately lobed or parted; scales dimorphic.
 Cauline leaves entire, variously serrate to pinnatifid; scales monomorphic.
- Basal leaves bladeless or with petioles elongate, usually septate, much longer than the small blades.
 Stems solitary, erect, sparingly branched, with few leaves; leaf-blades obtuse; Florida.
- 53a. *E. aquaticum* var. *floridanum*.
- Stems usually several, diffuse, prostrate or decumbent, rarely erect, freely branching, with many leaves; leaf-blades acute to acuminate; western United States.
 Bracts obscurely callous-margined, about twice as long as the heads; styles shorter than the sepals; western Oregon and Washington.
60. *E. petiolatum*.
- Bracts not callous-margined, usually less than twice as long as the heads; styles equaling or exceeding the sepals; California.
 Bractlets usually scarious-winged at the base; scales of the fruit subequal.
 Leaf-blades 3-15 cm. long, 10-30 mm. broad; inflorescence cymose; bracts spinose-ciliate; bractlets densely spinose to entire.
 Leaf-blades 2-5 cm. long, 4-8 mm. broad; inflorescence falsely racemose; bracts with several lateral spines near the base; bractlets entire.
61. *E. alismaefolium*.
 62. *E. racemosum*.
 63. *E. aristulatum*.
- Bractlets usually scarious-lobed at the base; scales of the fruit unequal.
- Basal leaves with petioles shorter, usually not septate, shorter than to only slightly exceeding the blades.
 Leaves deltoid, pinnately or ternately divided, the divisions broadly decurrent on the rachis; plants stout, fleshy, often glaucescent.
51. *E. campestre*.
- Leaves ovate to oblong-lanceolate, entire to pinnatifid, the divisions not broadly decurrent on the rachis; plants mostly slender, neither fleshy nor conspicuously glaucescent.
 Leaves definitely callous-margined.
 Bracts and bractlets tricuspidate; southeastern United States.
 Basal leaves narrowly ovate to obovate, pinnately parted; bracts 5-12 mm. long.
 Basal leaves cuneate, spinose-dentate; bracts 3-4 mm. long.
55. *E. aromaticum*.
 56. *E. cuneifolium*.
- Bracts and bractlets entire or spinose, not tricuspidate.
 Basal leaves pinnatifid to the midrib; bracts 10-30 mm. long, greatly exceeding the heads; California.
 Basal leaves coarsely spinulose-serrate or dentate to subpinnatifid; bracts 5-10 mm. long, shorter than the heads; Mexico.
59. *E. pinnatisectum*.
 52. *E. serratum*.

- Leaves not callous-margined.
 Bracts and bractlets callous-margined, usually entire. 58. *E. armatum*.
 Bracts and bractlets not callous-margined, usually spinose to lobed.
- Leaf-blades entire, crenate, or remotely serrulate; bractlets tricuspidate; eastern United States.
 Bractlets tricuspidate, the middle cusp elongate. 53. *E. aquaticum*.
 Bractlets equally tricuspidate. 53b. *E. aquaticum* var. *Ravenelii*.
- Leaf-blades spinulose-serrate to pinnatifid; bractlets entire to variously spinose; California, Baja California, and Guatemala.
- Leaf-blades deeply pinnatifid, the lobes usually remote, spinulose-lobed to pinnatifid.
 Bracts and bractlets without dorsal spines; heads small, 5-10 mm. in diameter; sepals usually entire. 64. *E. Vaseyi*.
- Bracts and bractlets usually with dorsal spines; heads larger, 6-18 mm. long; sepals spinose, toothed, or pinnatifid.
 Bracts with few dorsal spines; sepals pinnatifid. 64b. *E. Vaseyi* var. *globosum*.
- Bracts densely beset with dorsal spines; sepals spinose, usually not pinnatifid. 64a. *E. Vaseyi* var. *castrense*.
- Leaf-blades coarsely serrate, incised to pinnatifid, the lobes proximate, entire or spinose.
 Blades of the basal leaves lanceolate or oval, 2-6 cm. long, 1-2 cm. broad; inflorescence more or less puberulent; southern California and Baja California. 63a. *E. aristulatum* var. *Parishii*.
- Blades of the basal leaves ovate-lanceolate to oblanceolate, 3-25 cm. long, 0.5-3 cm. broad; inflorescence glabrous.
 Leaf-blades 3-25 cm. long, acute to acuminate, incised to lobed; California.
 Bractlets scarious-lobed at the base; scales of the fruit unequal. 63. *E. aristulatum*.
 Bractlets scarious-winged at the base; scales of the fruit subequal. 61. *E. alismaefolium*.
 Leaf-blades 2-2.5 cm. long, obtuse, coarsely serrate; Guatemala. 36. *E. reptans*.

1. *Eryngium pilularioides* Hemsl. & Rose; Rose, Contr. U. S. Nat. Herb. 8: 333. 1905.

Low, acaulescent or short-caulescent, glabrous perennials, 10-15 cm. high or long, from a stout taproot, the stems slender, elongate, procumbent, stoloniferous; leaves of 2 or 3 kinds, all fistulose to more or less flattened and often septate, linear, acute or obtuse, 1-8 cm. long, 1 mm. or less broad, fascicled, spinose-ciliate near the base, the venation parallel; sheaths scarious-margined, short, vaginate; inflorescence an elongated monochasium bearing numerous sessile or short-pedunculate, small heads, the flowers few; heads globose to globose-ovoid, 3-5 mm. in diameter; bracts 6-8, rigid, ascending, linear-lanceolate, pungent, entire, exceeding the heads; bractlets like the bracts, entire, scarious-winged at the base, slightly exceeding the fruit; coma wanting; sepals ovate, about 1 mm. long, acuminate, apiculate, scarious-margined; petals oblong, about 1 mm. long; styles equaling or shorter than the sepals; fruit subglobose, 1-2 mm. in diameter, densely covered with lanceolate, acuminate, flat, subequal white scales 0.5 mm. long.

TYPE LOCALITY: Shallow hollows of meadows near Buena Vista Station, eastern Hidalgo, Pringle 8948.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 8: 333. f. 18 (fr.); Hook. Ic. pl. 2806; Engler, Pflanzenreich 61 (422): 175.

2. *Eryngium ebracteatum* Lam. Encyc. 4: 759. 1797.

Eryngium ebracteatum var. *typicum* H. Wolff in Engler, Pflanzenreich 61 (4229): 216. 1913.
Eryngium caricinum Standley, Field Mus. Publ. Bot. 8: 147. 1930.

Slender, caulescent, glabrous perennials, 0.5–2 m. high, from a dense fascicle of fleshy-fibrous roots, the stems solitary, erect, branching; basal leaves lanceolate to linear, 1–10 dm. long, 1–3 cm. broad, tapering at the base, attenuate at the apex, entire to remotely crenate or crenate-serrate and often spinulose-setose toward the base, callous-margined, the venation parallel; sheaths nearly as broad as the blades, vaginate, very short; cauline leaves like the basal, the lower often spinulose-serrate, the upper greatly reduced, sessile, opposite, usually ternately parted; inflorescence diffusely cymose, the heads small, numerous, pedunculate, the flowers numerous; heads green, narrowly cylindrical, 8–25 mm. long, 3–4 mm. broad; bracts 5–7, foliaceous, spreading to reflexed, ovate, 0.75–1.5 mm. long, acute, much shorter than the heads; bractlets lanceolate, 1–1.5 mm. long, curved, acute, entire, shorter than the fruit; coma wanting; sepals broadly ovate, 0.5–1 mm. long, obtuse, apiculate; petals obovate, 0.5–1 mm. long; styles shorter than the sepals; fruit globose, 1.5–2 mm. in diameter, the calycine scales and those of the angles lanceolate, flattened, the faces papillate.

TYPE LOCALITY: Montevideo and Buenos Aires, *Commerson*.

DISTRIBUTION: Argentina and Brazil; Bolivian Andes to Honduras. (*Yuncker, Dawson & Youse 5776*.)

ILLUSTRATIONS: Delar. f. *Eryng.* pl. 32; Mart. Fl. Bras. 11¹: pl. 80; A. W. Schimp. Pfl.-Geog. f. 205.

3. *Eryngium Boissieuanum* H. Wolff, Repert. Sp. Nov. 7:
275. 1909.

Eryngium gramineum sensu Benth. Pl. Hartw. 38. 1840. Not *E. gramineum* Delar. f. 1808.

Slender, caulescent, glabrous perennials, 3.5–5 dm. high, from a short rootstock bearing a fascicle of tuberous roots, the stems solitary, erect, branching above; basal leaves narrowly linear to very narrowly linear-lanceolate, 6–8 cm. long, 2–2.5 mm. broad, broadest at the base, acuminate at the apex, spinulose-serrate, the longest teeth 4–5 mm. long, the venation parallel; sheaths vaginate; cauline leaves like the basal, sessile, subamplexicaul, the upper linear-lanceolate, setose; inflorescence sparingly cymosely branched, the heads few, rather large, pedunculate, the flowers numerous; heads dark-violet, cylindrical, 2 cm. long, 6–8 mm. broad; bracts about 10, linear-lanceolate, about 5 mm. long, entire, attenuate, much shorter than the heads; bractlets like the bracts but smaller, scarious-dilated at the base, exceeding the fruit; coma wanting; sepals triangular-ovate to broadly oval, about 1 mm. long, entire, mucronulate; petals broadly obovate to oval, about 1 mm. long; immature fruit 2.5–3 mm. long, densely covered with minute, subequal, vesicular processes.

TYPE LOCALITY: Bolivia, *D'Orbigny 1239*.

DISTRIBUTION: Bolivia; Mexico (*Hartweg 295*, fide H. Wolff).

4. *Eryngium globosum* Hemsl. in Hook. Ic. pl. 2765 2. 1903.

Slender, caulescent perennials, 0.5–2 dm. high, from a short, oblique, tuberous rootstock, the stems solitary, erect, branching; basal leaves distichous, very numerous, linear-lanceolate, 3–7 dm. long, 1–2 cm. broad, glaucescent, acuminate at the apex, spinose-ciliate or spinose-serrate, the longest spines 5–10 (or 15) mm. long, weak, ascending, or spreading at right angles, axillary spines often present, the venation parallel; sheaths broader than the blades, vaginate, 8–10 cm. long; cauline leaves few, like the basal, amplexicaul, the lower alternate, ascending, the upper greatly reduced, opposite; inflorescence cymosely branched, the heads large, numerous, pedunculate, the flowers numerous; heads globose to globose-ovoid, 1–2 cm. long, 1–1.5 cm. broad; bracts 5–8, rigid, spreading to reflexed, linear, 5–30 mm. long, 1–3 mm. broad, pungent, entire or with 1–2 pairs of short spines, longer or shorter than the heads; bractlets lanceolate-subulate, 6–10 mm. long, entire, pungent and somewhat dilated towards the base, occasionally minutely puberulent (?), exceeding the fruit; coma wanting; sepals ovate, 1.5–3

mm. long, obtuse, entire to denticulate; petals oval, 2-3 mm. long; styles slender, exceeding the sepals; fruit turbinate, 3-4 mm. long, the calycine and lateral scales lanceolate, acute, up to 1.5 mm. long, the latter forming two incised wings, the dorsal reduced or obsolete.

TYPE LOCALITY: Near Tepic, Territorio de Tepic [Nayarit], *E. W. Nelson 4174*.

DISTRIBUTION: Chihuahua to Oaxaca (*Mexia 1596, Pringle 5007*).

5. *Eryngium Pringlei* Hemsl. & Rose; Rose, Contr. U. S. Nat. Herb. 8: 333. 1905.

Very slender, caulescent perennials, 2-6 dm. high, from a short rootstock bearing fleshy-fibrous roots, the stems solitary or few, erect, branching; basal leaves numerous, linear-lanceolate to linear, 5-30 cm. long, 3-7 mm. broad, slightly narrowed toward the base, pungent-acute at the apex, setose-ciliate with slender bristles toward the base, the venation parallel; sheaths nearly as broad as the blades, up to 3 cm. long; cauline leaves few, like the basal, sessile, the lower alternate, the upper reduced, opposite; inflorescence cymose, the heads small, numerous, pedunculate, the flowers numerous; heads globose-ovoid, 5-8 mm. in diameter; bracts 5-6, rigid, spreading, ovate-lanceolate, 2-5 mm. long, pungent-acuminate, entire, puberulent on the back, much shorter than the heads; bractlets like the bracts in size and shape, puberulent on the back, about equaling the fruit; coma wanting; sepals broadly ovate, 1-1.5 mm. long, obtuse, scarious-margined, apiculate, puberulent on the back; petals broadly ovate, about 1.5 mm. long; styles slender, longer than the sepals; fruit subglobose, about 3 mm. in diameter, the calycine scales and those of the angles flattened, lanceolate, the faces papillate.

TYPE LOCALITY: In alkaline meadows, Hacienda de Angostura, San Luis Potosí, *Pringle 3759*.

DISTRIBUTION: Coahuila to Nayarit and San Luis Potosí (*Palmer 63, Pennell 18,045*).

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 8: 334, f. 19 (fr.).

6. *Eryngium sparganophyllum* Hemsl. in Hook. Ic. pl. 2508. 1897.

Eryngium longifolium sensu A. Gray, Pl. Wright 2: 65. 1853. Not *E. longifolium* Cav. 1793.

Rather slender, caulescent, glabrous perennials, 4-12 dm. high, from a short tuberous rootstock bearing a fascicle of fleshy-fibrous roots, the stems solitary to several, erect; basal leaves numerous, linear to linear-lanceolate, 1-9 dm. long, 5-15 mm. broad, broadest at the base, attenuate at the apex, entire or obsoletely spinulose-dentate with teeth 2 mm. long or less, axillary spines absent, the venation parallel; sheaths broader than the blades, vaginate or plane, 2-10 cm. long; cauline leaves few, like the basal but reduced and sessile, the lower alternate, ascending, the upper opposite; inflorescence divaricately cymose, or trifurcate, or rarely simple, the heads rather large, numerous to few or solitary, pedunculate, the flowers numerous; heads blue, ovoid or ovoid-oblong, 15-25 mm. long, 10-15 mm. broad, rounded at the base; bracts 8-12, herbaceous, loosely spreading to reflexed, linear, 5-15 mm. long, pungent, entire, much shorter than the heads; bractlets lanceolate, 5 mm. long, curved, pungent, entire, slightly exceeding the fruit; coma wanting; sepals ovate, 1.5-2 mm. long, obtuse, apiculate; petals oblong, about 2 mm. long; styles slender, exceeding the sepals; fruit ovoid, 3-4 mm. long, the calycine scales and those of the angles lanceolate, up to 1 mm. long, those of the surfaces smaller and papillose.

TYPE LOCALITY: Los Playos Springs, near the Sierra de Los Animas, New Mexico, *C. Wright 1103*.

DISTRIBUTION: New Mexico to Jalisco (*Palmer 294, Pennell 18,296*).

ILLUSTRATIONS: Hook. Ic. pl. 2508; Proc. Wash. Acad. 1: 124; Contr. U. S. Nat. Herb. 7: 42.

7. *Eryngium longifolium* Cav. Anal. Hist. Nat. 2: 133. 1800.

Eryngium Watsoni Coult. & Rose; Rose, Contr. U. S. Nat. Herb. 8: 334. 1905.

Eryngium Langlassei H. Wolff, Repert. Sp. Nov. 9: 417. 1911.

Slender, caulescent perennials, 5-20 dm. high, from a short, oblique, tuberous rootstock bearing a fascicle of fibrous-fleshy roots, the stems solitary, erect, branching; basal leaves numerous, broadly linear, 3-7 dm. long, 1-2 cm. broad, broadest at the base, attenuate at the apex, weakly spinose-ciliate, the spines slender, ascending, the longest 2-6 mm. long, axillary

spines minute or wanting, the venation parallel; sheaths broader than the blades, vaginate, 6–12 cm. long; cauline leaves few, like the basal, amplexicaul, alternate, ascending, the upper greatly reduced, opposite; inflorescence divaricately cymose, the heads rather large, numerous, pedunculate, the flowers numerous; heads globose-ovoid to ovoid-cylindric, 8–15 mm. long, 8–10 mm. broad, rounded at apex and base; bracts 6–8, rigid, spreading to loosely reflexed, linear-lanceolate, 3–12 mm. long, 1 mm. broad, pungent, entire, much shorter than the heads; bractlets narrowly lanceolate, 3–5 mm. long, pungent, entire, occasionally puberulent (?), slightly exceeding the fruit; coma wanting; sepals broadly ovate, 1 mm. long, obtuse, apiculate; petals oval, about 1 mm. long; styles slender, exceeding the sepals; fruit turbinate, 2–3 mm. long, the calycine and lateral scales lanceolate, up to 1 mm. long, the dorsal greatly reduced or obsolete.

TYPE LOCALITY: Between Pachuco and Real del Monte, Hidalgo, collector unknown.

DISTRIBUTION: Jalisco to Mexico and Guerrero (*Mexia* 9028, *Pringle* 6197).

ILLUSTRATION: Cav. Ic. *pl.* 555.

8. *Eryngium gramineum* Delar. f. Eryng. 60. 1808.

Eryngium puberulentum Hemsl. & Rose; Rose, Contr. U. S. Nat. Herb. 8: 334. 1905.

Slender, caulescent perennials, 0.6–1 m. high, from a short, cylindrical, woody horizontal or oblique rootstock bearing a fascicle of fleshy-fibrous roots, the stems solitary, erect; basal leaves numerous, narrowly linear, 2–4 (or 6) dm. long, 5–15 mm. broad, broadest at the base and attenuate at the apex, densely spinose-ciliate with weak ascending spines, the longest 2–7 mm. long, or the spines nearly obsolete, axillary spines absent, the venation parallel; sheaths as broad as the blades, vaginate, 2–6 cm. long; cauline leaves few, like the basal but reduced, ascending, the lower alternate, the uppermost reduced and opposite; inflorescence cymose, the heads rather large, numerous to few, pedunculate, the flowers numerous; heads ovoid, 10–15 mm. long, 8–12 mm. broad; bracts 6–10, linear-lanceolate, 3–8 (or 15) mm. long, 1–2 mm. broad, acute or acuminate, pungent, entire, much shorter than the heads; bractlets lanceolate-triangular to ovate, 3–5 mm. long, pungent, dilated at the base, densely puberulent on the back or occasionally glabrate, slightly exceeding the fruit; coma wanting; sepals oval to oblong-lanceolate, 1.5–2 mm. long, obtuse, mucronulate; petals obovate, about 1 mm. long; styles slender, exceeding the sepals; fruit turbinate, 2–3 mm. long, the calycine scales and those of the angles lanceolate, 0.5 mm. long, flat, tawny or whitish, those of the faces greatly reduced, vesiculose or abortive.

TYPE LOCALITY: "Nova Hispania," *Humboldt & Bonpland*.

DISTRIBUTION: Nuevo León to Sonora, south to Sinaloa (*Pringle* 10,078, 11,461).

ILLUSTRATION: Delar. f. Eryng. *pl.* 27.

9. *Eryngium yuccifolium* Michx. Fl. Bor. Am. 1: 164. 1803.

Eryngium aquaticum L. Sp. Pl. ed. 2. 336, in part. 1762. Not *E. aquaticum* L. 1753.

Eryngium tuberosum Raf. Fl. Ludov. 60. 1817.

Eryngium aquaticum var. *normale* H. Wolff in Engler, Pflanzenreich 61 (4228): 240. 1913.

Eryngium aquaticum var. *subinermis* H. Wolff in Engler, Pflanzenreich 61 (4228): 242. 1913.

Stout, glabrous perennials, 3–18 dm. high, from a fascicle of tuberous woody roots, the stems slender, solitary, branching above; basal leaves rigid, broadly linear, 1.5–10 dm. long, 1–3 cm. broad, acute, remotely bristly with solitary or occasionally 2 or more bristles together, the venation parallel; sheaths short; cauline leaves like the basal, reduced above; inflorescence cymosely branched, the heads large, pedunculate, the flowers numerous; heads globose-ovoid, 1–2.5 cm. in diameter; bracts 6–10, spreading-ascending, ovate-lanceolate, 4–15 mm. long, cuspidate, mostly entire, shorter than the heads; bractlets like the bracts, entire or minutely serrulate, exceeding the fruit; coma wanting; sepals ovate, obtuse, mucronulate; petals oblong, 1.5 mm. long; styles exceeding the sepals; fruit oblong, 4–8 mm. long, the scales of the angles lanceolate, flattened, 1.5–3 mm. long, those of the dorsal surfaces reduced or obsolete.

TYPE LOCALITY: In paludosis Virginiae, *Michaux*.

DISTRIBUTION: Connecticut to Florida, west to Minnesota, Kansas, and Texas (*Heller* 1104, *Palmer* 12,793).

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. 2: 522; ed. 2. 2: 622; Millsp. Am. Med. Pl. *pl.* 62; Rydb. Fl. Fr. & Pl. 589.

9a. *Eryngium yuccifolium* var. *synchaetum* A. Gray; Coult. & Rose,
Rev. N. Am. Umbell. 94. 1888.

Eryngium synchaetum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 44. 1900.

Eryngium aqualicum var. *synchaetum* H. Wolff in Engler, Pflanzenreich 61 (4²²⁸): 242. 1913.

Plants slender; basal leaves 15–35 cm. long, 5–10 mm. broad, remotely spinulose-setose with 2–4 weak setae 3–10 mm. long; heads subglobose, 10–15 mm. in diameter; bracts 6–9, spreading or reflexed, linear-lanceolate, 5–10 (or 25?) mm. long, entire or few-toothed; bractlets like the bracts but broader, about 5 mm. long, entire, exceeding the fruit; sepals acute; petals oblong, 1.5 mm. long.

TYPE LOCALITY: Florida, in dry pine barrens near Jacksonville, *Curtiss 996*.

DISTRIBUTION: Georgia to Florida, west to eastern Oklahoma and Texas (*Nash 1487, Tracy 4481*).

ILLUSTRATION: Engler, Pflanzenreich 61 (4²²⁸): 241. 1913.

10. *Eryngium montanum* Coult. & Rose, Contr. U. S. Nat. Herb. 3:
300. 1895.

Rather stout, glabrous perennials, 4–8 dm. high, from a short woody caudex bearing a fascicle of fleshy-fibrous roots, the stems solitary, erect, simple below; basal leaves numerous, linear-lanceolate, 2–3.5 dm. long, 10–18 mm. broad, broadest at the base, acuminate at the apex, spinulose-dentate with short, slender, subequal spreading spines 2–5 mm. long, axillary spines wanting, the venation parallel; sheaths as broad as or broader than the blades, usually vaginate, 2–5 cm. long; cauline leaves like the basal, few, reduced, alternate and ascending, the upper opposite; inflorescence simple or sparsely cymose with 3 or 4 heads, the heads large, pedunculate, the flowers numerous; heads deep blue, ovoid-oblong, 2–3 cm. long, 1.5–2 cm. broad; bracts 10–16, rigid, spreading to reflexed, linear-lanceolate, 1–2.5 cm. long, 2–4 mm. broad, unequal, entire or with 1–2 spines at the base, shorter than or equaling the heads; bractlets linear-subulate, 4–5 mm. long, curved, pungent, entire, exceeding the fruit; coma wanting; sepals ovate, about 1.5 mm. long, obtuse, apiculate; petals obovate, 1–1.5 mm. long; styles slender, exceeding the sepals; fruit turbinate, 3–4 mm. long, the lateral scales forming a pair of wings, the other scales obsolete.

TYPE LOCALITY: In wet meadows, Sierra de Clavellinas, Oaxaca, *E. W. Nelson 1386*.

DISTRIBUTION: Oaxaca (*Pringle 6040, C. L. Smith 884*).

11. *Eryngium Hemsleyanum* H. Wolff in Engler, Pflanzenreich
61 (4²²⁸): 255. 1913.

Slender, caulescent, glabrous perennials, 0.5–2 m. high, from a short oblique or horizontal tuberous rootstock bearing a fascicle of fleshy-fibrous roots, the stems solitary, erect, simple below; basal leaves numerous, linear-lanceolate, 15–35 (or 60) cm. long, 5–10 (or 15) mm. broad, broadest at the base or the middle and attenuate at the apex, densely spinose-lobed, the lobes stout, ascending or spreading, the longest 5–22 mm. long, axillary spines present, the venation parallel; sheaths usually as broad as the leaves, vaginate, 2–4 cm. long; cauline leaves few, the lower like the basal but clasping, alternate, little reduced, ascending, the uppermost reduced, opposite, all very spinose; inflorescence divaricately cymose, the heads numerous, rather large, pedunculate, the flowers numerous; heads ovoid, 8–15 mm. long, 7–12 mm. broad, more or less rounded at apex and base; bracts 6–8, rigid, spreading, lanceolate, 3–10 mm. long, pungent, entire or few-toothed, much shorter than the heads or occasionally longer; bractlets broadly lanceolate, 3–5 mm. long, pungent, entire, exceeding the fruit; coma wanting; sepals ovate, about 1.5 mm. long, obtuse, apiculate; petals oval, about 1.5 mm. long; styles slender, greatly exceeding the sepals; fruit turbinate, about 2 mm. long, the calyxine and lateral scales flat, tawny, ovate-lanceolate, to 1 mm. long, the lateral forming incised wings, the dorsal reduced or obsolete.

TYPE LOCALITY: San Luis Potosí, *Schaffner 547*.

DISTRIBUTION: Nuevo León and Tamaulipas to Vera Cruz and Puebla (*Pennell 17,118, Pringle 3698*).

12. *Eryngium Purpusii* Hemsl. & Rose; Rose, Contr. U. S. Nat. Herb. 13: 311. 1911.

Eryngium Loesenerianum H. Wolff in Engler, Pflanzenreich 61 (4228): 255. 1913.

Slender, caulescent, glabrous perennials, 5-8 dm. high, from a short tuberous vertical rootstock bearing fibrous roots, the stems solitary, simple below, erect; basal leaves numerous, coriaceous, linear-lanceolate, 1-3.5 dm. long, 1-2 cm. broad, broadest at the base, acuminate at the apex, coarsely spinose-lobed, axillary spines present, the lobes stout, spreading nearly at right angles, the longest 6-10 mm. long, the venation parallel; sheaths as broad as the blades, vaginate, 2-7 cm. long; cauline leaves few, like the basal but amplexicaul, ascending, conspicuously spinose-lobed, the uppermost reduced and opposite, spinose; inflorescence cymose, compact, the heads large, few, pedunculate, the flowers numerous; heads ovoid, 1.5-2 cm. long, 1-1.5 cm. broad; bracts about 10, rigid, spreading, linear-lanceolate, 8-12 mm. long, 1-3 mm. broad, pungent, entire or few-toothed, much shorter than the heads; bractlets linear-lanceolate, 5-6 mm. long, pungent, entire, exceeding the fruit; coma wanting; sepals ovate-lanceolate, about 1.5 mm. long, obtuse, mucronulate; petals oblong, about 1.5 mm. long; styles slender, exceeding the sepals; fruit turbinate, about 3 mm. long, the calycine scales ovate or lanceolate, small, the lateral forming marginal wings, the faces naked.

TYPE LOCALITY: Cerro de Cacolotl, Puebla, *Purpus 4105* ("4109").

DISTRIBUTION: Puebla and Oaxaca (*Camp 2243*, *Seler 90*).

13. *Eryngium columnare* Hemsl. in Hook. Ic. pl. 2511. 1897.

Stout, caulescent, glabrous perennials, 4-15 dm. high, from a short woody caudex bearing a fascicle of fleshy-fibrous roots, the stems solitary, erect; basal leaves numerous, herbaceous, linear-lanceolate, 2-5 dm. long, 8-15 mm. broad, broadest at or near the base, acuminate at the apex, spinose-lobed, the teeth divaricate or spreading, the longest 4-17 mm. long, axillary spines usually present, the venation parallel; sheaths as broad as the blades, plane or vaginate, 2-10 cm. long; cauline leaves few, like the basal, sessile, alternate below, ascending, the upper occasionally opposite, deeply spinose-serrate; inflorescence sparingly cymosely branched or simple, the heads large, few or solitary, pedunculate, the flowers numerous; heads deep blue, ovoid-oblong, 2-4 cm. long, 1.5-2 cm. broad; bracts 9-13, rigid, reflexed, linear-lanceolate, 2-5.5 cm. long, 3-8 mm. broad, pungent, conspicuously spinose-dentate toward the base, usually exceeding the heads; bractlets linear-subulate, 5-6 mm. long, curved, pungent, entire, exceeding the fruit; coma wanting; sepals ovate-oblong, about 2 mm. long, acuminate, mucronate; petals oblong, 2 mm. long; styles slender, exceeding the sepals; fruit turbinate, 3-4 mm. long, the lateral scales forming two entire wings, acuminate distally, otherwise naked.

TYPE LOCALITY: Mexico, *Graham 217*.

DISTRIBUTION: Tamaulipas and Hidalgo to Mexico and Morelos (*Pringle 8243*, *Rose & Painter 7188*).

ILLUSTRATION: Hook. Ic. pl. 2511.

14. *Eryngium crassisquamosum* Hemsl. in Hook. Ic. pl. 2765. 1903.

Eryngium pectinatum sensu Seem. Bot. Voy. Herald 294. 1856. Not *E. pectinatum* Presl, 1837.

Stout, caulescent, glabrous perennials, 1-2 m. high, from a short vertical tuberous rootstock bearing a fascicle of fleshy-fibrous roots, the stems solitary, erect; basal leaves numerous, linear, 3-8 dm. long, 1-2 cm. broad, coarsely spinose-lobed, the lobes spreading or divaricate, the longest spines 15-25 (or 60) mm. long, axillary spines present, the venation parallel; sheaths broader than the blades, vaginate, 4-12 cm. long; cauline leaves like the basal, the lower alternate, elongate, ascending, densely spinose at the base, the upper greatly reduced, opposite; inflorescence divaricately cymose, the heads large, numerous, pedunculate, the flowers numerous; heads purple, ovoid-oblong, 1.5-2.2 cm. long, 1-1.3 cm. broad; bracts 8-12, rigid, spreading or reflexed, lanceolate to linear, 1-2 cm. long or occasionally much shorter, pungent, entire or few-toothed, exceeding or shorter than the heads; bractlets lanceolate, 4-6 mm. long, pungent, entire, exceeding the fruit; coma wanting; sepals ovate, 1.5-2 mm. long, obtuse, apiculate; petals oval, about 1.5 mm. long; styles slender, exceeding the sepals; fruit

turbinate, 2-3 mm. long, the calycine and lateral scales lanceolate, flat, tawny, acute, up to 1 mm. long, the latter forming incised wings, the dorsal reduced downwards or obsolete.

TYPE LOCALITY: Sierra Madre, Mexico, *Seeman 2136*.

DISTRIBUTION: Nuevo León to Durango and Nayarit (*Ferris 5976, Rose 2128*).

ILLUSTRATION: Hook. Ic. *pl. 2765*.

15. *Eryngium pectinatum* Presl; DC. Prodr. 4: 96. 1830.

Eryngium longispinum Coult. & Rose; Hemsl. in Hook. Ic. *pl. 2766 2*. 1903.

Eryngium stenolobum Hemsl. in Hook. Ic. *pl. 2766 2*. 1903.

Stout, caulescent, glabrous perennials, 6-18 dm. high, from a short woody caudex bearing a fascicle of fleshy-fibrous roots, the stems solitary, erect; basal leaves numerous, linear, 2-6 dm. long, 4-12 mm. broad, broadest at the base, attenuate at the apex, spinose-lobed, the lobes spreading or divergent, the longest 1.5-4 cm. long, axillary and often intermediate spines usually well developed, the venation parallel; sheaths as broad as the blades, plane, 2-5 cm. long; cauline leaves like the basal, the lower alternate, ascending, the upper reduced, opposite, deeply spinose-serrate or pinnatifid; inflorescence cymosely branched, the heads large, numerous, pedunculate, the flowers numerous; heads blue, ovoid-oblong, 1.5-2.5 cm. long, 1.5-2 cm. broad; bracts 8-10, rigid, reflexed, linear-lanceolate, 2-5 cm. long, 3-8 mm. broad, pungent, coarsely spinose-serrate toward the base or rarely nearly entire, exceeding the heads; bractlets linear-lanceolate, 4-7 mm. long, curved, pungent, entire, exceeding the fruit; coma wanting; sepals ovate, about 2 mm. long, obtuse or acute, mucronate; petals ovate, about 2 mm. long; styles slender, surpassing the sepals; fruit turbinate, 3-4 mm. long, the scales of the angles forming two incised wings, the calycine scales small, the faces naked.

TYPE LOCALITY: Mexico, *Haenke*.

DISTRIBUTION: Coahuila to Mexico and Morelos (*Pringle 4359, 10,132*).

ILLUSTRATION: Hook. Ic. *pl. 2766*.

16. *Eryngium cymosum* Delar. f. Eryng. 63. 1808.

Rather stout, caulescent, glabrous perennials, 6-8 dm. high, from a fascicle of fleshy-fibrous roots, the stems solitary, erect; basal leaves numerous, linear-lanceolate, 2-6 dm. long, 6-18 mm. broad, broad at the base, attenuate at the apex, spinose-serrate with spreading teeth, the longest 1-3 cm. long, axillary spines present, the venation parallel; sheaths as broad as the blades, 2-5 cm. long; cauline leaves like the basal, few, sessile, very spiny especially at the base, the lower alternate, ascending, the upper reduced, opposite, spreading or recurved; inflorescence cymosely branched, the heads rather large, numerous, pedunculate, the flowers numerous; heads hemispheric to globose, 10-12 mm. in diameter; bracts 6-8, rigid, spreading to loosely reflexed, linear to linear-lanceolate, 8-24 mm. long, 2-3 mm. broad, pungent, entire or with 1 or 2 obsolete marginal spines, usually greatly exceeding the heads; bractlets linear-lanceolate, 3-5 mm. long, pungent, entire, exceeding the fruit; coma wanting; sepals ovate, about 1.5 mm. long, acute, mucronate; petals oval, 1-1.5 mm. long; styles slender, exceeding the sepals; fruit ovoid, 2-2.5 mm. long, the calycine scales and those of the angles flat, lanceolate, up to 1 mm. long, those of the surfaces smaller or the lower portion naked.

TYPE LOCALITY: "Nova Hispania," *Humboldt & Bonpland*.

DISTRIBUTION: Guerrero (*Nelson 2172*).

ILLUSTRATIONS: Delar. f. Eryng. *pl. 31*; Tratt. Ausg. Taf. *pl. 323*.

17. *Eryngium guatemalense* Hemsl. in Hook. Ic. *pl. 2766 2*. 1903.

Eryngium pectinatum sensu Donn. Smith, Enum. Pl. Guat. 2: 29. 1891. Not *E. pectinatum* Presl, 1830.

Stout, caulescent, glabrous perennials, 1-1.5 m. high, from a short horizontal woody rootstock bearing a fascicle of fibrous roots, the stems solitary, erect, branching; basal leaves numerous, rosulate, linear-lanceolate, 1-6 dm. long, 8-22 mm. broad, slightly narrowed at the base, acuminate at the apex, spinose-serrate, the lobes divaricate or spreading, the longest

1-2.5 cm. long, axillary spines often present, the venation parallel; sheaths nearly as broad as the blades, plane (?), 1-5 cm. long; cauline leaves like the basal, the lower alternate, ascending, the upper broad and elongated, spreading or recurved, opposite or occasionally whorled; inflorescence diffusely cymosely branched, the heads large, numerous, pedunculate, the flowers numerous; heads blue or purple, hemispheric, 1-2 cm. in diameter; bracts rigid, spreading to ascending, linear to linear-lanceolate, 1-4 cm. long, 2-6 mm. broad, often unequal, pungent, entire or with a few reduced spines, exceeding the heads; bractlets subulate-linear, 4-5 mm. long, mucronate, entire, exceeding the fruit; coma wanting; sepals ovate, 1.5-2 mm. long, obtuse, apiculate; petals oblong to oval, about 1.5 mm. long; styles slender, exceeding the sepals; fruit ovoid, 3-4 mm. long, the scales of the angles forming two wings, the faces naked.

TYPE LOCALITY: Mountains near Hacienda de Chaulco, Guatemala, *E. W. Nelson 3654*.
DISTRIBUTION: Chiapas to Guatemala (*Matuda 2323, J. D. Smith 2197*).

18. *Eryngium Palmeri* Hemsl. in Hook. *Ic. pl. 2765 2. 1903.*

Stout, caulescent, glabrous perennials, 8-18 dm. high, from a short tuberous rootstock bearing a fascicle of fleshy-fibrous roots, the stems solitary, erect, branching; basal leaves distichous, numerous, linear, 3-7 dm. long, 6-12 mm. broad, attenuate at the apex, spinose-serrate with stout spreading lobes or teeth, the longest 10-32 mm. long, axillary spines usually present, the venation parallel; sheaths broader than the blades, vaginate, 4-10 cm. long; cauline leaves few, like the basal, the lower alternate, elongate, ascending, the upper spreading, opposite, all deeply spinose-serrate; inflorescence cymosely branched, the heads large, numerous, pedunculate, the flowers numerous; heads hemispheric, 1.5-2 cm. in diameter; bracts 6-8, rigid, spreading, 2.5-5 cm. long, entire or with 1-2 reduced spines, greatly exceeding the heads; bractlets linear-lanceolate, 8-10 mm. long, curved, pungent, entire, exceeding the fruit; coma wanting; sepals ovate, 3 mm. long, acute, mucronate, puberulent on the back; petals obovate, about 2.5 mm. long; styles slender, exceeding the sepals; fruit turbinate, 3-4 mm. long, the scales forming two incised lateral wings, the calycine scales few, narrow, the surfaces naked.

TYPE LOCALITY: Rio Blanco, Mexico, *Palmer 681*.
DISTRIBUTION: Jalisco (*Pringle 7623, 10,131*).

19. *Eryngium monocephalum* Cav. *Anal. Hist. Nat. 2: 116. 1800.*

Eryngium bromeliaefolium Delar. f. *Eryng.* 60. 1808.
? *Eryngium axilliflorum* Turcz. *Bull. Soc. Nat. Mosc.* 20: 172. 1847.
Eryngium alternatum Coult. & Rose, *Contr. U. S. Nat. Herb.* 3: 298. 1895.
Eryngium involucreatum Coult. & Rose, *Contr. U. S. Nat. Herb.* 3: 299. 1895.
Eryngium grande Hemsl. & Rose; Rose, *Contr. U. S. Nat. Herb.* 8: 332. 1905.

Stout, caulescent, glabrous perennials, 6-30 dm. high, from a short woody caudex bearing a fascicle of fleshy-fibrous roots, the stems solitary, erect, branching; basal leaves linear-lanceolate, 1-6 dm. long, 6-25 mm. broad, slightly narrowed at the base, acuminate at the apex, spinose-serrate with divergent or spreading teeth 5-30 mm. long, often replaced by slender spines toward the base, axillary and intermediate spines usually present, the venation parallel; sheaths nearly as broad as the blades, plane, 1-3 cm. long; cauline leaves like the basal, alternate, the upper opposite, amplexicaul, vaginate and mostly recurved; inflorescence sparingly cymosely branched or the branching entirely suppressed, the heads large, solitary to few, pedunculate, the flowers very numerous; heads ovoid, 1-2.5 cm. long, 1-1.5 cm. broad; bracts 12-30, biseriate, rigid, spreading-ascending, strongly imbricate, linear to linear-lanceolate, 3-8 cm. long, 3-12 mm. broad, pungent, entire or spinose-serrate, exceeding and often enclosing the heads (or rarely conspicuously shorter than the heads); bractlets lanceolate-subulate, 4-7 mm. long, pungent, entire, slightly exceeding the fruit; coma wanting; sepals lanceolate to ovate, 2-4 mm. long, obtuse, mucronate; petals oblanceolate, 2-3 mm. long; styles short but slightly exceeding the sepals; fruit cuneate-cylindric, 3-5 (or 8?) mm. long, the lateral scales forming two incised wings, the calycine few, the surfaces naked or nearly so.

TYPE LOCALITY: "Huanajuato [Guanajuato] and Chilpancingo, New Spain," collector unknown.
DISTRIBUTION: Hidalgo to Morelos and Oaxaca (*Pringle 10,245, Purpus 3747*).
ILLUSTRATIONS: Cav. *Ic. pl. 553*; Delar. f. *Eryng.* *pl. 28*; Engler, *Pflanzenreich* 61 (4²²⁸): f. 35.

20. *Eryngium proteaeflorum* Delar. f. *Eryng.* 62. 1808.

Eryngium Seatonii Coult. & Rose; Seaton, Proc. Am. Acad. 28: 118. 1893.

Stout, caulescent, glabrous perennials, 1–2.5 m. high, from a fascicle of fleshy roots, the stems solitary, erect, branching; basal leaves rosulate, linear-lanceolate, 1–3 dm. long, 1–2 cm. broad, pungent-acuminate, spinose-lobed, the lobes ascending or divergent, 5–20 mm. long, axillary spines often present, the venation parallel; sheaths nearly as broad as the blades, short or obsolete; cauline leaves numerous, like the basal, alternate, sessile, ascending, leafy to the heads; inflorescence sparingly cymosely branched or simple, the heads very large, solitary or few, very short-pedunculate, the flowers numerous; heads ovoid-cylindric, 2–6 cm. long, 1.5–3 cm. broad; bracts 15–30, multi- or bi-seriate, rigid, ascending, linear to lanceolate, 5–12 cm. long, 5–20 mm. broad, strongly imbricate, the inner smaller and narrower, all pungent-acuminate with sparingly spinose-serrate margins, greatly exceeding and enclosing the heads; bractlets linear-lanceolate, 5–8 mm. long, pungent, exceeding the fruit; coma wanting; sepals broadly ovate, 2–3 mm. long, obtuse, apiculate; petals obovate, 2 mm. long; styles short, slightly exceeding the sepals; fruit cuneate-cylindric, 3–5 mm. long, naked except for a few flattened, lanceolate calycine scales and those on the summits of the angles.

TYPE LOCALITY: "Nova Hispania," collector unknown.

DISTRIBUTION: Vera Cruz to Tlaxcala and Mexico (*Pringle 1892, Purpus 3020*).

ILLUSTRATIONS: Delar. f. *Eryng.* pl. 30; Gard. Chron. III. 41: 248, 249; Möller's Gärtner-Zeit. 24: 344; Silva Tarouca, Freiland-Standen 98; Garden 75: 380; Engler, Pflanzenreich 61 (4225): pl.

21. *Eryngium Deppeanum* Schlecht. & Cham. *Linnaea* 5: 207. 1830.

Eryngium Painteri Hemsl. & Rose; Rose, Contr. U. S. Nat. Herb. 8: 333. 1905.

Eryngium Painteri var. *gigantophyllum* H. Wolff, Repert. Sp. Nov. 8: 307. 1910.

Eryngium Painteri var. *typicum* H. Wolff in Engler, Pflanzenreich 61 (4225): 222. 1913.

Rather stout, caulescent, glabrous perennials, 6–15 dm. high, from a short tuberous caudex bearing a fascicle of fleshy-fibrous roots, the stems solitary, erect, branching; basal leaves numerous, rosulate, linear-lanceolate, 8–40 cm. long, 1–2 cm. broad, slightly narrowed at the base, attenuate at the apex, spinose-lobed, the lobes short, stout, ascending or divaricate, 5–12 mm. long, often replaced by simple spines toward the base, short axillary spines occasionally present, the venation parallel, but some reticulations usually evident toward the margins; sheaths plane, nearly as broad as the blades, 1–3 cm. long; cauline leaves like the basal, large, sessile, lanceolate, alternate and deeply spinose-serrate, the upper opposite or whorled, broad and elongate, deeply spinose-serrate or spinose-lobed; inflorescence cymosely branched, the lower branches alternate, the upper whorled, the heads large, numerous, pedunculate, the flowers numerous; heads blue, ovoid, 1–2 cm. long, 1–1.5 cm. broad; bracts 8–12, rigid, spreading or reflexed, linear or linear-lanceolate, 1–3 cm. long, 2–4 mm. broad, pungent, entire or with an occasional tooth, about equaling the heads; bractlets linear-lanceolate, 3–8 mm. long, pungent, somewhat dilated at the base, entire, exceeding the fruit; coma wanting; sepals ovate, 1–2 mm. long, obtuse, apiculate; petals obovate, 1–2 mm. long; styles slender, exceeding the sepals; fruit ovoid, 2–5 mm. long, the angles densely covered with short, flattened, acute, lanceolate scales, the faces naked.

TYPE LOCALITY: "Serro Colorado," *Deppe*.

DISTRIBUTION: Hidalgo to Vera Cruz and Oaxaca (*Pringle 6038, 6939*).

ILLUSTRATIONS: Hook. Ic. pl. 2544; Contr. U. S. Nat. Herb. 8: 333. f. 17 (fr.).

22. *Eryngium fluitans* M. E. Jones, Contr. W. Bot. 12: 42. 1908.

Eryngium mexicanum sensu H. Wolff in Engler, Pflanzenreich 61 (4225): 178. 1913. Not *E. mexicanum* S. Wats. 1891.

Eryngium Wolffii Mathias, Ann. Mo. Bot. Gard. 16: 395. 1929.

Slender, caulescent, glabrous, perennials (?), 1.5–4 dm. high, from a fascicle of fleshy-fibrous roots, the stems several, weakly erect or ascending, branching; basal leaves linear to lanceolate, 2–15 cm. long, 0.5–3 cm. broad, entire or ternate to pinnatisect, the linear or lanceolate lobes entire or obsoletely serrate, 1–2 cm. long, the venation pinnately reticulate; petioles fistulose, septate, broadly sheathing at the base, 0.5–1 dm. long, exceeding the blades;

cauline leaves like the basal, entire to ternately or pinnately parted with herbaceous, weak, and often elongate divisions, the upper leaves sessile and opposite; inflorescence successively trifurcate or cymose, the heads rather large, numerous, pedunculate, the flowers numerous; heads blue, ovoid-cylindric, 10-15 mm. long, 6-8 mm. broad; bracts 8-12, rigid, spreading, linear-lanceolate to lanceolate, 10-15 mm. long, pungent, entire or with a pair of obsolete spines, green beneath and yellowish-white above, shorter than or exceeding the heads; bractlets subulate, 2-3 mm. long, entire, exceeding the fruit; coma of a single entire or shallowly lobed filiform bractlet, 15-25 mm. long; sepals ovate, about 0.5 mm. long, obtuse, apiculate; petals spatulate, about 0.6-0.8 mm. long; styles slender, exceeding the sepals; fruit ovoid, 1-2 mm. long, densely covered with subequal, white, lanceolate scales.

TYPE LOCALITY: Marsh Lake, Sierra Madre, Chihuahua, *M. E. Jones*.

DISTRIBUTION: Chihuahua to Mexico (*Pennell 18,288, Pringle 3180*).

ILLUSTRATION: Engler, *Pflanzenreich* 61 (4⁷²⁸): f. 30 (as *E. mexicanum* S. Wats.).

23. *Eryngium madrese* S. Wats. Proc. Am. Acad. 23: 274. 1888.

Slender, caulescent, glabrous perennials (?), 5-6 dm. high, from a fascicle of fleshy-fibrous roots, the stems solitary, strictly erect, branching; basal leaves lanceolate, 1-2 dm. long, 1-2 cm. broad, acuminate, ternate or pinnatisect, the linear or lanceolate lobes entire or obsolete serrat, 1-2 cm. long, the venation pinnately reticulate; petioles fistulose, septate, sheathing at the base, 1.5-3 dm. long, exceeding the blades; cauline leaves like the basal, ternately parted with rigid, bipinnatisect, linear divisions, 1-2 cm. long, the upper leaves opposite and sessile; inflorescence successively trifurcate or cymose, the heads rather large, short-pedunculate, the flowers numerous; heads blue, broadly cylindric, 10-12 mm. long, 6-8 mm. broad; bracts 8-10, rigid, spreading, linear to lanceolate, 12-18 mm. long, pungent, acute, entire or with an occasional spinose tooth, green beneath and yellowish-white above, exceeding the heads; bractlets subulate, 2-3 mm. long, rigid, entire, slightly dilated at the base, exceeding the fruit; coma of a single, rigid, deeply parted bractlet, 15-18 mm. long; sepals lanceolate, 0.5 mm. long, obtuse, apiculate; petals obovate, about 1 mm. long; styles slender, exceeding the sepals; fruit ovoid, 1-1.5 mm. long, densely covered with lanceolate, white, subequal scales.

TYPE LOCALITY: In ponds on the plains at the base of the Sierra Madre, Chihuahua, *Pringle 1531*.

DISTRIBUTION: Chihuahua (*Pringle 2009*).

24. *Eryngium phyteumae* Delar. f. *Eryng.* 51. 1808.

Eryngium cylindraceum (cylindricum) Willd.; Spreng. Syst. 1: 872, as syn. 1825.

Eryngium horminoides DC. Prodr. 4: 94, ex char. fide H. Wolff. 1830.

Eryngium phyteumatos Benth. Pl. Hartw. 38. 1840.

Eryngium discolor S. Wats. Proc. Am. Acad. 18: 193. 1883.

Eryngium mexicanum S. Wats. Proc. Am. Acad. 26: 136. 1891. Not *E. mexicanum* sensu H. Wolff, 1913.

Rather slender, caulescent, glabrous perennials, 3-7 dm. high, from a cluster of sub-fusiform roots, the stems solitary or few, simple or sparingly branched; basal leaves oblong to lanceolate, 6-20 cm. long, 1-2 cm. broad, obtuse or acute, apiculate, obscurely crenate or crenate-serrate, the venation reticulate; petioles fistulose, septate, 7-18 cm. long; cauline leaves like the basal, the upper sessile; inflorescence simple or cymosely few-branched, the heads rather large, few, pedunculate, the flowers numerous; heads amethystine to deep blue, ovoid-cylindric, 1-2 cm. long, 8-12 mm. broad; bracts 6-10, reflexed, linear-lanceolate, 1-4 cm. long, 2-3 mm. broad, acute, entire to sparingly spinulose-serrate, green beneath and white or blue above, equalling or exceeding the heads; bractlets subulate, 3-5 mm. long, exceeding the fruit; coma of 3-5 subequal, entire or spinulose-serrate bractlets, 5-15 mm. long; sepals broadly ovate, mucronate, obtuse to truncate; petals oblong or oblanceolate, 1-1.5 mm. long; styles slender, exceeding the sepals; fruit ovoid, 2-3 mm. long, densely covered with flat, lanceolate, white, subequal scales.

TYPE LOCALITY: "Nova Hispania," *Humboldt & Bonpland*.

DISTRIBUTION: Arizona and Chihuahua to Mexico (*Pennell 19,151, Townsend & Barber 291*).

ILLUSTRATION: Delar. f. *Eryng.* pl. 21.

25. *Eryngium comosum* Delar. f. *Eryng.* 30. 1808.

Low and stout, glabrous perennials (?), 1.5–4 dm. high, from fleshy, tuberous roots, the stems erect or spreading, branching; basal leaves oblong to obovate, 8–15 cm. long, 3–5 cm. broad, pinnatifid to bipinnatisect with rigid, lanceolate, pungent divisions, the venation pinnately reticulate; petioles winged, spiny, 2–8 cm. long, shorter than the blades; cauline leaves like the basal, the upper reduced, sessile, opposite, and deeply parted; inflorescence successively trifurcate or cymosely branched, the heads rather large, numerous, pedunculate, the flowers numerous; heads cylindrical, 1–1.8 cm. long, 6–8 mm. broad; bracts 6–8, chartaceous, spreading or reflexed, lanceolate to oblanceolate, 1–1.5 cm. long, acute, trifurcate or sometimes pinnatifid at the apex, greenish beneath and yellowish-white above, shorter than or equaling the heads; bractlets subulate, 3–4 mm. long, curving, slightly dilated at the base, about equaling the fruit; coma of 2–4 subequal, entire or trifurcate bractlets, 8–15 mm. long; sepals ovate-lanceolate, 1.5–2 mm. long, acute, mucronate; petals spatulate, about 1–2 mm. long; styles slender, slightly exceeding the sepals; fruit ovoid-globose, 2–4 mm. in diameter, densely covered with flat, lanceolate-acuminate, white or tawny scales, those on the angles the longest.

TYPE LOCALITY: "Nova Hispania," *Humboldt & Bonpland*.

DISTRIBUTION: Mexico (State) and the Federal District (*Pringle 3203, Purpus 5718*).

ILLUSTRATION: Delar. f. *Eryng.* pl. 7.

26. *Eryngium carlinae* Delar. f. *Eryng.* 53. 1808.

Eryngium radiatum Willd.; Spreng. Syst. 1: 877, as syn. 1825.

Eryngium affine H. Wolff, Repert. Sp. Nov. 7: 345. 1909.

Low, short-caulescent or acaulescent, glabrous perennials, 5–25 cm. high or long, from a slender, often branched taproot, the stems decumbent to erect, solitary to several; basal leaves numerous, rosulate, oblanceolate, 3–8 cm. long, 5–18 mm. broad, long-cuneate at the base, obtuse at the apex, coarsely spinulose-serrate and often incised or lobed with divaricate teeth or lobes, the venation pinnately reticulate; petioles broadly winged, 0.5–2 cm. long, much shorter than the blades; cauline leaves few, like the basal, the upper sessile, deeply incised and often parted toward the base; inflorescence trifurcate or sparingly cymosely divaricate, the heads small, pedunculate, the flowers numerous; heads violet-blue, ovoid, 7–10 mm. long, 5–7 mm. broad; bracts 8–10, chartaceous, spreading-ascending, oblanceolate to ovate, 8–20 mm. long, 2–6 mm. broad, acute, more or less spinose-serrate toward the apex, green or blue beneath and white above, usually exceeding the heads; bractlets subulate, 2–3 mm. long, curved, entire, slightly exceeding the fruit; coma of 1–3 nearly entire bractlets, 2–5 mm. long, or occasionally obsolete; sepals ovate, 1.5–2 mm. long, obtuse, mucronate; petals spatulate, about 1 mm. long; styles shorter than the sepals; fruit ovoid, 1.5–2 mm. long, the angles densely covered with short flattened scales, the faces with conical papillae.

TYPE LOCALITY: "Nova Hispania," collector unknown.

DISTRIBUTION: Durango and Hidalgo to Guatemala and Costa Rica (*Pennell 18,532, Pringle 6916*).

ILLUSTRATIONS: Delar. f. *Eryng.* pl. 23; Tratt. Ausg. Taf. pl. 327; Möller's Gärtnere-Zeit. 26: 517.

27. *Eryngium Beecheyanum* H. & A. Bot. Beech. Voy. 294. 1838.

Eryngium tenue H. & A. Bot. Beech. Voy. 293. 1838. Not *E. tenue* Lam. 1797.

Eryngium cryptanthum Hemsl. in Hook. Ic. pl. 2509. 1897.

Eryngium tenuissimum Hemsl. in Hook. Ic. pl. 2580. 1899.

Eryngium Seleri H. Wolff, Repert. Sp. Nov. 7: 275. 1909.

Slender, caulescent, divaricately branching, glabrous biennials, 1.5–6 dm. high, from a fascicle of fibrous roots; basal leaves numerous, rosulate, oblanceolate, 3–8 cm. long, 8–15 mm. broad, long-cuneate at the base, obtuse at the apex, setose-serrate to subpinnatifid, the venation pinnately reticulate; petioles short or obsolete, winged and sheathing at the base, to 1 cm. long, much shorter than the blades; lower cauline leaves like the basal, setose-serrate or shallowly incised to pinnatifid, the upper palmately parted, sessile, the uppermost opposite; inflorescence cymosely divaricate, the heads small, numerous, pedunculate, the flowers numerous; heads blue or occasionally white, ovoid-cylindric, 6–10 mm. long, 5–6 mm. broad; bracts 8–12,

chartaceous, spreading, linear-lanceolate, 8–15 mm. long, 2–3 mm. broad, pungent, green or bluish beneath and yellowish-white above, with 1–3 short lateral spines or entire, exceeding or occasionally only equaling the heads; bractlets subulate, 3–4 mm. long, entire, curved, exceeding the fruit; coma of 1–3 usually entire bractlets, 2–6 mm. long, or occasionally obsolete; sepals ovate, about 1 mm. long, obtuse, apiculate; petals obovate, about 1 mm. long; styles rather short, slightly exceeding the sepals; fruit globose, 1–2 mm. long, densely papillate on the angles and surfaces.

TYPE LOCALITY: "Talisco [Jalisco], Sierra Madre, Mexico," *Lay & Collie*.

DISTRIBUTION: Sonora and Chihuahua to Mexico and Michoacán (*Hinton 2194, Pringle 4120, 13,526*).

ILLUSTRATIONS: Hook. Ic. *pl.* 2506, 2509, 2580.

28. *Eryngium heterophyllum* Engelm. in Wisliz. Tour Northern Mex. 106. 1848.

? *Eryngium Haenkei* Presl; DC. Prodr. 4: 94. 1830.

Eryngium Wrightii A. Gray, Pl. Wright. 1: 78. 1852.

Eryngium medium Hemsl. in Hook. Ic. *pl.* 2767. 1903.

Eryngium Altamiranoi Hemsl. & Rose; Rose, Contr. U. S. Nat. Herb. 10: 129. 1906.

Eryngium confusum Hemsl. & Rose; Rose, Contr. U. S. Nat. Herb. 10: 129. 1906.

Eryngium Endlichii H. Wolff, Repert. Sp. Nov. 8: 306. 1910.

Rather stout, caulescent, glabrous perennials, 2–6 dm. high, from a stout taproot, the stems erect, branching; basal leaves rosulate, narrowly oblanceolate to oblong-oval, 4–12 cm. long, 1–3 cm. broad, cuneate at the base, acute or obtuse at the apex, those of the sterile rosettes setose-dentate, the fertile spinose-serrate to pinnatifid or bipinnatisect, the teeth or lobes acute, pungent, callous-margined, the venation pinnately reticulate; petioles narrowly winged, sheathing at the base, 1–5 cm. long, shorter than the blades; cauline leaves numerous, like the basal, the lower pinnatifid or bipinnatisect, the upper opposite, sessile and palmately parted; inflorescence paniculately branched, the heads rather small, numerous, pedunculate, the flowers numerous; heads ovoid, blue to white, 7–15 mm. long, 5–10 mm. broad; bracts 8–14, rigid, spreading-ascending, linear-lanceolate to lanceolate, 12–25 mm. long, 2–5 mm. broad, pungent or acuminate, with 1 or 2 pairs of spinose teeth or entire, green or bluish beneath and yellowish-white above, exceeding or occasionally shorter than the heads; bractlets subulate, 3–5 mm. long, entire, curved, exceeding the fruit; coma of 1–4 entire bractlets, 5–15 mm. long, or occasionally obsolete; sepals ovate, about 1 mm. long, obtuse or truncate, apiculate; petals oblanceolate to obovate, about 1 mm. long; styles slender, exceeding the sepals; fruit globose, 1.5–2.5 mm. in diameter, with flat scales below the sepals and on the upper angles, the faces papillate.

TYPE LOCALITY: In valleys about Cosihuiriachi, Chihuahua, *Wisliczenius 176*.

DISTRIBUTION: Louisiana, Texas, and Arizona to San Luis Potosí and Oaxaca (*Pringle 13,530, Schaffner 548*).

ILLUSTRATION: Hook. Ic. *pl.* 2767.

29. *Eryngium Lemmoni* Coult. & Rose, Bot. Gaz. 14: 279. 1889.

Eryngium Goldmani Hemsl. in Hook. Ic. *pl.* 2638. 1900.

Eryngium argutum Hemsl.; H. Wolff in Engler, Pflanzenreich 61 (4²²⁸): 195, as syn. 1913.

Slender, caulescent, glabrous perennials (?), 3–8 dm. high, from a fascicle of fibrous or fleshy roots, the stems erect, branching; basal leaves coriaceous, rosulate, oblanceolate and often elongate, 5–20 cm. long, 1–2 cm. broad, long-cuneate at the base, obtuse at the apex, spinulose-serrate with more or less divaricate, callous-margined teeth, the venation pinnately reticulate; petioles broadly sheathing at the base, 1–8 cm. long, shorter than the blades; cauline leaves like the basal, the upper often broader, opposite, sessile, spinose-serrate or deeply incised or parted; inflorescence successively trifurcate or cymose, the heads rather large, few, pedunculate, the flowers numerous; heads blue, ovoid, 10–15 mm. long, 6–12 mm. broad; bracts usually 10–13, chartaceous, spreading-ascending, broadly lanceolate to oblanceolate, 1.5–3 cm. long, 4–8 mm. broad, pungent, acute, spinose-serrate with 2–3 pairs of teeth, green or blue beneath and white above, greatly exceeding the heads; bractlets subulate, about 5 mm. long, curved, exceeding the fruit; coma wanting; sepals ovate, 2–3 mm. long, obtuse, apiculate;

petals obovate, about 1 mm. long; styles short, slightly exceeding the sepals; fruit ovoid, 2-3 mm. long, with flat, white, ovate, acute scales below the sepals and on the summits of the angles, the faces papillate or bare.

TYPE LOCALITY: Chirricahua Mountains, southeastern Arizona, *Lemmon 17*.

DISTRIBUTION: Arizona and Chihuahua to Durango (*Pringle 2010, Townsend & Barber 242*).

ILLUSTRATION: Hook. Ic. *pl. 2638*.

30. *Eryngium calaster* Standley, Field Mus. Publ. Bot. 22: 42. 1940.

Slender, caulescent, glabrous perennials, 15-25 cm. high, from a fascicle of fibrous roots, the stems solitary, erect, simple or branched; basal leaves thin, spatulate to oblanceolate, 4-8 cm. long, 1-1.5 cm. broad, long-cuneate at the base, obtuse at the apex, setose-dentate, the venation pinnately reticulate; petioles slender, sheathing at the base, 1-3 cm. long; cauline leaves like the basal, the lower setose-dentate to subpinnatifid, the upper sessile, opposite, incised to palmately parted; inflorescence sparingly cymosely branched, the heads small, few, pedunculate, the flowers numerous; heads blue, globose-ovoid, 4-7 mm. in diameter; bracts 8-14, chartaceous, spreading, oblong to lanceolate, 10-15 mm. long, 3-5 mm. broad, obtuse or abruptly acute, spinose-serrate with 3-6 pairs of delicate spines, green or bluish beneath and silvery above, greatly exceeding the heads; bractlets blue, subulate, 2-4 mm. long, curved, entire, slightly exceeding the fruit; coma wanting; sepals ovate, about 1 mm. long, obtuse, apiculate; petals obovate, 1 mm. long; styles short, slightly exceeding the sepals; fruit globose, 2 mm. in diameter, densely papillate with short conical papillae, the calycine scales narrow and flat.

TYPE LOCALITY: Memelichi, Rio Mayo, Chihuahua, *H. S. Gentry 2762*.

DISTRIBUTION: Chihuahua to Durango (*Pennell 18, 284*).

31. *Eryngium Leavenworthii* T. & G. Fl. N. Am. 1: 604. 1840.

Rather slender, glabrous and purplish perennials (?), 5-10 dm. high, from a slender taproot, the stems erect, divaricately branching, leafy; lower cauline leaves broadly oblanceolate, 3-6 cm. long, 1-2 cm. broad, short-petiolate, the upper broadly ovate to orbicular, sessile, deeply palmately parted, the divisions pinnatifid with pungent lobes, the venation reticulate; inflorescence sparingly cymose, the heads large, few or more, short-pedunculate, the flowers numerous; heads purplish, ovoid to ovoid-cylindric, 2-3.5 cm. long, 15-25 mm. broad; bracts about 8, oblong, 2-4 cm. long, spinose-pinnatifid like the upper leaves, about equaling the heads; bractlets linear, 1 cm. long, spinose-lobed with 3-7 prominent teeth, exceeding the fruit; coma of about 8 prominent spinescent bract-like bractlets, 1-2 cm. long; sepals oblong, 5 mm. long, spinose-pinnatifid toward the apex; petals oblong, 2-3 mm. long; styles shorter than the sepals; fruit oblong, 2-4 mm. long, densely covered on the angles and faces with linear or claviform white scales 1-2 mm. long.

TYPE LOCALITY: Red River, "Arkansas," *Leavenworth*.

DISTRIBUTION: Kansas to Texas (*Lindheimer 836, 837, Palmer 9008*).

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. 2: 622; Engler, Pflanzenreich 61 (4226): f. 28.

32. *Eryngium diffusum* Torr. Ann. Lyc. N. Y. 2: 206. 1827.

Eryngium prostratum James; S. Wats. Bibl. Ind. 421, as syn. 1878.

Low, caulescent, diffusely branched, prostrate to erect, glabrous perennials (?), 1-4 dm. high, from a slender taproot; basal leaves obovate to cuneate, 2-5 cm. long, 1-2 cm. broad, nearly sessile, deeply palmately parted, the cuneate or oblong divisions spinulose-dentate or lobed, the venation palmately reticulate; cauline leaves numerous, like the basal; inflorescence successively trifurcate, or some lateral branches elongate to form a monochasium, the heads numerous, small, very short-pedunculate, the flowers numerous; heads bluish, globose-ovoid, 8-12 mm. long, 6-8 mm. broad; bracts 10-12, rigid, spreading, linear-lanceolate, 10-15 mm. long, 2-3 mm. broad, pungent, spinose-serrate, scarious-margined at the base, exceeding the heads; bractlets lanceolate, 5 mm. long, mucronate, entire, broadly scarious-winged at the

base, exceeding the fruit; coma wanting; sepals lanceolate, long-mucronate, 3-3.5 mm. long; petals oblanceolate, about 1.5 mm. long; styles shorter than to slightly exceeding the sepals; fruit globose-ovoid, 2.5-3 mm. long, densely covered with linear, acute, subequal, white scales, 1-2 mm. long.

TYPE LOCALITY: On the Canadian River, probably Oklahoma, *James*.

DISTRIBUTION: Texas and adjacent Oklahoma (*Berlandier 1078*, *Reverchon 3852*).

ILLUSTRATIONS: *Marcy*, *Expl. Bot. pl. 6*; *Bot. Gaz. 12: pl. 17, f. 123 (fr.)*.

33. *Eryngium Hookeri* Walp. *Rep. 2: 389. 1843.*

Eryngium coronatum T. & G. *Fl. N. Am. 1: 604. 1840.* Not *E. coronatum* H. & A. 1833.

Slender, caulescent, glabrous annuals (?), 3-6 dm. high, from fascicled fibrous roots, the stems solitary, erect, branched above; basal leaves obovate to oblong-lanceolate, 6-9 cm. long, 2-3 cm. broad, acute at the apex, somewhat serrate or dentate, the venation reticulate; petioles slender, sheathing at the base, 0.5-2 dm. long; lower cauline leaves lanceolate, nearly sessile, laciniately toothed and spinulose with a pair of small lacinate segments at the base; upper cauline leaves ovate, palmately divided with 5-7 oblong, lacinate or pinnatifid, spinulose lobes 2-3 cm. long; inflorescence cymosely branched, the heads few, rather large, pedunculate, the flowers numerous; heads amethystine, ovoid to cylindric-ovoid, 8-15 mm. in diameter; bracts numerous, rigid, linear-lanceolate, 1-2 cm. long, spinulose-serrate, broadly winged at the base, exceeding the heads; bractlets lanceolate, 4-6 mm. long, pungent, entire, exceeding the fruit; coma of a few elongate bractlets or wanting; sepals ovate-lanceolate, 2 mm. long, pungent-acuminate; petals broadly linear, 1-1.5 mm. long; styles shorter than the sepals; fruit 1-2 mm. long, densely covered with flat, tawny (?) scales, up to 0.5 mm. long.

TYPE LOCALITY: Texas, *Drummond*.

DISTRIBUTION: Eastern Texas (*Reverchon 2011*, *Thorp 2423*).

34. *Eryngium spiculosum* Hemsl. in *Hook. Ic. pl. 2507. 1897.*

Slender, caulescent, glabrous perennials (?), 10 dm. high, the stems erect, branching; basal leaves thin, oblong to obovate, 5-15 cm. long, 1.5-3 cm. broad, long-cuneate at the base, obtuse at the apex, callous-margined, crenate-serrate, the venation pinnately reticulate; petioles slender, sheathing at the base, 2-5 cm. long, shorter than the blades; upper cauline leaves sessile, broad, mostly opposite, palmately parted with lanceolate lobes; inflorescence divaricately trifurcate, the lateral branches elongated to form a monochasium, the heads small, numerous, pedunculate, the flowers numerous, pedicellate (?); heads globose-ovoid, 6-7 mm. long, 5-6 mm. broad; bracts 5 (-8?), reflexed, lanceolate or linear-lanceolate, 12-25 mm. long, 2-4 mm. broad, pungent, entire, green beneath and green or whitish toward the base above, exceeding the heads; bractlets subulate, 3-4 mm. long, entire, exceeding the fruit; coma of 1 or 2 bractlets, 10-15 mm. long; sepals ovate, 1.5 mm. long, obtuse, mucronulate, the margins scarios; petals oblanceolate, about 1 mm. long; styles slender, exceeding the sepals; fruit globose or a little longer than broad, 2-3 mm. long, densely covered with fleshy, papillose, setiform scales.

TYPE LOCALITY: Mexico, *Ocampo*.

DISTRIBUTION: Guetero (*Pringle 10,344*).

ILLUSTRATIONS: *Hook. Ic. pl. 2507*; *Proc. Wash. Acad. 1: pl. 3*.

35. *Eryngium nasturtifolium* Juss.; *Delar. f. Eryng. 46. 1808.*

Eryngium compactum Small, *Fl. SE. U. S. 863. 1903.*

Prostrate, ascending or erect, glabrous biennials or perennials, 1-3 dm. high or long, from a fascicle of fibrous roots or a slender taproot, the stems several, leafy, branched from the base; basal leaves spatulate or oblanceolate, 3-10 cm. long, 1-3 cm. broad, cuneate at the base, coarsely dentate to runcinate-pinnatifid, the teeth or lobes mucronulate or spinose, the venation reticulate; petioles broad, winged, up to 10 cm. long; cauline leaves like the basal, spinose-dentate or spinose-pinnatifid; inflorescence divaricately trifurcate or cymose, the lateral branches often elongate and continuous to form a monochasium, the heads numerous, small,

nearly sessile, the flowers numerous; heads ovoid to ovoid-cylindric, 5-15 mm. long, 4-8 mm. broad; bracts 5-9, rigid, spreading, subulate to linear-lanceolate, 8-20 mm. long, entire, pungent, about equaling the heads; bractlets lanceolate to obovate, 4-9 mm. long, broadly scarious-margined at the base, entire, exceeding the fruit; coma of several short bractlets 3-7 mm. long, resembling the bracts; sepals ovate, 1-1.5 mm. long, obtuse or acute, mucronulate, serrulate toward the apex; petals oblong to obovate, 0.5-1 mm. long; styles shorter than to exceeding the sepals; fruit ovoid-globose, 2-3 mm. long, densely covered with elliptic to linear, white or flavescent scales up to 2 mm. long.

TYPE LOCALITY: "Americae meridionale," *Houston*.

DISTRIBUTION: Texas and Baja California to Mexico and Vera Cruz; Cuba. (*Palmer 11,517, Pringle 4098.*)

ILLUSTRATIONS: Delar. f. *Eryng. pl. 17*; Hook. *ic. pl. 2581*.

36. *Eryngium reptans* Hemsl. in Hook. *ic. pl. 2543*. 1897. Not

E. reptans Willd.; Spreng. (nom. in syn.). 1825.

Slender, caulescent, glabrous perennials, 5-13 cm. high or long, from a taproot, the stems several from the base, prostrate, branching; basal leaves obovate-spatulate, 20-25 mm. long, 8-10 mm. broad, cuneate at the base, obtuse at the apex, coarsely serrate, the venation reticulate; petioles very short or obsolete; cauline leaves like the basal, oval to obovate, sessile, coarsely serrate, the upper opposite; inflorescence of divergent branches bearing solitary heads at the nodes, the heads small, numerous, short-pedunculate, the flowers numerous; heads hemispheric, 5 mm. in diameter; bracts 6-7, rigid, spreading, lanceolate, 5-8 mm. long, pungent, entire or few-toothed, exceeding the heads; bractlets like the bracts, linear-lanceolate, pungent, entire, slightly exceeding the fruit; coma wanting; sepals ovate, 0.5-1 mm. long, acute, pungent; petals ?; styles exceeding the sepals; fruit ovoid, 1-1.5 mm. long, densely covered with small, globose scales, or the upper ovoid and subacute.

TYPE LOCALITY: Quetzaltenango, Guatemala, *Bernoulli & Cario 2745*.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Hook. *ic. pl. 2543*.

37. *Eryngium divaricatum* H. & A. Bot. Misc. 3: 350. 1833.

Eryngium flaccidum H. & A. Bot. Misc. 3: 350. 1833.

Slender, caulescent, glabrous perennials, 1-3 dm. high or long, from a fascicle of fibrous roots, the stems numerous, prostrate or ascending, branching above; basal leaves ovate to oblong, 5-10 cm. long, 1-2 cm. broad, pinnate or pinnately lobed, the divisions remote, narrowly lanceolate, acute, entire, sparsely spinulose or incised above, the venation reticulate; petioles sheathing at the base, 5-20 cm. long; cauline leaves like the basal, the segments more crowded, petiolate; inflorescence cymosely branched, the lateral branches continuing, to form a monochasium, the heads small, numerous, pedunculate, the flowers numerous; heads cylindrical, 8-15 mm. long, 4-5 mm. broad; bracts very few, unequal, herbaceous, spreading, linear-subulate, 3-9 mm. long, entire, shorter than the heads; bractlets subulate, acuminate, 1-2 mm. long, about equaling the fruit; coma wanting; sepals ovate, about 0.5 mm. long, obtuse, mucronate; petals broadly ovate, 1 mm. long; styles longer than the sepals; fruit ovoid, 1-2 mm. long, densely covered with small, linear, acute scales.

TYPE LOCALITY: Buenos Aires, Argentina, *Tweedie*.

DISTRIBUTION: Argentina; introduced on the coasts of North Carolina and Florida.

38. *Eryngium foetidum* L. Sp. Pl. 232, in principal part, excl. syn. 1753.

Eryngium antihystericum Rottb. Acta Lit. Univ. Hafn. 1: 288. 1778.

Eryngium foetidum f. *comosum* Urban in Mart. Fl. Bras. 11: 302. 1879.

Eryngium foetidum f. *nudum* H. Wolff in Engler, Pflanzenreich 61 (4228): 203. 1913.

Slender, caulescent, branching, glabrous biennials, 0.5-6 dm. high, from a fascicle of fibrous roots, the stems mostly solitary, erect; basal leaves thin and herbaceous, lanceolate or

oblanceolate, 3–27 cm. long, 1–5 cm. broad, cuneate at the base, obtuse at the apex, callous-margined, crenate to finely spinulose-serrate, the venation pinnately reticulate; petioles short or obsolete, broadly sheathing at the base, up to 3 cm. long; lower cauline leaves like the basal, the upper reduced, sessile and usually opposite, deeply spinulose-serrate to parted; inflorescence divaricately trifurcate, the lateral branches often continuing, to form a monochasium, the heads numerous, small, short-pedunculate, the flowers numerous; heads cylindrical, 7–11 mm. long, 3–5 mm. broad; bracts 5–6, foliaceous, spreading and reflexed, lanceolate, 1–4 cm. long, 2–10 mm. broad, mucronate, entire or with 1 or 2 pairs of weak marginal spines, rarely parted, green on both surfaces, greatly exceeding the heads; bractlets linear or lanceolate, 2–3 mm. long, exceeding the fruit; coma conspicuous to wanting; sepals lanceolate to ovate, about 0.5 mm. long, acute, weakly mucronate; petals oblanceolate to obovate, about 0.5 mm. long; styles short, slightly exceeding the sepals; fruit globose or slightly broader than long, about 1.5 mm. long, densely papillose with globose, tawny processes.

TYPE LOCALITY: Mexico, collector unknown.

DISTRIBUTION: Vera Cruz to Panama and the West Indies; South America. (*Purpus* 2030, 5916.)

ILLUSTRATIONS: Vell. Fl. Flum. Ic. 3: pl. 97; Mart. Fl. Bras. 11: pl. 79.

39. *Eryngium Baldwini* Spreng. Syst. 1: 870. 1825.

Eryngium gracile Nutt. Gen. 1: 175. 1818. Not *E. gracile* Delar. f. 1808.

Eryngium gracile Baldw.; Ell. Bot. S. C. & Ga. 1: 345. 1821. Not *E. gracile* Delar. f. 1808.

Eryngium reptans Willd.; Spreng. Syst. 1: 870, as syn. 1825.

Streblanthus humilis Raf. New Fl. 4: 35. 1838.

Streblanthus gracilis Raf. New Fl. 4: 36. 1838.

Streblanthus tenuifolius Raf. New Fl. 4: 36. 1838.

Klonion gracile Raf. New Fl. 4: 36. 1838.

Klonion tenuifolium Raf. New Fl. 4: 36. 1838.

Eryngium filiforme Shuttl.; A. Gray, Pl. Wright. 1: 78. 1852.

Eryngium filiforme var. *latifolium* Shuttl.; A. Gray, Pl. Wright. 1: 78, as syn. 1852.

Eryngium Cervantesii sensu Chapm. Fl. S. U. S. 160. 1860. Not *E. Cervantesii* Delar. f. 1808.

Eryngium prostratum sensu Wood, Class-Book, ed. 1861. 378. 1861. Not *E. prostratum* Nutt. 1830.

Low, caulescent, glabrous perennials, 1.5–12 dm. high or long, from a fascicle of fibrous roots, the stems subprostrate or ascending, very slender, several, diffusely branched above, sometimes rooting at the nodes; basal leaves broadly ovate or obovate to lanceolate, 1.5–7 cm. long, 15–25 mm. broad, entire, lacinate or palmately divided, crenate to serrate, the venation reticulate; petioles slender, 0.5–7 cm. long; cauline leaves reduced, sessile or shortly petiolate, palmately 3–5-parted, the segments narrowly linear to oblanceolate, entire to sub-pinnatifid; inflorescence of elongated monochasia bearing numerous small heads on filiform axillary peduncles, the flowers few; heads ovoid to ovoid-cylindric, 3–7 mm. long, 2–5 mm. broad; bracts 6–8, rigid, spreading, subulate, 2–6 mm. long, acute, shorter than the heads; bractlets like the bracts, linear, subulate, 1.5 mm. long, exceeding the fruit; coma wanting; sepals ovate, about 0.8 mm. long, obtuse, mucronulate, petals light blue, oblanceolate to spatulate, 0.5 mm. long; styles exceeding the sepals; fruit globose-ovoid, about 1 mm. in diameter, densely covered with elongated white tubercles.

TYPE LOCALITY: Carolina, Florida, Baldwin?

DISTRIBUTION: Southeastern Georgia to Florida (*Biltmore herb.* 2359, *Curtiss* 1002).

ILLUSTRATION: Jour. Bot. 38: pl. 411, D.

40. *Eryngium prostratum* Nutt.; DC. Prodr. 4: 92. 1830.

Streblanthus auriculatus Raf. Bull. Bot. Seringe 1: 218. 1830.

Streblanthus auriculatus Raf. Atl. Jour. 149. 1832.

Streblanthus heterophyllus Raf. New Fl. 4: 35. 1838.

Eryngium Baldwini var. β T. & G. Fl. N. Am. 1: 605. 1840.

Eryngium prostratum var. *foliosum* Wood, Class-Book, ed. 1861. 378. 1861.

Low, prostrate or ascending, glabrous perennials, 1.5–7 dm. high; from a fascicle of fibrous roots, the stems very slender, simple or somewhat branched above; basal leaves ovate to lanceolate, 15–55 mm. long, 7–25 mm. broad, simple or palmately lobed, the margins entire or irregularly and remotely dentate, the venation reticulate; petioles slender, 1–8 cm. long; cauline leaves like the basal, reduced, clustered at the nodes, sessile upwards; inflorescence of

elongated monochasia bearing small, numerous heads on filiform axillary peduncles, the flowers few; heads often blue, ovoid to ovoid-cylindric, 4-9 mm. long, 3-4 mm. broad; bracts 5-10, foliaceous, reflexed, lanceolate, 2-12 mm. long, acute, equaling the heads; bractlets narrowly subulate, about 1 mm. long, acute, shorter than the fruit; coma wanting; sepals ovate to semi-orbicular, about 0.8 mm. long, obtuse, mucronulate; petals blue, obovate-spatulate, 1 mm. long; styles exceeding the sepals; fruit subglobose, 2 mm. in diameter, sparsely covered with low white tubercles.

TYPE LOCALITY: "In Americae bor. Territoria Arkansano." Nuttall.

DISTRIBUTION: Tennessee to Florida, west to Missouri and Texas (Curtiss 6814, Palmer 7484).

ILLUSTRATION: Britt. & Brown, Ill. Fl. ed. 2: 623.

41. *Eryngium Cervantesii* Delar. f. Eryng. 47. 1808.

Eryngium viviparum Cerv.; Delar. f. Eryng. 47, as syn. 1808. Not *E. viviparum* Gay. 1848.

Low, caulescent, branching, glabrous perennials, 6-15 cm. high, the stems numerous, procumbent; basal leaves linear to narrowly spatulate, 2-4 cm. long, 1-4 mm. broad, remotely serrate to shallowly lobed, the venation pinnately reticulate; petioles slender, sheathing at the base, 0.5-2 cm. long, about equaling the blades; cauline leaves short-petiolate or sessile, 3-lobed or 3-5-palmately lobed or similar to the basal and fasciated; inflorescence a monochasium with small, short-pedunculate heads solitary in the axils, often subtended by fascicles of leaves; heads globose, 3-6 mm. in diameter; bracts 5-6, rigid, spreading-ascending, lanceolate, 3-12 mm. long, pungent, entire, usually longer than the heads; bractlets like the bracts but scarious-dilated at the base, 3-4 mm. long, slightly exceeding the flowers and fruit; coma wanting; sepals ovate, about 1 mm. long, obtuse, apiculate; petals oval, about 0.5 mm. long; styles slender, exceeding the sepals; fruit ovoid, 2-3 mm. long, the calycine scales ovate, up to 1 mm. long, the dorsal and lateral linear, attenuate, about equally long.

TYPE LOCALITY: Mexico. Sessé & Mocino 1486.

DISTRIBUTION: Hidalgo to Michoacán (Gregg 806, Schumann 677).

ILLUSTRATIONS: Delar. f. Eryng. pl. 18, f. 1; Tratt. Ausg. Taf. pl. 330; Hook. Ic. pl. 2547.

42. *Eryngium Rosei* Hemsl. in Hook. Ic. pl. 2579. 1899.

Slender, subscauose, glabrous perennials, 0.5-3 dm. high, from a fascicle of fleshy-fibrous roots, the flowering stems solitary or few, erect; basal leaves coriaceous, rosulate, oval to oblanceolate, 2-3 cm. long, 1-1.5 cm. broad, rounded or slightly cuneate at the base, obtuse at the apex, densely spinose-ciliate, the cilia 2-5 mm. long, the venation pinnately reticulate; petioles more or less winged, vaginate below, sheathing at the base, 1-4 cm. long, shorter or longer than the blades; cauline leaves few, like the basal, those of the inflorescence sessile, opposite or in threes; inflorescence usually simply trifurcate, the heads few, small, pedunculate, the flowers numerous; heads deep blue, globose, 5-10 mm. long; bracts 8-12, chartaceous, stellate-spreading, oblanceolate, 1-2 cm. long, 3-8 mm. broad, obtuse, apiculate, entire or spinosely few-toothed near the apex, blue or green beneath and white above, greatly exceeding the heads; bractlets linear-oblong, 3-4 mm. long, entire, pungent, exceeding the fruit; coma wanting; sepals ovate, 1-1.5 mm. long, obtuse, mucronate; petals obovate, about 1.5 mm. long; styles short but exceeding the sepals; fruit oblong, 1-1.5 mm. long, the calycine scales lanceolate, acute, the dorsal and lateral faces papillate.

TYPE LOCALITY: Between Dolores and Santa Gertrudis, and other localities, Nayarit and Zacatecas, Rose 2035.

DISTRIBUTION: Nayarit and Zacatecas (Rose 3456, 3520).

ILLUSTRATIONS: Hook. Ic. pl. 2579; Proc. Wash. Acad. 1: 123.

43. *Eryngium ranunculoides* Benth. Pl. Hartw. 38. 1840.

Low, short-caulescent or acaulescent, glabrous perennials, 5-35 cm. high, from a fascicle of fibrous roots, the stems 1-many, slender, erect, simple or branching near the base; basal leaves ovate to linear-lanceolate, 1-3.5 cm. long, 5-10 mm. broad, cuneate at the base, obtuse or abruptly acute at the apex, entire or obscurely and remotely crenate-serrate, callous-margined, the venation palmately reticulate; petioles narrowly winged, long-sheathing at the

base, 3-8 cm. long, exceeding the blades; cauline leaves like the basal, reduced above, sessile, opposite; heads solitary at the end of the stem or branches, rather small, pedunculate, the flowers numerous; heads violet-blue, ovoid, 5-13 mm. long, 4-10 mm. broad; bracts 7-10, chartaceous, eventually reflexed, linear-lanceolate, 10-15 mm. long, 1-3 mm. broad, acute, entire or obsoletely spinulose, blue beneath and whitish above, exceeding the heads; bractlets lanceolate, 2-3 mm. long, dilated and scarious-margined at the base, acute, mucronate, equaling the fruit; coma wanting; sepals lanceolate, 1.5-2 mm. long, mucronate, entire; petals oblong-spatulate, about 1.5 mm. long; styles exceeding the sepals; fruit globose, 2-3 mm. long, the calycine scales few, lanceolate, the dorsal greatly reduced.

TYPE LOCALITY: "In pascuis montanis, Anganguio," *Hartweg 294*.
DISTRIBUTION: Mexico (State) (*Pringle 4217*).

44. *Eryngium Ghiesbreghtii* Decaisne, Bull. Soc. Bot. Fr. 20:
21. 1873.

Slender, caulescent, glabrous perennials (?), 3-8 dm. high, from a fascicle of woody-fibrous roots, the stems erect, branching above; basal leaves triangular-cordate, 3.5-8 cm. long, 2.5-6 cm. broad, deeply caudate at the base, acute at the apex, finely spinulose-serrate, the venation palmately reticulate; petioles narrowly long-sheathing at the base, 5-15 cm. long, longer than the blades; lower cauline leaves like the basal, the upper greatly reduced, sessile, opposite; inflorescence successively trifurcate, the heads small, numerous, pedunculate, the flowers numerous; heads globose, 3-5 mm. in diameter; bracts 6-8, chartaceous, ultimately reflexed, oblong-lanceolate, 6-15 mm. long, 2-4 mm. broad, acute, mucronate, entire, green beneath, whitish within, greatly exceeding the heads; bractlets linear-subulate, 3-5 mm. long, entire, exceeding the fruit; coma wanting; sepals ovate-lanceolate, 1-1.5 mm. long, acute or obtuse, mucronate, entire; petals oblanceolate, about 1 mm. long; styles slender, greatly exceeding the sepals; fruit globose, 1-2 mm. long, densely covered with short, appressed, acute, tawny scales.

TYPE LOCALITY: "Prope Hinchilique et Ciudad-Real," Chiapas, *Bourgeau*.
DISTRIBUTION: Morelos to Chiapas (*Matuda 1615, Pringle 6386*).

45. *Eryngium Galeottii* Hemsl. in Hook. Ic. pl. 2510. 1897.

Eryngium Ghiesbreghtii sensu Coult. & Rose, Contr. U. S. Nat. Herb. 3: 299. 1895. Not *E. Ghiesbreghtii* Decaisne, 1873.

Slender, caulescent, glabrous perennials, 3-9 dm. high, from a fascicle of cylindrical, tuberous roots, the stems simple or sparingly branched, erect; basal leaves lanceolate, 5-8 cm. long, 0.5-2 cm. broad, cuneate at the base and tapering to the acuminate apex, callous-margined, crenate or crenate-serrate, the venation pinnately reticulate; petioles narrow, slender, sheathing at the base, 5-15 cm. long, exceeding the blades; cauline leaves few, like the basal, the upper reduced, alternate or opposite, narrow, sessile; inflorescence sparingly cymosely branched to simple, the heads rather large, few, pedunculate, the flowers numerous; heads ovoid, 8-15 mm. long, 6-10 mm. broad; bracts 6-10, chartaceous, spreading to reflexed, linear-lanceolate or rarely ovate, 5-12 mm. long, 1.5-4 mm. broad, acuminate, narrowly scarious-margined at the base, entire or with mostly 2 spinulose teeth, green beneath and whitish or amethystine above, shorter than the heads; bractlets like the bracts, subulate, 4-5 mm. long, exceeding the fruit; coma wanting; sepals lanceolate, 2-2.5 mm. long, mucronate, entire; petals oblanceolate, 1.5-2 mm. long; styles slender, exceeding the sepals; immature fruit globose, 2 mm. in diameter, the calycine scales lanceolate, small, those of the faces and angles sparse.

TYPE LOCALITY: Cordillera of Oaxaca at 7000 to 8000 feet, *Galeotti 2767*.
DISTRIBUTION: Mexico to Oaxaca (*Hinton 2759, Pringle 4746*).
ILLUSTRATIONS: Hook. Ic. pl. 2510; Proc. Wash. Acad. 1: pl. 3.

46. *Eryngium gracile* Delar. f. *Eryng.* 54. 1808.

Eryngium longirameum Turcz. Bull. Soc. Nat. Mosc. 20: 171. 1847.
Eryngium planum Sessé & Moc. Fl. Mex. 82, in part. 1894. Not *E. planum* L. 1753.
Eryngium paucisquamatum Hemsl. in Hook. Ic. pl. 2505. 1897.

Slender, caulescent, glabrous perennials, 2.5-9 dm. high, from a cluster of woody-fibrous roots, the stems erect, branching above; basal leaves ovate to oblong, 3-8 cm. long, 2-5.5 cm. broad, deeply cordate to rounded at the base, obtuse at the apex, callous-margined, crenate or shallowly crenate-serrate, the venation palmately reticulate; petioles narrowly sheathing at the base, 0.2-3 dm. long, usually exceeding the blades; cauline leaves few, the lower like the basal, the upper greatly reduced, sessile, opposite; heads solitary at the end of the stem or branches small, pedunculate, the flowers numerous; heads bluish, globose, 4-7 mm. in diameter; bracts 8-12, chartaceous, ultimately reflexed, oblong or oblong-oval, 4-15 mm. long, 2-5 mm. broad, obtuse or abruptly acute, entire or with a few minute spinulose teeth, amethystine or glaucous above and green beneath, greatly exceeding the heads; bractlets subulate, 3-4 mm. long, dilated at base, entire, slightly exceeding the fruit; coma wanting; sepals lanceolate, 1-1.5 mm. long, acute, mucronulate, entire; petals oblong-spatulate, about 1 mm. long; styles slender, exceeding the sepals; fruit globose, 1.5-2 mm. long, with a few small bluish lanceolate calycine scales, the dorsal scales few or none.

TYPE LOCALITY: "In locis humidis novae Hispaniae." collector unknown.

DISTRIBUTION: Michoacán to Chiapas and Guatemala (*Ghiesbreght 806, Pringle 4910, Skutch 1208*).

ILLUSTRATIONS: Delar. f. *Eryng. pl. 24*; Hook. *Ic. pl. 2505*; Proc. Wash. Acad. 1: *pl. 3*.

47. *Eryngium scaposum* Turcz. Bull. Soc. Nat. Mosc. 20:

172. 1847.

Eryngium Nelsoni Coult. & Rose, Contr. U. S. Nat. Herb. 3: 300. 1895.

Eryngium longipetiolatum Hemsl. in Hook. *Ic. pl. 2504*. 1897.

Eryngium costaricense H. Wolff, Repert. Sp. Nov. 7: 278. 1909.

Eryngium commutatum H. Wolff, Repert. Sp. Nov. 8: 306. 1910.

Low, short-caulescent or acaulescent, glabrous perennials, 0.5-3 dm. high, from a fascicle of fibrous roots, the stems solitary to many, erect or ascending, slender, simple below; basal leaves rosulate, spatulate to obovate, 2-10 cm. long, 1-4 cm. broad, cuneate at the base, obtuse at the apex, callous-margined, crenate or crenate-serrate, the venation reticulate; petioles winged, 1-10 cm. long, shorter or longer than the blades; cauline leaves few, like the basal, the upper reduced, sessile, incised, opposite; inflorescence simple or cymosely few-branched, the heads few, small, pedunculate, the flowers numerous; heads amethystine, sub-globose, 4-8 mm. in diameter; bracts 8-12, chartaceous, ascending, oblong to oblanceolate, 6-15 mm. long, 2-8 mm. broad, obtuse or acute, apiculate, entire or toothed near the apex, blue or greenish beneath and glaucous above, exceeding the heads; bractlets subulate, 2-4 mm. long, entire, acute, about equaling the fruit; coma wanting; sepals ovate to ovate-lanceolate, 2 mm. long, acute or obtuse, mucronate, entire; petals oblong, 1.5-2 mm. long; styles slender, exceeding the sepals; fruit globose-ovoid, 2-3 mm. long, the calycine and lateral scales ovate-lanceolate, acuminate, the dorsal scales few or wanting.

TYPE LOCALITY: Oaxaca, 9000 feet, *Galeotti 2766*.

DISTRIBUTION: Vera Cruz, Oaxaca, and Chiapas to Costa Rica (*Pringle 4834, J. D. Smith 7528*).

ILLUSTRATIONS: Hook. *Ic. pl. 2504*; Engler, *Pflanzenreich 61 (4228): f. 32*.

48. *Eryngium Bonplandi* Delar. f. *Eryng. 52*. 1808.

Eryngium Bonplandianum H.B.K. Nov. Gen. & Sp. 5: 25. 1821.

Eryngium microcephalum Willd.; Spreng. Syst. 1: 871. 1825.

Eryngium planum Sessé & Moc. Fl. Mex. 82, in part. 1894. Not *E. planum* L. 1753.

Eryngium Schaffneri Hemsl. in Hook. *Ic. pl. 2545*. 1897.

Eryngium leptopodium Hemsl. in Hook. *Ic. pl. 2546*. 1897.

Slender, caulescent or short-caulescent, glabrous perennials, 1-5 dm. high, from a fascicle of tuberous roots, the stems solitary or few, simple or sparingly branched below the simple or trifurcate inflorescence; basal leaves oval to oblanceolate, 3-9 cm. long, 1-6 cm. broad, rounded or slightly cuneate at the base, obtuse to shortly acuminate at the apex, crenate or crenate-serrate, callous-margined, the venation pinnately reticulate; petioles narrow, sheathing at the base, 2-6 cm. long, shorter than or equaling the blades; cauline leaves solitary or few, alternate, like the basal or much narrower, those of the inflorescence opposite, often incised toward the base; inflorescence simple or trifurcate, the heads few, small, pedunculate, the flowers numer-

ous; heads pale blue, ovoid to globose-ovoid, 5–15 mm. long, 5–10 mm. broad; bracts 8–10, herbaceous, spreading, lanceolate or linear-lanceolate, 5–9 mm. long, 1–3 mm. broad, acute, entire or obsoletely spinulose-serrate, green on both surfaces, exceeding the heads; bractlets similar to the bracts, subulate, 3–6 mm. long, exceeding the fruit; coma wanting; sepals ovate, 1.5–2 mm. long, mucronate; petals spatulate, about 1.5 mm. long; styles slender, exceeding the sepals; fruit globose, 3–4 mm. long, with a few subequal calycine scales, the dorsal scales numerous to none.

TYPE LOCALITY: "Nova Hispania," probably *Humboldt & Bonpland*.
DISTRIBUTION: San Luis Potosí to Mexico (*Palmer 184, Pringle 4283*).
ILLUSTRATIONS: Delar. f. *Eryng. pl. 22*; Hook. Ic. *pl. 2545, 2546*.

49. *Eryngium planum* L. Sp. Pl. 233. 1753.

Rather stout, caulescent, glabrous perennials, to 10 dm. high, from a woody taproot, the stems solitary or few, remotely leafy, unbranched below; basal leaves coriaceous, oblong-oval, 10–15 cm. long, 5–8 cm. broad, rounded or cordate at the base, rounded at the apex, crenate to spinulose-serrate, the venation reticulate; petioles stout, 10–15 cm. long; lower cauline leaves like the basal, the upper palmately lobed or divided, the narrow lobes spinulose-serrate; inflorescence sparingly cymosely branched, the heads large, pedunculate, the flowers numerous; heads bluish, ovoid or rarely subglobose, 1.5–2 cm. long, 1–1.5 cm. broad; bracts 6–8, rigid, spreading, linear, 1.5–3 cm. long, acute, spinulose-dentate, shorter than the heads; bractlets rigid, linear, 5–6 mm. long, the lower tricuspidate, the upper pungent, entire, exceeding the fruit; coma wanting; sepals lanceolate, 2–2.5 mm. long, mucronate, acute or obtuse; petals ovate-oblong, 2 mm. long; styles slightly exceeding the sepals; fruit ovoid, 3–4 mm. long, densely covered with subequal, linear, white scales up to 1 mm. long.

TYPE LOCALITY: "In Russia, Polonia, Austria, Helvetia," collector unknown.

DISTRIBUTION: Introduced at Salem, Oregon (*Thompson 4986*).

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: *pl. 1848*; Engler, Pflanzenreich 61 (4²²⁹): *f. 3, A*; Hegi, Ill. Fl. Mittel-Eur. 5²: *f. 2321a, 2349, 2350, 2351*.

50. *Eryngium maritimum* L. Sp. Pl. 233. 1753.

Stout and more or less fleshy, glabrous and glaucous or bluish-tinged, perennials, 2–6 dm. high, from a woody base, the stems prostrate to erect, leafy; basal leaves subsorbicular-reniform, 5–15 cm. in diameter, simple or palmately incised, coarsely spinose-dentate or spinose-serrate, the venation reticulate; petioles stout, sheathing at the base, naked or spinulose-winged, 5–15 cm. long; cauline leaves similar to the basal, sessile and clasping, and sometimes narrower, rhomboidal or cuneate above; inflorescence cymosely branched, the heads large, pedunculate, the flowers numerous; heads amethystine, ovoid or subglobose, 1–3 cm. long, 1.5–2.5 cm. broad; bracts lanceolate to ovate, 2–3 cm. long, 0.5–2 cm. broad, rounded or cuneate at the base, 3–5-dentate at the apex with broad triangular spinose teeth, usually exceeding the heads; bractlets linear, 1.5 cm. long, tricuspidate, about equaling the fruit; coma wanting; sepals ovate-lanceolate, 5 mm. long, the very stout midrib projecting as a pungent tip; petals oblong, 4–5 mm. long; styles about equaling the sepals; fruit ovoid, 8–15 mm. long, 6–8 mm. broad, slightly compressed laterally and densely covered with subquadrate or narrower scales, the lateral 1–2 mm. long, the dorsal smaller to obsolete.

TYPE LOCALITY: "Ad Europae littorae arenosa maritima," collector unknown.

DISTRIBUTION: Adventive at Ellis Island, New York.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: *pl. 1849*; Coste, Fl. Fr. 2: 157; Hegi, Ill. Fl. Mittel-Eur. 5²: *f. 2300a, 2344, 2345, 2346, 2352g*; *pl. 192, f. 2*.

51. *Eryngium campestre* L. Sp. Pl. 233. 1753.

Stout and fleshy, glabrous and often glaucescent perennials, 2–5 dm. high, from a stout woody, fibrous-covered base bearing fleshy roots, the stems erect, leafy, freely branching above with elongate branches; basal leaves rigid, deltoid, 10–25 cm. in diameter, pinnately, ternately, or ternate-pinnately divided, the divisions broadly decurrent on the rachis, spinose-dentate or spinose-serrate, the venation reticulate; petioles stout, sheathing at the base, 5–25

cm. long; cauline leaves similar but usually sessile, ternate and broadly sheathing; inflorescence cymose, the heads numerous, pedunculate, rather large, the flowers numerous; heads ovoid to subglobose, 1-1.5 cm. in diameter; bracts 5-7, linear or linear-lanceolate, 2-5 cm. long, pungent, entire or spinose-dentate, greatly exceeding the heads; bractlets subulate, 1 cm. long, entire, exceeding the fruit; coma wanting; sepals lanceolate, 2 mm. long, mucronate; petals oblong, 2-2.5 mm. long; styles shorter than the sepals; fruit ovoid, 2-2.5 mm. long, slightly compressed laterally and densely covered with linear to lanceolate, white, lacerate scales 1-2 mm. long.

TYPE LOCALITY: "In Germaniae, Galliae, Hispaniae, Italiae incultis," collector unknown.

DISTRIBUTION: Introduced on the coasts of New Jersey, Maryland, and Alabama.

ILLUSTRATIONS: Reichenb. Ic. Fl. Germ. 21: pl. 1852; Coste, Fl. Fr. 2: 157; Hegi, Fl. Mittel-Eur. 5^e: f. 2352b-f, 2353, 2354, 2355; pl. 192, f. 1.

52. *Eryngium serratum* Cav. Anal. Hist. Nat. 2: 132. 1800.

Eryngium Schiedeianum Schlecht. & Cham. Linnaea 5: 206. 1830.

Slender, caulescent, branching, glabrous perennials, 2-8 dm. high, from a fascicle of woody-fibrous roots; basal leaves coriaceous, lanceolate to oblong, 4-15 cm. long, 1-2 cm. broad, long-cuneate at the base, acute or obtuse at the apex, callous-margined, coarsely spinulose-serrate or spinulose-dentate to subpinnatifid, the venation pinnately reticulate; petioles narrowly winged, broadly sheathing at the base, 0.2-2 dm. long, shorter or longer than the blades; cauline leaves few, the upper greatly reduced, sessile, incised or lobed; inflorescence cymose, the heads few, pedunculate, rather large, the flowers numerous; heads greenish, subglobose to ovoid-cylindric, 5-18 mm. long, 6-12 mm. broad; bracts 8-12, foliaceous, rigid, ascending, linear-lanceolate, 5-10 mm. long, 1-2 mm. broad, acute or acuminate, entire or with 1 or 2 spinose teeth, greenish on both sides, shorter than the heads; bractlets subulate, 5-6 mm. long, narrowly scarious-winged at the base, exceeding the fruit; coma wanting; sepals narrowly lanceolate, 2-3 mm. long, mucronate, entire; petals oblong, 1.5-2 mm. long; styles slender, exceeding the sepals; fruit subglobose, 3-5 mm. long, densely covered with appressed, white, lanceolate-acuminate scales, the lateral and calycine larger than the dorsal.

TYPE LOCALITY: "Huanajuato [Guanajuato], Nuevo-España [Mexico]," collector unknown.

DISTRIBUTION: Nuevo León and San Luis Potosí to Vera Cruz and Mexico (*Pringle 3156*, *Schiede 282*).

ILLUSTRATION: Cav. Ic. pl. 554.

53. *Eryngium aquaticum* L. Sp. Pl. 232. 1753.

Eryngium foetidum L. Sp. Pl. 232, in part, not as to name-bearing plants. 1753.

Eryngium foetidum sensu Walt. Fl. Car. 112. 1788. Not *E. foetidum* L. as to name-bearing plants. 1753.

Eryngium virginianum Lam. Encyc. 4: 759. 1797.

Eryngium Plukenetii Ell. Bot. S. C. & Ga. 1: 582. 1821.

Eryngium aquaticum sensu Michx. Fl. Bor. Am. 1: 163. 1803.

Eryngium praealtum A. Gray, Bost. Jour. Nat. Hist. 6: 210. 1850.

Slender, caulescent, glabrous biennials (?), 3-12 dm. high, from a fascicle of fibrous roots, the stems solitary, erect, branching above; basal leaves linear to oblong-lanceolate, 1.5-4 dm. long, 0.5-7 cm. broad, acute, entire or remotely serrulate, the venation reticulate; petioles sheathing, slender, 1-3 dm. long; lower cauline leaves like the basal, the upper sessile, linear-lanceolate, 4-30 cm. long, subentire, spinulose-dentate or subpinnatifid; inflorescence cymose, the heads rather small, numerous, pedunculate, the flowers numerous; heads ovoid-ellipsoid, 10-15 mm. long, 8-12 mm. broad; bracts 8-10, reflexed, lanceolate, 8-25 mm. long, entire, spinulose-dentate, or subpinnatifid, equaling or exceeding the heads; bractlets tricuspidate, the middle cusp elongate, exceeding the fruit; coma wanting; sepals lanceolate-acuminate, equaling or exceeding the bractlets; petals oblong, 1-2 mm. long, with a fimbriate, subequal, inflexed apex; styles exceeding the sepals; fruit oblong, 3-4 mm. long, densely covered with flattened and appressed white scales 1-1.5 mm. long.

TYPE LOCALITY: Virginia, collector unknown.

DISTRIBUTION: Atlantic Coast from New Jersey to Georgia (*Canby 821*, *Pennell 2222*).

ILLUSTRATIONS: Delar. f. Eryng. pl. 19; Britt. & Brown, Ill. Fl. ed. 2: 2: 622.

53a. *Eryngium aquaticum* var. *floridanum* (Coul. & Rose) Math. & Const. Am. Midl. Nat. 25: 382. 1941.

Eryngium floridanum Coul. & Rose, Bot. Gaz. 13: 142. 1888.

Plants 6–10 dm. high; basal leaves narrowly oblong, 3–15 cm. long, 1–2.5 cm. broad, obtuse at the apex; petioles 1.5–3 dm. long, exceeding the blades; heads few; bracts 8–15, spreading or reflexed, linear-lanceolate, 1–1.5 cm. long, longer than the heads; bractlets linear, about 6 mm. long, entire; sepals ovate; petals narrowly oblong, about 1 mm. long; immature fruit about 1 mm. long, densely covered with flat scales.

TYPE LOCALITY: Brackish marshes [near Jacksonville], Florida, *Curtiss*.
DISTRIBUTION: Florida (*Curtiss* 998, 4337).

53b. *Eryngium aquaticum* var. *Ravenellii* (A. Gray) Math. & Const. Am. Midl. Nat. 25: 382. 1941.

Eryngium Ravenellii A. Gray, Bost. Jour. Nat. Hist. 6: 209. 1850.
Eryngium Mettaueri Wood, Class-Book ed. 1861. 379. 1861.

Plants 5–18 dm. high; basal leaves linear or linear-lanceolate, 1.5–3 dm. long, 0.5–1 cm. broad, acute at the apex, the blades sometimes obsolete; petioles 1–3 dm. long; cauline leaves usually bladeless, the uppermost opposite, reduced, usually toothed and incised; bracts 6–10, reflexed, narrowly lanceolate, 0.8–1.5 cm. long, 2–3 mm. broad, about equaling the heads; bractlets oblong, 3–7 mm. long, equally tricuspidate; sepals ovate-lanceolate; petals oval, 1.5 mm. long; fruit oblong, 2–4 mm. long, the angles covered with flattened, lanceolate scales, the calycine largest and about 1 mm. long, the other scales decreasing in size and intermixed with smaller scales.

TYPE LOCALITY: In flat and damp pine land, Black Oak, St. John, Berkley district, South Carolina, *Ravenel*.
DISTRIBUTION: South Carolina to Georgia and Florida (*Nash* 2537, *Rugel* 276).

54. *Eryngium integrifolium* Walt. Fl. Car. 112. 1788.

Eryngium virgatum Lam. Encyc. 4: 757. 1797.
Eryngium ovalifolium Michx. Fl. Bor. Am. 163. 1803.
Eryngium americanum "Walt."; Spreng. in R. & S. Syst. Veg. 6: 337. 1820.
Eryngium ludovicianum Morong, Bull. Torrey Club 14: 51. 1887.
Eryngium virgatum var. *ludovicianum* Morong; Coul. & Rose, Rev. N. Am. Umbell. 96. 1888.
Eryngium integrifolium var. *ludovicianum* Coul. & Rose, Contr. U. S. Nat. Herb. 7: 48. 1900.
Eryngium integrifolium var. *typicum* H. Wolff in Engler, Pflanzenreich 61 (4228): 160. 1913.
Eryngium integrifolium var. *lanceolatum* H. Wolff, in Engler, Pflanzenreich 61 (4228): 161. 1913.

Slender, caulescent, glabrous perennials, 3–8 dm. high, from a fascicle of tuberous or fleshy-fibrous roots, the stems solitary, erect, branching above; basal leaves oblong-lanceolate to oblong-ovate, 1.5–6 cm. long, 5–25 mm. broad, often cordate at the base, obtuse at the apex, entire to shallowly crenate, the venation reticulate; petioles sheathing at the base, 1–3 cm. long; lower cauline leaves like the basal but short-petiolate to sessile above, the uppermost linear, oblanceolate to ovate, acute, usually spinulose-serrate or rarely laciniate or sub-entire; inflorescence branched, the heads few, rather small, pedunculate, the flowers numerous; heads amethystine, ovoid to globose, 5–15 mm. in diameter; bracts 6–10, rigid, linear, 1–2 cm. long, entire or usually with 3–5 spiny teeth, exceeding the heads; bractlets tricuspidate, 3 mm. long, exceeding the fruit; coma wanting; sepals lanceolate, 1–1.5 mm. long, mucronate; petals oblong, about 1 mm. long; styles slender, exceeding the sepals; fruit about 2 mm. long, the angles densely covered with rows of lanceolate white scales 0.5–1 mm. long, the surfaces usually scaleless.

TYPE LOCALITY: Presumably in the Carolinas, *Walter*.
DISTRIBUTION: North Carolina to Florida, west to Oklahoma and Texas (*Curtiss* 6008, *Heller* & *Heller* 4039).
ILLUSTRATIONS: Delar. f. *Eryng.* pl. 20; Lodd. Bot. Cab. pl. 1636.

55. *Eryngium aromaticum* Baldw.; Ell. Bot. S. C. & Ga. 1:

344. 1821.

Slender, caulescent, glabrous, perennials, 1.5-7 dm. high, from a long slender taproot, the stems decumbent or erect, slender, branching above; basal leaves narrowly ovate to obovate, 3.5-5 dm. long, 1-1.5 cm. broad, pinnately parted, the three apical segments remote, ovate to lanceolate, cuspidate-acuminate, cartilaginous, entire, the lower segments remote, setaceous, spinulose; cauline leaves numerous, shorter, otherwise similar to the basal; inflorescence cymose, the heads few, pedunculate, small, the flowers few; heads ovoid to globose, 5-7 mm. long, 5-8 mm. broad; bracts 5-8, similar to the leaves, 5-12 mm. long, 3-cleft, the middle segment elongate, spreading and ascending, equaling or exceeding the heads; bractlets similar, 3-5 mm. long, exceeding the fruit; sepals lanceolate, 2.5-3 mm. long, acuminate; petals narrowly spatulate, 1.5 mm. long; styles longer than the sepals; fruit ovoid, 1.5-3 mm. long, densely covered with white, clavate processes.

TYPE LOCALITY: In dry pine barrens, Florida, *Baldwin?*

DISTRIBUTION: Georgia and Florida (*Curtiss 4335, 5215*).

ILLUSTRATION: Bot. Gaz. 12: pl. 17, f. 121 (fr.).

56. *Eryngium cuneifolium* Small, Man. SE. Fl. 964. 1933.

Slender, caulescent perennials, 3-9 dm. high, from a woody base, the stems numerous, slender, leafy, freely branching; basal leaves cuneate, 4.5-5.5 cm. long, 1-2.2 cm. broad, spinose-dentate toward the base, the apex with 3-5 lanceolate, spinose, callous-margined teeth, 4-7 mm. long, the venation reticulate; petioles slender, 1-3 cm. long; cauline leaves like the basal, reduced and sessile above; inflorescence cymose, the heads small, numerous, pedunculate, the flowers few; heads subglobose, 4-8 mm. in diameter; bracts cuneate, spreading or ascending, 3-8 mm. long, tricuspidate, about equaling the heads; bractlets like the bracts, 3-4 mm. long, exceeding the fruit; coma wanting; sepals lanceolate, 1.5-2 mm. long, mucronate; petals oblong, 1.5-2 mm. long; styles slightly exceeding the sepals; fruit turbinate, 1.5-2 mm. long, densely covered with white, linear-claviform scales 0.5 mm. long.

TYPE LOCALITY: About Lake Nancesomee, Florida, *Small & Mosier*.

DISTRIBUTION: Southern Florida (*Maxon 10,836*).

57. *Eryngium articulatum* Hook. Lond. Jour. Bot. 6: 232. 1847.

Eryngium Harknessii Curran, Bull. Calif. Acad. 1: 153. 1885.

Eryngium petiolatum of authors. 1840-1900. Not *E. petiolatum* Hook. 1834.

Eryngium articulatum var. *Bakeri* Jepson, Madroño 1: 104. 1923.

Stout, caulescent, glabrous perennials, 3-10 dm. high, from a fascicle of fleshy-fibrous roots, the stems erect, branching above; basal leaves lanceolate to ovate, 4-9 cm. long, 1.5-3 cm. broad, acuminate at the apex, entire to coarsely spinulose-serrate or incised, the venation reticulate, or the blades often obsolete; petioles elongate, septate, 1-3 (or 6) dm. long, greatly exceeding the small or abortive blades; cauline leaves similar to the basal, but sessile and reduced upwards, often laciniate at the base, the uppermost opposite; inflorescence cymose, the heads large, numerous, pedunculate, the flowers numerous; heads bright blue, ovoid, 1-2 cm. long, 1-1.5 cm. broad; bracts 10-15, rigid, reflexed, linear-lanceolate, 1-2 cm. long, subulate, spinose-ciliate and scarious-dilated at the base, about equaling the heads; bractlets like the bracts, tricuspidate at the apex, the middle cusp broader than the lateral, or occasionally with accessory teeth, or entire, exceeding the fruit; coma wanting; sepals linear-lanceolate, 3-5 mm. long, acuminate, entire or occasionally with 1-2 teeth; petals obovate, 1.5-2 mm. long; styles equaling or exceeding the sepals; fruit ovoid, 2-3 mm. long, densely covered with appressed, white, acuminate, lanceolate scales 0.3-1 mm. long.

TYPE LOCALITY: Stony edges of the Spokane River, and Skitsoe and Coeur d'Alene lakes, Idaho *Geyer 583*.

DISTRIBUTION: Northern Idaho to central California (*Heller 11,558, Leiberg 1543*)

ILLUSTRATION: Jour. Bot. 38: pl. 411, B (fl.).

58. *Eryngium armatum* (S. Wats.) Coult. & Rose, Bot. Gaz. 13:
141. 1888.

Eryngium petiolatum var. *armatum* S. Wats.; Brewer & Wats. Bot. Calif. 1: 255. 1876.
Eryngium longistylum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 55. 1900.
Eryngium Harnsianum H. Wolf, Repert. Sp. Nov. 8: 415. 1910.

Low, caulescent, glabrous perennials, 0.5-4 (or 6?) dm. high, from a fascicle of thick fibrous roots, the stems prostrate or ascending, diffusely branching from the base; basal leaves thick, rosulate, oblanceolate, 0.5-3 dm. long, 0.5-3 cm. broad, tapering at the base, obtuse or acute at the apex, remotely serrate to coarsely incised with spinulose marginal teeth, the venation reticulate; petioles winged and short, or obsolete; cauline leaves like the basal, reduced and narrower upwards; inflorescence cymose, the heads numerous, rather small, short-pedunculate, the flowers numerous; heads yellowish or occasionally bluish, globose, 5-15 mm. in diameter; bracts 8-10, rigid, lanceolate, 10-20 mm. long, 2-5 mm. broad, callous-margined, entire or rarely with 1 or 2 teeth, often scarious-winged at the base, exceeding the heads; bractlets like the bracts, 5-10 mm. long, scarious-winged at the base, enfolding and exceeding the fruit; coma wanting; sepals ovate-lanceolate, 1-2 mm. long, acuminate, entire; petals oblong to oblanceolate, 0.5-1 mm. long; styles shorter than to considerably exceeding the sepals; fruit ovoid, 1.5-3 mm. long, densely covered with narrow, acute, flat, white or brown scales, the calycine longest, 0.5-1 mm. long, or the scales obsolete below.

TYPE LOCALITY: Monterey to Humboldt County, California, *Brewer*.

DISTRIBUTION: Northern and central California coast; inland in the vicinity of San Francisco Bay and its estuaries (*Heller 6342, Jones 2288*).

ILLUSTRATION: Jepson, Man. Fl. Pl. Calif. 695; Madroño 1: 107.

59. *Eryngium pinnatisectum* Jepson, Madroño 1: 105. 1923.

Rather stout, caulescent, glabrous (or puberulent in the inflorescence) perennials, 1-4 dm. high, from a fascicle of fibrous roots; basal leaves lanceolate, 1-3 dm. long, pinnatifid to the midrib, the oblong to linear-lanceolate lobes callous-margined, entire or with a few spinose teeth and short spines between the lobes, the lobes 1-4 cm. long, the venation reticulate; petioles short and broad; cauline leaves similar to the basal, reduced and sessile above; inflorescence cymose, the heads rather large, short-pedunculate, the flowers numerous; heads globose, 8-15 mm. in diameter; bracts 8-12, rigid, linear-lanceolate, 1-3 cm. long, mucronate, callous-margined, entire or with a few spines toward the base, greatly exceeding the heads; bractlets like the bracts, 5-8 mm. long, entire, with an entire or toothed scarious margin at the base embracing the fruit, exceeding the fruit; coma wanting; sepals lanceolate, 3-4 mm. long, mucronate, entire; petals oblanceolate, 0.8-1 mm. long; styles slightly exceeding the sepals; fruit ovoid, 3 mm. long, densely covered with appressed, lanceolate-acuminate white scales 1-1.5 mm. long.

TYPE LOCALITY: Duffield Cañon, Soulsbyville, California, *Jepson 7690*.

DISTRIBUTION: Western foothills of the central Sierra Nevada, California (*Hansen 391, Hoover 2460*).

ILLUSTRATION: Jepson, Fl. Calif. 2: 658.

60. *Eryngium petiolatum* Hook. Fl. Bor. Am. 1: 259. 1832.

Eryngium petiolatum var. *juncifolium* A. Gray, Proc. Am. Acad. 8: 385. 1872.

Slender, caulescent, glabrous perennials, 2-5 dm. high, from a cluster of fibrous roots, the stems erect or ascending, branching; basal leaves lanceolate to oval, 2-7 cm. long, 0.5-1 cm. broad, acuminate at the apex, remotely to coarsely spinulose-serrate, the venation reticulate, or the blades obsolete; petioles slender, elongate, septate, 1-4 dm. long, greatly exceeding the blades; cauline leaves like the basal but short-petiolate or sessile, spinulose-serrate, reduced above; inflorescence cymose, the heads small, numerous, short-pedunculate, the flowers numerous; heads globose, 5-8 mm. in diameter; bracts 8-12, rigid, linear, 10-15 mm. long, subulate, obscurely callous-margined and spinose-ciliate with 4-6 spines, broadly dilated and scarious-margined at the base, about twice as long as the heads; bractlets like the bracts, 5-8 mm. long, with 2-5 spines, the dilated scarious base partially enfolding the flower and fruit,

exceeding the fruit; coma wanting; sepals lanceolate, 3 mm. long, acuminate, entire or rarely few-toothed; petals obovate, 1.5 mm. long; styles a little shorter than the sepals; fruit oblong-ovoid, 2 mm. long, densely covered with depressed, flat, white, lanceolate-acuminate scales, 1-1.5 mm. long.

TYPE LOCALITY: Moist soils on the plains of the Multnomah [Willamette] River, Oregon, Douglas.

DISTRIBUTION: Dried swales; western Oregon and contiguous Washington (*Eastwood 2120, Hall 200*).

61. *Eryngium alismaefolium* Greene, *Erythraea* 3: 64. 1895.

Eryngium petiolatum var. *minimum* Coult. & Rose, Rev. N. Am. Umbell. 98. 1888.

Eryngium articulatum var. *microcephalum* Coult. & Rose, Rev. N. Am. Umbell. 99. 1888.

Eryngium minimum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 54. 1900.

Low, caulescent, spreading, glabrous perennials, 0.5-3 dm. high, from a fascicle of fibrous roots, the stems numerous, diffuse, branching above; basal leaves lanceolate to obovate, 3-15 cm. long, 1-3 cm. broad, tapering at the base, acute at the apex, coarsely spinose-serrate, incised, or pinnatifid, the venation reticulate; petioles short and broad, or some of them slender, septate, elongate, and bearing a few spinose processes, up to 3 dm. long; cauline leaves like the basal, the upper reduced, sessile and opposite; inflorescence cymose, the heads rather small, numerous, short-pedunculate, the flowers numerous; heads globose, 5-10 mm. in diameter; bracts few, rigid, linear-lanceolate to subulate, 6-16 mm. long, pungent, spinose-ciliate and slightly dilated at the base, exceeding the heads; bractlets like the bracts, 5-8 mm. long, densely spinose to entire, broadly scarious-winged at the base, exceeding the fruit; coma wanting; sepals ovate-lanceolate, 1-3 mm. long, pungent, scarious-margined; petals oblong, 1.5 mm. long; styles equaling or slightly exceeding the sepals; fruit ovoid, about 2 mm. long, densely covered with depressed, acuminate, lanceolate, flat, white, subequal scales 0.5-1 mm. long.

TYPE LOCALITY: Egg Lake, Modoc County, California, *Baker & Nutting*.

DISTRIBUTION: South-central Oregon, northern Nevada, and northeastern California (*Cusick 2784, Heller 7061*).

62. *Eryngium racemosum* Jepson, Fl. Calif. 2: 659. 1936.

Slender, caulescent, prostrate or decumbent, glabrous perennials, 1-3 dm. high or long, from a fascicle of woody-fibrous roots, the stems several, branching above; basal leaves lanceolate, 2-5 cm. long, 4-8 mm. broad, acute, subentire to spinulose-serrate, the venation reticulate; petioles slender, elongate, septate, 1-4 dm. long, greatly exceeding the blades; cauline leaves like the basal, but sessile and reduced above, opposite, spinulose-serrate; inflorescence falsely racemose, the heads small, numerous, pedunculate, the flowers rather few; heads globose-ovoid, 4-8 mm. in diameter; bracts about 8, rigid, linear, 8-10 mm. long, mucronate, spinose-serrate near the base, exceeding the heads; bractlets like the bracts, 5-10 mm. long, entire, mucronate, scarious-winged at the base, exceeding the fruit; coma wanting; sepals ovate, 1-1.5 mm. long, acute, mucronate, scarious-margined; petals oblanceolate, 1 mm. long; styles slightly exceeding the sepals; fruit ovoid, 1.5 mm. long, densely covered with short, appressed, white or tawny, lanceolate-acuminate, subequal scales 0.5 mm. long.

TYPE LOCALITY: San Joaquin City, California, *Jepson 10,287*.

DISTRIBUTION: San Joaquin Delta, central California (*Hooover 706*).

63. *Eryngium aristulatum* Jepson, *Erythraea* 1: 62. 1893.

Eryngium elongatum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 53. 1900. Not *E. elongatum* Pohl; Urban, 1879.

Eryngium Jepsoni Coult. & Rose, Contr. U. S. Nat. Herb. 7: 54. 1900.

Eryngium oblanceolatum Coult. & Rose, Contr. U. S. Nat. Herb. 7: 56. 1900.

Eryngium californicum Jepson, Fl. W. Middle Calif. 343. 1901.

Eryngium Vaseyi var. *oblanceolatum* Jepson, *Madroño* 1: 107. 1923.

Eryngium laxibracteum Mathias, *Brittonia* 2: 245. 1936.

Stout or slender, caulescent, glabrous perennials, 1-8 dm. high, from a fascicle of woody-fibrous roots, the stems several or few, branching freely from the base or above, the branches

erect to prostrate; basal leaves numerous, oblanceolate to ovate-lanceolate, 3.5–25 cm. long, 5–25 mm. broad, acuminate at the apex, finely spinulose-serrate to incised or lobed, especially in the submerged leaves, the venation reticulate, or the blades obsolete; petioles slender, elongate, septate, entire or spinulose, 5–25 cm. long; cauline leaves like the basal, but sessile and reduced above; inflorescence cymose, the heads numerous to few, large or small, pedunculate, the flowers numerous; heads globose, 5–12 mm. in diameter, the distal often much smaller than those below; bracts rigid, spreading, linear or linear-lanceolate, 5–25 mm. long (varying with the size of the heads), spinose on the margins and occasionally dorsally, somewhat scarious-winged at the base, equaling to greatly exceeding the heads; bractlets like the bracts, 5–15 mm. long, exceeding the fruit, with 1–3 pairs of lateral and occasionally a few short dorsal spines, or spineless, broadly scarious-winged at the base and enfolding the fruit, the wing usually ending in two free, acute, entire or toothed, ascending tips and often spinose in the sinuses; coma wanting; sepals lanceolate, 1.5–3.5 mm. long, acute or obtuse, cuspidate, entire or nearly so; petals oblanceolate, 1.5 mm. long; styles usually exceeding the sepals; fruit ovoid, 1.5–2.5 mm. long, densely covered with appressed, lanceolate-acuminate scales, the calycine up to 1 mm. long, those below decreasing rapidly in size.

TYPE LOCALITY: In the dry bed of a winter lake, mountains south of Uncle Sam Mountain, Lake County, California, *Jepson 14,281*.

DISTRIBUTION: Vernal pools and salt marshes; Coast Ranges and Sierra Nevada foothills of northern California (*Abrams 5747, Tracy 3777*).

ILLUSTRATIONS: *Jepson, Man. Fl. Pl. Calif. 696. f. 674* (as *E. Vaseyi*); *Madroño 1: 107* (as *E. Vaseyi*).

63a. *Eryngium aristulatum* var. *Parishii* (Coul. & Rose) Math. & Const. Am. Midl. Nat. 25: 386. 1941.

Eryngium Parishii Coul. & Rose, Contr. U. S. Nat. Herb. 7: 57. 1900.

Eryngium Jepsonii var. *Parishii* *Jepson, Madroño 1: 107. 1923.*

Plants 1–4 dm. high, the stems numerous, erect or spreading, branching above; basal leaves lanceolate to oval, 2–6 cm. long, 1–2 cm. broad, tapering at the base, acute at the apex, coarsely spinose-serrate to pinnatifid, the lobes spinose; petioles more or less spinose, 3–15 cm. long, exceeding the blades; heads small, short-pedunculate, the flowers relatively few; heads globose, 4–8 mm. in diameter; bracts 6–8, linear-lanceolate, 5–20 mm. long, with 2–5 lateral spines on the lower half and often somewhat scarious-winged at the base, greatly exceeding the heads; bractlets exceeding the fruit; sepals ovate, 1.5–2 mm. long, mucronate, puberulent on the back; petals oblong-oval, 0.8–1 mm. long; styles equaling or exceeding the sepals; fruit densely covered with subequal scales 0.5–1 mm. long.

TYPE LOCALITY: Oceanside, San Diego County, California, *Parish 4436*.

DISTRIBUTION: San Diego County, California, to northern Baja California (*Baker 1628, Chandler 5344*).

64. *Eryngium Vaseyi* Coul. & Rose, Bot. Gaz. 13: 142. 1888.

Rather stout, caulescent, glabrous perennials, 1.5–4 (or 6) dm. high, from a fascicle of woody-fibrous roots, the stems erect or ascending, branching above; basal leaves oblong-lanceolate to ovate, 9–25 cm. long, 2–8 cm. broad, deeply pinnatifid, the segments unequal, narrow or broad, usually remote, spinulose-lobed or again pinnatifid; petioles very short, dilated, 1–4 cm. long; cauline leaves like the basal, the upper sessile, opposite; inflorescence corymbose, the heads rather small, numerous, short-pedunculate, the flowers numerous; heads subglobose, 5–10 mm. in diameter; bracts about 8, rigid, spreading, linear-subulate, 5–15 (or 25) mm. long, densely spinose with 1–5 pairs of lateral, but no dorsal spines, shorter than to greatly exceeding the heads; bractlets like the bracts, the terminal longest, 5–15 mm. long, exceeding the fruit, usually with 1–3 pairs of lateral spines or rarely entire and with a short and broad scarious wing at the base which enfolds the fruit; coma wanting; sepals lanceolate to ovate, 1–3 mm. long, acute or obtuse, mucronate, scarious-margined, entire or occasionally somewhat spinose; petals oblong, 1–1.5 mm. long; styles shorter or longer than the sepals; fruit ovoid, 2–3 mm. long, densely covered with appressed, white, subequal, lanceolate scales 0.5–1 mm. long, or the calycine scales slightly the longest.

TYPE LOCALITY: San Antonio River, Monterey County, California, *Vasey 222*.
 DISTRIBUTION: Vernal pools; upper Salinas and San Joaquin valleys, interior central California
 (*Abrams 5290, Mathias 1385*).

64a. *Eryngium Vaseyi* var. *castrense* (Jepson) Hoover; Math. &
 Const. Am. Midl. Nat. 25: 387. 1941.

Eryngium castrense Jepson, Madroño 1: 108. 1923.
Eryngium castrense var. *vallicolum* Jepson, Madroño 1: 108. 1923.
Eryngium globosum var. *medium* Jepson, Madroño 1: 108. 1923.
Eryngium spinosepalum var. *medium* Mathias, Brittonia 2: 245. 1936.

Plants often stouter; heads subglobose to globose-ovoid, 6–15 mm. long; bracts spreading, 0.8–2.5 cm. long, densely beset with dorsal as well as lateral spines scarious-winged at the base, usually greatly exceeding the heads; bractlets densely spiny and usually with some dorsal spines, 0.5–2 cm. long, greatly exceeding the fruit; sepals usually somewhat spinose.

TYPE LOCALITY: Chinese Camp, Tuolumne County, California, *Jepson 6319*.
 DISTRIBUTION: Great Valley of California (*Braunton 1014, Heller 11,472*).
 ILLUSTRATIONS: Jepson, Man. Fl. Calif. 696. f. 675; Madroño 1: 108.

64b. *Eryngium Vaseyi* var. *globosum* (Jepson) Hoover; Math. &
 Const. Am. Midl. Nat. 25: 387. 1941.

Eryngium globosum Jepson, Madroño 1: 108. 1923.
Eryngium spinosepalum Mathias, Brittonia 2: 245. 1936.

Plants often stouter; heads globose to ovoid, 8–18 mm. long; bracts spreading to slightly reflexed, 1–3 cm. long, pinnately spinose and often with some dorsal spines, greatly exceeding the heads; bractlets pinnately spinose and often with a few dorsal spines, broadly scarious-winged at the base, the wing spinose, exceeding the fruit; sepals, or some of them, pinnatifid with 3–8 spiny teeth.

TYPE LOCALITY: Exeter, Tulare County, California, *K. Brandegee*.
 DISTRIBUTION: Interior of south-central California (*Grant 2594, Hoover 2698*).
 ILLUSTRATION: Jepson, Fl. Calif. 2: 661; Madroño 1: 108.

DOUBTFUL SPECIES

ERYNGIUM OBLIQUATUM Raf. Herb. Raf. 52. 1833. (Nomen nudum.)

ADDITIONS AND CORRECTIONS TO UMBELLIFERAE

After publication of Part 1, containing the first 61 genera, the authors were privileged to see the manuscript of Dr. E. D. Merrill's *Index Rafinesquianus*. The following changes are necessitated by the additional names and citations therein brought to light. Variant spellings, and names attributed to Rafinesque in the *Index Kewensis* but not actually published by him, are not here included.

71. SPERMOLEPIS.

Add the synonyms:

Lepisperma Raf. Act. Soc. Linn. Bordeaux 6: 268. 1834.
Babiron Raf. New Fl. 4: 23. 1838.

72. *Spermolepis divaricata*.

For "Britton, Mem. Torrey Club 5: 244. 1894." substitute: Raf. Bull. Bot. Seringe 217. 1830.

Add the synonym:

Siflora pusillum Raf. Bull. Bot. Seringe 217. 1830.

74. *Erigenia bulbosa*.

Add the synonym:

Erigenia Shortiana Raf. Cat. Bot. Gard. Trans. Univ. 14. 1824. (Nomen nudum.)

104. *Cryptotaenia canadensis*.

Add the synonym:

Mesodiscus simplex var. *major* Raf. New Fl. 4: 20. 1838.

105. OSMORHIZA.

In the citation of authority for the genus, insert after "Raf." the following: Am. Mo. Mag. 2: 176. 1818 (nomen nudum);

Add the synonym:

Gonatherus Raf. Am. Mo. Mag. 2: 176. 1818. (Nomen nudum.)

108. *Osmorhiza Claytoni*.

Add the synonym:

Myrrhis dulcis Raf. Good Book 53, as syn. 1840.

110. TORILIS.

Add the synonym:

Ocotrix Raf. Good Book 54. 1840.

111. *Torilis arvensis*.

Add the synonym:

Ocotrix helvetica Raf. Good Book 54. 1840.

CAUCALIS.

Add the synonym:

Pullipes Raf. Good Book 54. 1840.

112. DAUCUS.

Add the synonym:

Lophiopsis Raf. New Fl. 4: 26, as subg. 1838.

Remove the synonym:

Babiron Raf. New Fl. 4: 23. 1838.

113. *Daucus pusillus*.

Add the synonym:

Daucus brevifolius var. *filiformis* Raf. New Fl. 4: 26. 1838.

Remove the synonyms:

Babiron pusillum Raf. New Fl. 4: 23. 1838.

Peltactilla aurea Raf. New Fl. 4: 28. 1838.

Peltactilla grandiflora Raf. New Fl. 4: 28. 1838.

Peltactilla hispida Raf. New Fl. 4: 28. 1838.

Peltactilla parviflora Raf. New Fl. 4: 28. 1838.

Daucus Carota.

Add the synonyms:

? *Daucus nudicaulis* var. *pumila* Raf. New Fl. 4: 25. 1838.

? *Daucus scariosus* var. *ramosus* Raf. New Fl. 4: 25. 1838.

? *Daucus scariosus* var. *simplex* Raf. New Fl. 4: 25. 1838.

? *Daucus heterophyllus* var. *asper* Raf. New Fl. 4: 27. 1838.

? *Daucus heterophyllus* var. *laxifolius* Raf. New Fl. 4: 27. 1838.

? *Daucus heterophyllus* var. *fumaroides* Raf. New Fl. 4: 27. 1838.

Remove the synonyms:

Ballimon muricatum ["*nuricatum*"] Raf. New Fl. 4: 28. 1838.

Ballimon maritimum Raf. New Fl. 4: 28. 1838.

114. Before 28. ANTHRISCUS insert:

DOUBTFUL SPECIES

DAUCUS TENUIFOLIUS Raf. Herb. Raf. 69. 1833. (Nomen nudum.)

115. *Anthriscus scandicina*.

Add the synonym:

Antriscus fetidus Raf. Good Book 52. 1840.

117. CHAEROPHYLLUM.

Add the synonym:

Polgidon Raf. Good Book 53. 1840.

Chaerophyllum temulum.

Add the synonym:

Polgidon temulum Raf. Good Book 53. 1840.

118. *Chaerophyllum bulbosum*.

Add the synonym:

Polgidon bulbosum Raf. Good Book 53. 1840.

119. *Chaerophyllum procumbens*.

Add the synonyms:

? *Cherophyllum flavicaule* Raf. Herb. Raf. 78. 1833.

? *Cherophyllum pallidum* Raf. Herb. Raf. 78. 1833.

? *Cherophyllum triflorum* Raf. Herb. Raf. 79. 1833.

DOUBTFUL SPECIES.

Insert: *CHEROPHYLLUM VERNUM* Raf. Cat. Bot. Gard. Trans. Univ. 13. 1824.
(Nomen nudum.)

125. *Musineon divaricatum*.

Add the synonym:

Marathrum crassifolium Raf. Herb. Raf. 40. 1833.

129. *APIUM*.

Add the synonyms:

Laoberdes Raf. Good Book 50. 1840.

Lavera Raf. Good Book 50. 1840.

131. *Apium repens*.

Add the synonym:

Laoberdes repens Raf. Good Book 50. 1840.

Apium nodiflorum.

Add the synonym:

Lavera nodiflora Raf. Good Book 50. 1840.

133. *Pimpinella Anisum*.

Add the synonym:

Anisum odoratum Raf. Good Book 52. 1840.

136. *Bupleurum Fontanesii*.

Add the synonym:

? *Orimaria filiformis* Raf. Bull. Bot. Seringe 218. 1830.

138. *Ammi Visnaga*.

Add the synonym:

Visnaga vera Raf. New Fl. 4: 28. 1838.

139. *Falcaria sioides*.

In the citation of the synonym *Ammi Falcaria* Börner, insert the page number 487.

152. *Sium suave*.

Add the synonyms:

Sium heterophyllum Raf. Herb. Raf. 69. 1833. (Nomen nudum.)

Siumis heterophyla Raf. New Fl. 4: 31. 1838.

Order CORNALES

BY HAROLD WILLIAM RICKETT

Trees and shrubs, or rarely subherbaceous. Leaves simple, opposite or alternate, usually lacking stipules. Inflorescence cymose, or in a few genera racemose. Flowers hermaphrodite or dioecious, actinomorphic, small. Calyx small, sometimes obsolete. Petals free. Perianth borne on an hypanthium (calyx-tube), the inferior ovary (or the sterile receptacle) surmounted by a glandular disc or ring. Ovary with 1-4 (rarely 10) locules; styles 1 or several. Ovules solitary, pendulous, anatropous. Fruit usually a drupe. Embryo surrounded by endosperm.

An artificial order, the affinities of its families (which have often been attached to the Umbelliferae) as yet undetermined.

Leaves (in North American species) opposite, or if alternate clustered at the ends of the season's growth; flowers (in North American species) hermaphrodite, 4-merous, the petals valvate; ovary bilocular. Leaves alternate; flowers dioecious, 5-merous, the petals imbricate; ovary unilocular.

Family 1. CORNACEAE.

Family 2. NYSSACEAE.

Family 1. CORNACEAE

BY HAROLD WILLIAM RICKETT

Trees and shrubs, or rarely subherbaceous. Leaves opposite or alternate, mostly petiolate, estipulate except *Helwingia*. Inflorescence a cyme (often reduced), a panicle, or rarely a raceme. Flowers small, white or yellowish or sometimes red or blue, mostly hermaphrodite. Sepals 4 or 5. Petals 4 or 5 (rarely lacking), valvate. Stamens of the same number as the petals and alternate with them. Anthers introrse, basifixed or dorsifixed. Styles 1 or several, arising from an epigynous glandular disc or ring. Ovary inferior, 1-4-locular. Ovule with 1 integument. Fruit a drupe (rarely a berry), the endocarp 1-4-locular (or rarely with 2-4 pyrenes). Embryo surrounded by copious endosperm.

CORNUS L. Sp. Pl. 117. 1753; Gen. Pl. ed. 5. 54. 1754.

- Chamaepericlymenum* Hill, Brit. Herb. 331. 1756.
Cynoxylon Raf. Alsog. 59. 1838. (As genus or subgenus ?)
Eukrania Raf. Alsog. 59. 1838. (As genus or subgenus ?)
Benthamidia Spach, Hist. Vég. 8: 106. 1839.
Svida Opiz, Seznam 94. 1852 (nomen nudum); Small, Fl. SE. U. S. 853. 1903.
Cornella Rydb. Bull. Torrey Club 33: 147. 1906.
Macrocarpium Nakai, Bot. Mag. Tokyo 23: 38. 1909.
Arctocrania Nakai, Bot. Mag. Tokyo 23: 39. 1909.
Benthamia Lindl. Bot. Reg. pl. 1579. 1833, emend. Nakai, Bot. Mag. Tokyo 23: 40. 1909. Not
Benthamia Richard, 1828; nor Lindl. 1830.
Mesomora Lunell, Am. Midl. Nat. 4: 487. 1916.
Ossea Lunell, Am. Midl. Nat. 4: 487. 1916.

Trees and shrubs and 2 species with herbaceous shoots from a woody rhizome. Leaves opposite, or rarely alternate and clustered toward the ends of the branchlets, entire, usually petiolate; veins usually arising toward the base of the blade and curving so as to parallel the margin; lower surface commonly covered with a cuticle which may form a fine network, frequently with small papillae visible through a hand magnifier. Trichomes usually present on leaves and branchlets, varying between two extremes: forked and appressed, and simple and more or less erect and curling. Inflorescence a cyme, usually ebracteate, in some species simulating an umbel or capitule and then often subtended by a more or less petaloid involucre. Flowers usually hermaphrodite. Sepals 4, small, united at the base to form a shallow cup. Petals 4, valvate, spreading or revolute. Stamens 4, the anthers dorsifixed, versatile. Style 1, arising from a carnose ring, the stigma capitate. Ovary bilocular. Drupe usually bilocular but frequently 1-seeded.

Type species, *Cornus mas* L.

Flowers in a cyme lacking bracts, appearing with or after the foliage.

Leaves all opposite; endocarp not pitted at the apex.

Sepals shorter than the hypanthium; style not dilated beneath the stigma except in a Mexican species; endocarp smooth or nearly so except in a white-fruited species; drupes white or blue.

Veins usually 3 or 4 on either side of the midrib.

Leaves minutely papillose on the under surface; pith of the branchlets brown or white; drupes white on red pedicels.

Cyme thyrsoidal; leaves strigillose beneath with appressed trichomes, smooth above, lanceolate; petioles about 0.5 cm. long.

Cyme flat or convex; leaves villose beneath with curling trichomes, scabrid above, ovate; petioles 1-2 cm. long.

1. *C. racemosa*.

3. *C. Drummondii*.

- Leaves not papillose on the under surface; pith of the branchlets white; drupes blue or bluish.
- Petioles 5 mm. long or less; styles 2 mm. long; drupes about 4 mm. in diameter; southeastern United States.
- Petioles mostly 5-15 mm. long; styles more than 2 mm. long; drupes 6 mm. or more in diameter.
- Leaves paler beneath; petioles about 5 mm. long; veins prominent, smoothly curving to the apex of the leaf; leaves long-acuminate; style often dilated beneath the stigma; cyme congested, often almost capituliform; Mexico.
- Leaves scarcely paler beneath; petioles 5-15 mm. long; veins less prominent, often irregularly curved; cyme ample, umbelliform.
- Petals 3.5-4 mm. long; petioles 10 mm. long or more; branches erect; southeastern and south-central United States.
- Petals 4-5 mm. long; petioles usually less than 10 mm. long; branches often pendulous; California.
- Veins usually 4 or more on either side of the midrib; pith of the branchlets white.
- Veins 4-7 on either side of the midrib; leaves lanceolate or ovate; drupes white except in a Mexican species.
- Pith about half the diameter of the branchlet; veins commonly 5-7 on either side of the midrib; drupes and anthers white; United States and northern Mexico.
- Style less than 2.5 mm. long; petals 2-3 mm. long; cyme and under surface of the leaves variously pubescent but not densely hirsute; endocarp smooth, usually as long as broad or longer.
- Style 2.5 mm. long or longer; petals 3-4 mm. long; cyme and under surface of the leaves densely hirsute; endocarp ridged, usually broader than long; western United States.
- Pith less than half the diameter of the branchlet; drupes and anthers blue; veins commonly 4 or 5 on either side of the midrib; Mexico.
- Veins about 8 on either side of the midrib; leaves broadly ovate to orbicular, villose beneath; drupes blue; eastern United States.
- Sepals as long as the hypanthium; style dilated beneath the stigma; drupes blue; endocarp ridged; pith of the branchlets brown; eastern United States.
- Pubescence on the under side of the leaves partly spreading, often ferruginous on the veins, and on the branchlets; leaves not papillose on the under surface, generally ovate, often rounded at the base.
- Pubescence on the under side of the leaves appressed, usually white; leaves minutely papillose on the under surface, lanceolate, generally cuneate at the base.
- Leaves mostly alternate and clustered toward the ends of the branchlets, broadly ovate to obovate; veins usually 4 or 5 on either side of the midrib; cyme ample, its branches often alternate; drupes usually blue; endocarp pitted at the apex.
- Flowers in a sympodial capitule or umbel (a congested cyme), subtended by deciduous or persistent bracts, appearing usually before the foliage in woody species; drupes red or almost black.
- Trees and shrubs; drupes ellipsoid.
- Bracts of the involucre deciduous at anthesis, leaving a disc-like rim beneath the capituliform cyme; leaves elliptic, subcoriaceous; veins 3 or 4 on either side of the midrib and equally spaced along it; Mexico.
- Bracts of the involucre persistent through anthesis, conspicuous and petaloid except when the cyme is umbelliform; leaves ovate to elliptic and obovate; veins 4 or more on either side of the midrib, 3 or more arising from its basal half.
- Bracts of the involucre 1-1.5 cm. long, scarcely petaloid; cyme umbelliform; drupes on slender hairy pedicels; western United States.
- Bracts of the involucre 5 cm. long or longer, petaloid; cyme capituliform; drupes sessile.
- Bracts of the involucre usually 4; drupes 1-8 in a cluster.
- Bracts obovate, 2-4 cm. broad; drupes usually 4-8 in a cluster; eastern United States.
- Bracts linear, acute, about 2 cm. broad; drupes usually 1-3 in a cluster; Mexico.
4. *C. asperifolia*.
6. *C. excelsa*.
2. *C. stricta*.
5. *C. glabrata*.
8. *C. stolonifera*.
9. *C. occidentalis*.
7. *C. lanceolata*.
12. *C. rugosa*.
10. *C. Amomum*.
11. *C. Purpusi*.
13. *C. alternifolia*.
15. *C. disciflora*.
14. *C. sessilis*.
16. *C. florida*.
16. *C. florida*
subsp. *urbiniama*.

Bracts of the involucre 4-8, obovate, acute; drupes many in a compact berry-like cluster 2.5-3 cm. across; western United States.

Stems herbaceous from woody rhizomes; drupes globose.

Leaves apparently whorled at the tip of the stem, with usually a pair of scale-like leaves on the stem below (these often foliaceous); veins arising from the midrib near its base; leaves short-petiolate; flowers usually yellowish, sometimes red or purplish; endocarp smooth, often unilocular.

Leaves in several pairs along the stem; veins usually arising from the base of the leaf-blade; leaves sessile; flowers blue or purplish; endocarp lightly grooved, bilocular.

17. *C. Nuttallii*.

15. *C. canadensis*.

19. *C. suecica*.

Section Thelycrania Endl. Gen. 1: 798. Mr 1839. Subg. *Kraniopsis* Raf. Alsog. 58. 1838. Subg. *Mesomera* Raf. Alsog. 58. 1838. Sect. *Microcarpium* Spach, Hist. Vég. 8: 92. O 1839. Subsect. *Bothrocaryum* Koehne, Gartenflora 45: 285. 1896. Subsect. *Amblycaryum* Koehne, Gartenflora 45: 286. 1896. *Albidae* Koehne, Mitt. Deuts. Dendr. Ges. 12: 34. 1903. *Paniculatae* Koehne, Mitt. Deuts. Dendr. Ges. 12: 34. 1903. *Nigrae* Koehne, Mitt. Deuts. Dendr. Ges. 12: 35. 1903. *Corynostylae* Koehne, Mitt. Deuts. Dendr. Ges. 12: 35. 1903. Subg. *Thelycrania* C. K. Schneid. Handb. Laubh. 2: 437. 1909. Sect. *Bothrocaryum* Wanger. in Engler, Pflanzenreich 41 (4²²⁹): 49. 1910. Sect. *Amblycaryum* Wanger. in Engler, Pflanzenreich 41 (4²²⁹): 52. 1910. Shrubs and small trees; inflorescence an ebracteate cyme, appearing with or after the foliage; flowers white or cream-colored; drupes globose, black, blue, red, or white.

1. *Cornus racemosa* Lam. Encyc. 2: 116. 1786.

Cornus candidissima Marsh. Arbust. 35. 1785. Not *C. candidissima* Mill. 1768.
Cornus citrifolia Hort.; Lam. Encyc. 2: 116, as syn. 1786. Not *C. citrifolia* Weston, 1770.
Cornus paniculata L'Hér. *Cornus* 9. 1788.
Cornus albida Ehrh. Beitr. 4: 16. 1789.
Cornus paniculata albida Pursh, Fl. Am. Sept. 109. 1814.
Cornus paniculata radiata Pursh, Fl. Am. Sept. 109. 1814.
Cornus comosa Raf. Alsog. 63. 1838.
Cornus oblongata Hort.; Dippel, Handb. Laubh. 3: 254, as syn. 1893.
Cornus gracilis Koehne, Mitt. Deuts. Dendr. Ges. 12: 36. 1903.
Svida candidissima Small, Fl. SE. U. S. 853. 1903.
Svida foemina Rydb. Brittonia 1: 94. 1931. Doubtfully *C. foemina* Mill. 1768.
Svida racemosa Moldenke, Boissiera 7: 3. 1943.

Shrubs, often forming dense thickets by proliferation from the roots; branchlets red, becoming light grey, the pith usually brown but often white; leaf-blades commonly 4-8 cm. long, 1-4 cm. broad, lanceolate to elliptic, acuminate to an obtuse tip, cuneate at the base, on plants growing in the open often subcoriaceous and in late summer suffused with crimson, sparsely strigillose on both surfaces, the under surface paler and bearing papillae barely discernible through a hand magnifier; veins usually 3 on either side of the midrib and about equally spaced along it; petioles about 5 mm. long; inflorescence 2.5-5 cm. across, more or less thyrsoidal, the primary branches commonly opposite on a central axis, essentially glabrous, becoming bright red; pedicels mostly 1-4 mm. long; hypanthium grey-strigillose; sepals 0.5 mm. long; petals 3 mm. long; style 2-2.5 mm. long; drupes at first lead-colored, becoming white, about 5 mm. in diameter, the endocarp 4 mm. broad, usually slightly shorter than broad, slightly compressed, more or less oblique, 1- or 2-seeded.

TYPE LOCALITY: "Jardin du Roi," Paris.

DISTRIBUTION: Maine to Minnesota, south to Florida, Alabama, Kentucky, Missouri, and north-western Arkansas.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. 2: 545; ed. 2. 2: 663; Deam, Shrubs Ind. pl. 109; Emerson, Trees & Shrubs Mass. ed. 3. pl. 115; Keeler, North. Shrubs 253; L'Hér. *Cornus* pl. 5; Torr. Fl. N. Y. pl. 41; E. H. Wilson, More Aristocr. pl. facing 226.

NOTE: Plants have several times been described (*C. paniculata radiata* Pursh, *C. comosa* Raf.) whose cyme formed leafy branches in place of flowers.

× *Cornus Arnoldiana* Rehder (in Sarg. Trees & Shrubs 1: 79. 1903) is a hybrid between *C. racemosa* and *C. Purpusi*. See also under *Cornus stricta*.

2. *Cornus stricta* Lam. Encyc. 2: 116. 1786.

Cornus canadensis Hort.; Lam. Encyc. 2: 116, as syn. 1786. Not *C. canadensis* L. 1753.
 ? *Cornus coerules* Meerb. Pl. Select. pl. 3. 1789. Not *C. caerulea* Lam. 1786.
Cornus cyanocarpus J. F. Gmel. Syst. Nat. 2: 257. 1791. Not *C. cyanocarpus* Moench, 1785.
Svida stricta Small, Fl. SE. U. S. 853. 1903.

Shrubs and small trees to 3 m. high (according to Curtiss); branchlets reddish, becoming grey or greenish, the pith white; leaf-blades commonly 5-9 cm. long, 2-4 cm. broad, elliptic to oblanceolate, abruptly acuminate to an obtuse tip, cuneate at the base, minutely and sparsely strigillose or glabrate on both surfaces, the under surface lighter green, not papillose; veins usually 3 or 4 on either side of the midrib; petioles commonly 1-1.5 cm. long; inflorescence 4-6 cm. across, commonly flat, the 2-4 primary branches more or less closely clustered without an evident central axis, glabrous or minutely hirtellose; pedicels mostly 2-6 mm. long; hypanthium grey-strigillose; sepals 0.7 mm. long; petals 3.5-4 mm. long; style 2.5-3 mm. long; anthers blue; drupes pale steel-blue, 6 mm. in diameter, the endocarp 5 mm. broad and long (occasionally longer), usually oblique, 1- or 2-seeded.

TYPE LOCALITY: "Jardin du Roi," Paris.

DISTRIBUTION: Virginia to Florida, chiefly on the coastal plain; Kentucky to southeastern Missouri and Arkansas, south to Alabama and Louisiana.

ILLUSTRATIONS: Addisonia 8: pl. 263; Britt. & Brown, Ill. Fl. 2: 546; ed. 2. 2: 663; Deam, Shrubs Ind. pl. 106; L'Hér. *Cornus* pl. 4; Meerb. Pl. Select. pl. 3 (?).

NOTE: This species hybridizes with *Cornus racemosa*, especially in the western parts of its range, yielding segregates which can be assigned to neither species.

3. *Cornus Drummondii* C. Meyer, *Cornus-Arten* 20. 1845.

Cornus asperifolia β ? T. & G. Fl. N. Am. 1: 651. 1840.

Cornus asperifolia sensu A. Gray, Man. ed. 2. 161. 1856; and later authors. Not *C. asperifolia* Michx. 1803.

Cornus asperifolia var. *Drummondii* Coult. & Evans, Bot. Gaz. 15: 36. 1890.

Svida asperifolia Small, Fl. SE. U. S. 854. 1903.

Shrubs and small trees to 15 m. high; branchlets hirtellose, at first green, becoming brown and finally grey, the pith brown; leaf-blades commonly 5-12 cm. long, 2-7 cm. broad, lanceolate to ovate, abruptly acuminate, cuneate at the base or sometimes truncate or cordate, greyish-green, the upper surface scabrid with minute appressed forked trichomes, the under surface scarcely paler, minutely papillose, short-villose with curling trichomes; veins usually 3 or 4 on either side of the midrib, 3 arising from its basal half; petioles 1-2 cm. long; inflorescence 4-7 cm. across, flat or somewhat convex, the lower 2 primary branches commonly separated from the upper by a short internode, sometimes appearing dichotomous, the branches and peduncle pubescent with both appressed and spreading (often ferruginous) trichomes, in fruit bright red; pedicels mostly 1.5-4 mm. long; hypanthium pale with usually appressed but sometimes spreading pubescence; sepals 0.8-1 mm. long; petals 4-4.5 mm. long, densely pubescent dorsally; style 3-4 mm. long; drupes white, about 6 mm. in diameter, the endocarp often oblique, somewhat depressed, 4-5 mm. broad and nearly as thick, 1- or 2-seeded.

TYPE LOCALITY: New Orleans, Louisiana.

DISTRIBUTION: Southern Ontario, Ohio, and Kentucky, west to Nebraska and Kansas, south to Mississippi, Louisiana, and Texas.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. 2: 544; ed. 2. 2: 662; Deam, Shrubs Ind. pl. 107; Hough, Handb. Trees N. States 360, 361; Keeler, North. Shrubs 249; Sarg. Man. 788; Sarg. Silva 14: pl. 529. (All as *Cornus asperifolia*.)

Cornus Drummondii f. *Priceae* (Small) Rickett, Bull. Torrey Club 72: 223. 1945. *Cornus Priceae* Small, Torreya 1: 54. 1901. *Svida Priceae* Small, Fl. SE. U. S. 854. 1903. Petals 3.5 mm. long; style 2.5 mm. long; drupes 3 mm. in diameter, the endocarp 2 mm. broad and high. TYPE LOCALITY: On bluffs of the Barren River, near Bowling Green, Kentucky. DISTRIBUTION: Known only from the type locality.

4. *Cornus asperifolia* Michx. Fl. Bor. Am. 1: 93. 1803.

Cornus sericea γ *asperifolia* DC. Prodr. 4: 272. 1830.

Cornus excelsa γ *Beyrichiana* C. Meyer, *Cornus-Arten* 27. 1845.

Cornus stricta β *asperifolia* Feay; Wood, Class-Book ed. 1861. 392. 1861.

Cornus microcarpa Nash, Bull. Torrey Club 23: 103. 1896.

Svida microcarpa Small, Fl. SE. U. S. 853. 1903.

Shrubs; branchlets sparsely and minutely scabrid, at first green, becoming grey sometimes tinged with red, the pith white; leaf-blades mostly 3-7 cm. long, 2-4 cm. broad, elliptic, abruptly acuminate, cuneate at the base, greyish-green, scabrid on both surfaces with minute curling or sometimes appressed usually forked trichomes, scarcely paler beneath, not papillose; veins usually 2-4 on either side of the midrib and equally spaced along it; petioles about 5 mm. long

or shorter, hirtellose; inflorescence 2-5 cm. across, convex, the usually 4 primary branches clustered, or often separated in 2 groups by a short internode, strigillose or hirtellose; pedicels mostly 1-3 mm. long; hypanthium pale-strigillose or hirtellose; sepals 0.5 mm. long; petals 2.5-3 mm. long, strigillose dorsally; anthers blue; style 2 mm. long; drupes pale blue, about 5 mm. in diameter, the endocarp 3 mm. broad and long, slightly compressed.

TYPE LOCALITY: South Carolina.

DISTRIBUTION: South Carolina to Florida and (?) Alabama, on the coastal plain.

5. *Cornus glabrata* Benth. Bot. Voy. Sulph. 18. 1844.

Cornus costulata Jepson, Fl. W. Middle Calif. ed. 2. 306. 1911.

Svida glabrata A. Heller, Cat. N. Am. Pl. ed. 3. 273. 1914. (Nomen nudum.)

Svida catalinensis Millsp. Field Mus. Publ. Bot. 5: 189. 1923.

Shrubs, often forming thickets; branchlets brown or reddish, becoming light brown and finally greyish, the pith white; branches sometimes elongated and pendulous; leaf-blades commonly 3-5 cm. long, 1.5-2.5 cm. broad, lanceolate or elliptic, acute, cuneate at the base, almost glabrous on both surfaces, grey-green, the under surface scarcely paler, not papillose; veins 3 or 4 on either side of the midrib and about equally spaced along it; petioles mostly 3-7 mm. long; inflorescence 2.5-4.5 cm. across, flat or somewhat convex, the 3 or 4 primary branches usually clustered but a short central axis sometimes evident, the peduncle almost glabrous, the ultimate branches strigillose; pedicels 2-3 mm. long, strigillose; hypanthium strigillose; sepals 0.8 mm. long; petals 4.5-5 mm. long; style 3.5 mm. long; drupes white or bluish, 9 mm. in diameter, the endocarp 5-6 mm. broad, smooth, oblique.

TYPE LOCALITY: San Francisco, California.

DISTRIBUTION: Siskiyou Mountains of Oregon and California, southward in the foothills of the Sierra Nevada, and in the Coast Range to Santa Barbara County.

6. *Cornus excelsa* H.B.K. Nov. Gen. & Sp. 3: 430. 1820.

Cornus toluensis H.B.K. Nov. Gen. & Sp. 3: 430. 1820.

Cornus pubescens Willd.; R. & S. Syst. Veg. Mant. 3: 252. 1827.

? *Cornus excelsa* α *schiedeana* C. Meyer, *Cornus-Arten* 27. 1845.

? *Cornus excelsa* β *Hartwegiana* C. Meyer, *Cornus-Arten* 27. 1845.

Cornus mexicana Carr. Rev. Hort. 47: 430. 1875.

Cornus declinata Sessé & Moc. Fl. Mex. 29. 1893.

Large shrubs and small trees to 5 m. high (according to Hinton); branchlets sparsely strigillose or hirtellose, dark red or brown, becoming grey, the pith white; leaf-blades commonly 5-12 cm. long, 2.5-5 cm. broad, lanceolate to narrowly ovate, long-acuminate, cuneate, rounded, or subcordate at the base, sparsely and minutely strigillose above, paler beneath and pubescent with short curling trichomes (these often brown or reddish on the veins), or appressed-pubescent with forked trichomes, or almost glabrous; veins 2 or 3 on either side of the midrib, arising from its basal half, prominent; petioles 5-15 mm. long, sparsely hirtellose; inflorescence usually 1.5-3 cm. across, compact, convex, almost capituliform, or sometimes more ample and umbelliform, the peduncle and branches hirtellose or strigillose; flowers crowded on short pedicels mostly 1-3 mm. long; hypanthium 1.5-2 mm. high, strigillose; sepals less than 0.5 mm. long; petals 3 mm. long, pubescent dorsally; style 2.5-3 mm. long, often dilated beneath the stigma; anthers blue on the connective; drupes at first whitish, becoming blue, about 8 mm. in diameter, the endocarp about 4 mm. in diameter, smooth.

TYPE LOCALITY: Between Chalco and Mexico, Distrito Federal.

DISTRIBUTION: San Luis Potosí and Sinaloa to Guatemala and Honduras.

NOTE: The great variability of this species indicates that it is a complex as yet insufficiently collected and not yet analyzed into its component parts.

7. *Cornus lanceolata* Rose, Contr. U. S. Nat. Herb. 8: 55. 1903.

Shrubs; branchlets sparsely hirtellose or glabrous, dark red or brown, becoming grey, the pith white; leaf-blades commonly 5.5-11 cm. long, 3-5.5 cm. broad, broadly ovate, long-acuminate, cuneate to rounded or subcordate at the base, almost glabrous above, paler beneath and

pubescent with scattered curling hairs, not papillose; veins prominent, usually 3 or 4 on either side of the midrib, 3 arising from its basal half; petioles 1–2 cm. long; inflorescence an ample cyme, usually 5 cm. across, the peduncle and branches hirtellose or strigillose; pedicels generally 1–3 mm. long; hypanthium strigillose; sepals 0.5 mm. long; petals 4–5 mm. long; style 3–4 mm. long, usually cylindrical but sometimes dilated beneath the stigma; drupes blue, the endocarp smooth.

TYPE LOCALITY: Near Jalapa, Vera Cruz.

DISTRIBUTION: Hidalgo, San Luis Potosí, Vera Cruz, and Chiapas.

NOTE: This species is part of the complex centering in *Cornus excelsa*; plants intermediate between the two occur, and it is probable that these are the result of hybridization.

S. *Cornus stolonifera* Michx. Fl. Bor. Am. 1: 92. 1803.

Cornus sericea L. Mant. 199, in part. 1771. (Nomen ambiguum.) Not *C. sericea* sensu Willd. 1797; Pursh, 1814; T. & G. 1840; and most others.

Cornus sanguinea sensu Marsh. Arbust. 36. 1785. Not *C. sanguinea* L. 1753.

Cornus alba sensu Pursh, Fl. Am. Sept. 1: 109. 1814. Not *C. alba* L. 1753.

Cornus Purshii G. Don, Hist. 3: 399. 1834.

Cornus silvestris Sessé & Moc. Fl. Mex. 28. 1893.

Cornus Nelsoni Rose, Contr. U. S. Nat. Herb. 8: 54. 1903.

Suida stolonifera var. *riparia* Rydb. Bull. Torrey Club 31: 573. 1904.

Cornus alba subsp. *stolonifera* Wanger. in Engler, Pflanzenreich 41 (4²²⁹): 53. 1910.

Cornus instolonea A. Nelson, Bot. Gaz. 53: 224. 1912.

Cornus stolonifera riparia Visher, Bull. S. Dak. Geol. & Biol. Surv. 5: 101. 1912.

Suida stolonifera A. Heller, Cat. N. Am. Pl. ed. 3. 273. 1914 (nomen nudum); Rydb. Brittonia 1: 94.

1931.

Ossea instolonea Nieuwl. & Lunell; Lunell, Am. Midl. Nat. 4: 487. 1916.

Suida instolonea Rydb. Fl. Rocky Mts. 635. 1917.

Cornus sericea subsp. *stolonifera* Fosberg, Bull. Torrey Club 69: 587. 1942.

Cornus sericea f. *stolonifera* Fosberg, Bull. Torrey Club 69: 587. 1942.

Spreading shrubs, the branches often procumbent and rooting at the tips ("stoloniferous"); branchlets strigillose, bright red, the white pith occupying half the diameter; leaf-blades commonly 5–9 cm. long, 1.5–5 cm. broad, lanceolate to elliptic and ovate, acute or acuminate, cuneate at the base, nearly glabrous above, the under surface strigillose, villose-tufted in the axils of the veins, minutely papillose; veins commonly 5–7 on either side of the midrib, usually 4 or 5 arising from its basal half; petioles commonly 5–7 mm. long; inflorescence 3–6 cm. across, rather flat, the primary branches clustered, strigillose to hirtellose; pedicels mostly 1–5 mm. long; hypanthium 1.5 mm. high, grey-strigillose; sepals 0.5 mm. long; petals 2–3 mm. long; style about 2 mm. long; drupes white, 7–9 mm. in diameter, the endocarp smooth on the faces, furrowed laterally, 4–5 mm. broad, usually oblique and somewhat longer than broad.

TYPE LOCALITY: "Canada."

DISTRIBUTION: Newfoundland to southern New York, west to Alaska and California, south in the Rocky Mountains to Nuevo León, Durango, and Chihuahua.

ILLUSTRATIONS: ARMSTRONG, Field Book W. Wild Fl. 341; Britt. & Brown, Ill. Fl. 2: 545; ed. 2. 2: 662; Deam, Shrubs Ind. pl. 105; Keeler, North. Shrubs 251; Kirkwood, N. Rocky Mt. Trees & Shrubs f. 54. pl. 30; M.-Victorin, Fl. Laurent. 409.

NOTE: Many hybrids have been noted between *Cornus stolonifera* and other species. × *Cornus acadiensis* Fernald (Rhodora 43: 411. 1941) is a hybrid between *C. stolonifera* and *C. alternifolia*. For hybridization with *C. occidentalis*, see under the latter species × *Cornus californica*.

Cornus stolonifera f. *Baileyi* (Coul. & Evans) Rickett, Brittonia 5: 159. 1944. *Cornus Baileyi* Coul. & Evans, Bot. Gaz. 15: 37. 1890. *Cornus alba* subsp. *Baileyi* Wanger. in Engler, Pflanzenreich 41 (4²²⁹): 55. 1910. *Suida Baileyi* Rydb. Brittonia 1: 94. 1931. *Cornus stolonifera* var. *Baileyi* Drescher, Trans. Wis. Acad. 28: 190. 1933. *Cornus sericea* f. *Baileyi* Fosberg, Bull. Torrey Club 69: 588. 1942. Branches not rooting at the tips; under surface of the leaves bearing curling erect trichomes mixed with the forked appressed trichomes, especially on the early growth of the season; drupes more oblique, usually broader than long. TYPE LOCALITY: South Haven, Michigan. DISTRIBUTION: Around the Great Lakes and eastward in the St. Lawrence Valley. ILLUSTRATIONS: Deam, Shrubs Ind. pl. 104; Keeler, North. Shrubs 255.

Cornus stolonifera f. *interior* (Rydb.) Rickett, Brittonia 5: 159. 1944. *Suida interior* Rydb. Bull. Torrey Club 31: 572. 1904. *Cornus interior* N. Petersen, Fl. Nebr. 163. 1912. *Ossea interior* Lunell, Am. Midl. Nat. 5: 239. 1918. *Cornus stolonifera* var. *interior* St. John, Fl. SE. Wash. 303. 1937. *Cornus sericea* f. *interior* Fosberg, Bull. Torrey Club 69: 588. 1942. Leaves as in the preceding form; branchlets and peduncles densely short-tomentose. TYPE LOCALITY: Dismal River, Nebraska. DISTRIBUTION: Alaska to eastern Washington, Colorado, and Nebraska.

9. *Cornus occidentalis* (T. & G.) Coville, Contr.
U. S. Nat. Herb. 4: 117. 1893.

Cornus circinnata sensu Cham. & Schlecht. *Linnaea* 3: 139. 1828. Not *C. circinnata* L'Hér. 1788.
Cornus alba β Hook. *Fl. Bor. Am.* 1: 276. 1833.
Cornus alba var. β *circinnata* G. Don, *Gen. Hist.* 3: 399. 1834. Not *C. circinnata* L'Hér. 1788.
Cornus sericea β ? *occidentalis* T. & G. *Fl. N. Am.* 1: 652. 1840.
Cornus pubescens Nutt. *Sylva* 3: 54. 1849. Not *C. pubescens* Willd. 1827.
Svida pubescens Standley, *Smithson. Misc. Coll.* 56²²: 3. 1912.
Cornus californica var. *pubescens* F. MacBr. *Contr. Gray Herb.* 56: 54. 1918.
Cornus sericea subsp. *occidentalis* Fosberg, *Bull. Torrey Club* 69: 589. 1942.
Cornus sericea f. *occidentalis* Fosberg, *Bull. Torrey Club* 69: 589. 1942.

Shrubs; branchlets usually dark red, more or less hirsute, the white pith occupying half the diameter; leaf-blades commonly 6–10 cm. long, 3–5 cm. broad, lanceolate or ovate to elliptic, short-acuminate, broadly cuneate to rounded or subcordate at the base, sparsely strigillose above, paler and tomentose beneath, minutely papillose; veins commonly 5 or 6 on either side of the midrib, usually 4 arising from its lower half; petioles 1–1.5 cm. long, variously pubescent; inflorescence 4–6 cm. across, flattish, the lower 2 primary branches often separated by a short internode from the remainder, the peduncle and branches hirsute; pedicels 4–7 mm. long, sparsely or densely villose; hypanthium 2 mm. high, grey-strigillose; sepals 0.7 mm. long; petals 3–4 mm. long; style 2.5–3 mm. long; drupes white, about 8 mm. in diameter, the endocarp 4–5 mm. long and rather broader, often oblique, marked with 3 often broad and low ridges on each face and furrowed laterally.

TYPE LOCALITY: San Francisco, California.

DISTRIBUTION: Southern British Columbia to southern California, eastward in the valley of the Columbia River.

ILLUSTRATION: Jepson, *Man. Fl. Pl. Calif.* 753.

× *Cornus californica* C. Meyer, *Cornus-Arten* 30. 1845. *Cornus Torreyi* S. Wats. *Proc. Am. Acad.* 11: 145. 1876. *Cornus Greenei* Coult. & Evans, *Bot. Gaz.* 15: 36. 1890. *Cornus pubescens* var. *californica* Coult. & Evans, *Bot. Gaz.* 15: 37. 1890. *Svida californica* Abrams, *Bull. N. Y. Bot. Gard.* 6: 429. 1910. *Svida Greenei* A. Heller, *Cat. N. Am. Pl. ed. 3.* 273. 1914. (Nomen nudum.) *Svida Torreyi* A. Heller, *Cat. N. Am. Pl. ed. 3.* 273. 1914. (Nomen nudum.) *Cornus californica* var. *nevadensis* Jepson, *Man. Fl. Pl. Calif.* 733. 1925. *Cornus stolonifera* var. *californica* McMinn, III. *Man. Calif. Shrubs* 377. 1939. *Cornus sericea* f. *californica* Fosberg, *Bull. Torrey Club* 69: 589. 1942. Under this name are included segregates from hybridization between *C. occidentalis* and *C. stolonifera*, which exhibit the pubescence, the dimensions of the flowers, and the shape and sculpturing of the endocarps of these two species in most of the possible combinations. They are commonly more sparsely pubescent than typical *C. occidentalis*. Other species of *Cornus* may enter into this hybrid complex. TYPE LOCALITY: San Francisco, California. DISTRIBUTION: Throughout the range of *Cornus occidentalis*.

10. *Cornus Amomum* Mill. *Gard. Dict. ed. 8. Cornus* no. 5. 1768.

Cornus sericea L. *Mant.* 199, in part. 1771. (Nomen ambiguum.)

? *Cornus cyanocarpus* Moench, *Verz. Ausl. Bäume* 27. 1785; *Meth.* 107. 1794. Not *C. cyanocarpus* J. F. Gmel. 1791.

Cornus caerulea [? *coerulea*] Lam. *Encyc.* 2: 116. 1786.

Cornus ferruginea Hort.; Lam. *Encyc.* 2: 116, as syn. 1786.

Cornus rubiginosa Ehrh. *Beitr.* 4: 15. 1789.

Cornus lanuginosa Michx. *Fl. Bor. Am.* 1: 92. 1803.

Cornus sericea β *oblongifolia* DC. *Prodr.* 4: 272. 1830.

Cornus oblongifolia Raf.; DC. *Prodr.* 4: 272, as syn. 1830.

Cornus sericea α *ovatifolia* C. Meyer, *Cornus-Arten* 23. 1845.

Cornus asperifolia Hort.; Dippel, *Handb. Laubh.* 3: 251, as syn. 1893. Not *C. asperifolia* Michx. 1803.

Cornus cirina Hort.; Dippel, *Handb. Laubh.* 3: 251, as syn. 1893.

Cornus Amomum var. *undulifolia* Koehne, *Mitt. Deuts. Dendr. Ges.* 12: 48. 1903.

Svida Amomum Small, *Fl. SE. U. S.* 854. 1903.

Spreading shrubs, the branches sometimes procumbent and rooting; branchlets white- or ferruginous-tomentose with short trichomes, sometimes sparsely so, becoming glabrous, at first green, becoming dark red, the pith dark brown; leaf-blades 5–12 cm. long, 2.5–6 cm. broad, lanceolate to elliptic or ovate, abruptly acuminate, broadly cuneate or rounded at the base, sparsely strigillose above, becoming glabrous, paler beneath and pubescent with usually mingled appressed forked and erect curling trichomes, these white or more commonly ferruginous especially on the veins, not papillose; veins commonly 4–6 on either side of the midrib, 3–5 arising from its basal half; petioles 1–2 cm. long; inflorescence 4–6 cm. across, generally flat,

the usually 3 or 4 primary branches clustered, the peduncle and branches short-tomentose to villose with white or ferruginous trichomes; pedicels mostly 2-5 mm. long; sepals nearly 2 mm. long, longer than the white-strigillose or villose hypanthium, villose; petals 4-5 mm. long; style 3-3.5 mm. long, conspicuously dilated beneath the small stigma; drupes blue, about 8 mm. in diameter, the endocarp 5-6 mm. long and broad, often slightly compressed, obscurely or strongly 3-ridged on each face, commonly 1-seeded with an empty locule.

TYPE LOCALITY: Presumably the Apothecaries' Garden at Chelsea, London.

DISTRIBUTION: New England to Pennsylvania and in the mountains to Georgia and Alabama, west to Kentucky, Tennessee, and Mississippi.

ILLUSTRATIONS: W. Barton, Veg. Mat. Med. pl. 9 (as *Cornus sericea*); Blanchan, Nat. Gard. pl. facing 252; Deam, Shrubs Ind. pl. 110; Emerson, Trees & Shrubs Mass. ed. 3. pl. 117; L'Hér. *Cornus* pl. 2; Millsp. Am. Med. Pl. pl. 73.

NOTE: This species hybridizes freely with *Cornus Purpusi* especially in New York, yielding segregates which can be assigned to neither species. The occasionally "stoloniferous" habit may be attributed to hybridization with *Cornus stolonifera*.

11. *Cornus Purpusi* Koehne, Gartenflora 48: 338. 1899.

? *Cornus minor* Hort.; Lam. Encyc. 2: 116. 1786.

Cornus sericea γ *Schützseana* C. Meyer, *Cornus*-Arten 23. 1845.

Cornus obliqua sensu Rehder, *Rhodora* 12: 122. 1910. Not *C. obliqua* Raf. 1819.

Sida Purpusi A. Heller, Cat. N. Am. Pl. ed. 3. 372. 1914. (Nomen nudum.)

Cornus cyanocarpos var. *albescens* Farwell, *Rhodora* 33: 72. 1931.

Cornus Amomum var. *Schuetzeana* Rickett, *Rhodora* 36: 274. 1934.

Shrubs; branchlets densely short-tomentose with white trichomes, becoming glabrous and brown, the pith dark brown; leaf-blades commonly 4-8 cm. long, 1.5-4 cm. broad, lanceolate to narrowly elliptic, abruptly acuminate, cuneate and often asymmetric at the base, strigillose on both surfaces with white forked trichomes (sometimes ferruginous beneath in the southwestern parts of the range), becoming nearly glabrous above, paler and more densely pubescent and minutely papillose beneath; veins commonly 3 or 4 on either side of the midrib and nearly equally spaced along it; petioles 1-1.5 cm. long; inflorescence 3-5 cm. across, generally flat, the 3 or 4 primary branches usually clustered, the peduncle and branches short-tomentose to strigillose with white trichomes; pedicels mostly 2-5 mm. long; hypanthium grey-strigillose; sepals 1.5-2 mm. long; petals 4-5 mm. long; style 3 mm. long, conspicuously dilated beneath the small stigma; drupes blue, about 8 mm. in diameter, the endocarp 5-6 mm. long and broad, obscurely or strongly 3-ridged on each face, commonly 1-seeded with an empty locule.

TYPE LOCALITY: Shore of Lake Erie west of Toledo, Ohio.

DISTRIBUTION: Nebraska to Kansas and southeastern Oklahoma, eastward to northern Alabama, Kentucky, Indiana, southern Ontario, and New York; District of Columbia.

ILLUSTRATIONS: Deam, Shrubs Ind. pl. 108; Rev. Hort. 60: pl. facing 444; Sarg. Trees & Shrubs pl. 39.

NOTE: Plants intermediate between this species and *Cornus Amomum* occur in New York and Ontario and westward to Minnesota, Illinois, and Kentucky; see the note under *C. Amomum*. For another hybrid see the note under *C. racemosa*.

12. *Cornus rugosa* Lam. Encyc. 2: 115. 1786.

Cornus virginiana Hort.; Lam. Encyc. 2: 115, as syn. 1786.

Cornus circinata L'Hér. *Cornus* 7. 1788.

Cornus tomentulosa Michx. Fl. Bor. Am. 1: 91. 1803.

Cornus verrucosa Hort.; Dippel, Handb. Laubh. 3: 250, as syn. 1893.

Sida circinata Small in Small & Carter, Fl. Lanc. Co. 206. 1913.

Sida rugosa Rydb. Fl. Pr. & Pl. 605. 1932.

Shrubs; branchlets sparsely strigillose with often ferruginous trichomes, at first green, soon suffused or streaked with dark red, often verrucose, the pith white; leaf-blades commonly 6-12 cm. long, 5-10 cm. broad, ovate, elliptic, or obovate, commonly suborbicular, abruptly acuminate, rounded or subcordate or occasionally broadly cuneate at the base, sparsely strigillose above, the pale under surface densely covered with white curling trichomes which obscure the minute papillae; veins usually 7 or 8 on either side of the midrib, impressed above; petioles usually 10-15 mm. long; inflorescence usually 5-7 cm. across, flat, the 4 or 5 primary branches clustered, strigillose; pedicels mostly 3-5 mm. long; hypanthium white-strigillose; drupes light blue, about 6 mm. in diameter, the endocarp 4 mm. broad, slightly shorter than broad, indistinctly and shallowly ridged, 1- or 2-seeded, the style often persistent on the mature fruit.

TYPE LOCALITY: "Jardin du Roi," Paris.

DISTRIBUTION: Maine to New Jersey and in the mountains to Virginia, west to Minnesota, the southern shores of Lake Michigan, and Iowa.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. 2: 544; ed. 2. 2: 661; Deam, Shrubs Ind. *pl.* 103; Emerson, Trees & Shrubs Mass. ed. 3. *pl.* 116; Guimp. Otto & Hayne, Abb. Fremden Holz. 1: *pl.* 86; L'Hér. *Cornus pl.* 3; Mathews, Field Book Am. Trees & Shrubs 333; Millsp. Am. Med. Pl. *pl.* 72; M.-Victorin, Fl. Laurent. 409.

13. *Cornus alternifolia* L. f. Suppl. 125. 1781.

? *Cornus citrifolia* Weston, Univ. Bot. 1: 74. 1770.

Cornus alternata Marsh. Arbust. 35. 1785.

Cornus alternifolia α *pennsylvanica* Hayne, Dendr. Fl. 8. 1822.

Cornus alternifolia β *canadensis* Hayne, Dendr. Fl. 8. 1822.

Cornus undulata Raf. Alsog. 61. 1838.

Cornus riparia Raf. Alsog. 62. 1838.

Cornus riparia var. *rugosa* Raf. Alsog. 62. 1838.

Cornus rotundifolia Raf. Alsog. 62. 1838.

Cornus punctata Raf. Alsog. 62. 1838.

Svida alternifolia Small, Fl. SE. U. S. 853. 1903.

Shrubs or small trees; branchlets green or yellowish, sometimes reddish-brown, the pith white; leaves alternate (or on some branchlets opposite), mostly crowded toward the ends of the branchlets, the membranous blades commonly 5–12 cm. long, 2.5–6.5 cm. broad, oblong, ovate, or obovate, abruptly acuminate, cuneate or occasionally rounded at the base, glabrate above, the under surface pale, minutely papillose, thinly pubescent with mostly appressed forked trichomes (those on the midrib and veins sometimes spreading and often ferruginous especially in the southern parts of the range); veins usually 4 or 5 on either side of the midrib, 4 arising from its basal half, impressed above; petioles commonly 2–5 cm. long; inflorescence 3.5–10 cm. across, hemispheric or flattish, the primary branches alternate along an often evident central axis, hirtellose; pedicels mostly 1–3 mm. long; hypanthium grey-strigillose; sepals 0.2 mm. long; petals 3–4 mm. long; style 2 mm. long; drupes blue, about 6 mm. in diameter, the style persistent on the summit, the endocarp globose, pitted at the apex.

TYPE LOCALITY: "In America septentrionali."

DISTRIBUTION: Newfoundland, Nova Scotia, and New England to Minnesota, south in the mountains to Florida and Alabama and in the Mississippi valley to the Ozarks.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. 2: 546; ed. 2. 2: 663; H. P. Brown, Trees N. Y. 316; Deam, Shrubs Ind. *pl.* 102; Duham. Arbres & Arbust. 2: *pl.* 45; Emerson, Trees & Shrubs Mass. ed. 3. *pl.* 115; A. Gray, For. Trees N. Am. *pl.* 63; Guimp. Otto & Hayne, Abb. Fremden Holz. 1: *pl.* 43; Hough, Handb. Trees N. States 358, 359; Illick, Penn. Trees ed. 2. *pl.* 127; Keeler, Nat. Trees 176; Keeler, North. Shrubs 257; L'Hér. *Cornus pl.* 6; Lounsbury, Guide Trees *pl.* 102; M.-Victorin, Fl. Laurent. 409; J. E. Rogers, Tree Book *pl.* facing 416; W. E. Rogers, Tree Fl. 421; Sarg. Man. 789; Sarg. Silva 5: *pl.* 216.

Cornus alternifolia f. *ochrocarpa* Rehder, Mitt. Deuts. Dendr. Ges. 16: 75. 1907. Drupes yellow. TYPE LOCALITY: Rochester, New York. DISTRIBUTION: Known only from the type locality.

Section *Tanycrania* Endl. Gen. 1: 798. Mr 1839, emend. Wanger. in Engler, Pflanzenreich 41 (4²²⁹): 78. 1910. Sect. *Macrocarpium* Spach, Hist. Vég. 8: 92. O 1839. Subg. *Macrocarpium* C. K. Schneid. Handb. Laubh. 2: 450. 1909. Shrubs and small trees; inflorescence a sessile sympodial umbel (a reduced cyme), appearing before the leaves and subtended by 2 or more pairs of scale-like cataphylls, the uppermost (usually 4) enlarging at anthesis and forming a subpetaloid involucre; flowers yellow; drupes ellipsoid, red or almost black.

14. *Cornus sessilis* Torr.; Durand, Jour. Acad. Phila. II. 3: 89. 1855.

Macrocarpium sessile Nakai, Bot. Mag. Tokyo 23: 38. 1909. (Nomen nudum.)

Svida sessilis A. Heller, Cat. N. Am. Pl. ed. 3. 273. 1914. (Nomen nudum.)

Shrubs and small trees to 4 m. high (according to Jepson); branchlets green becoming blotched with red, the pith white; leaf-blades commonly 4.5–9 cm. long, 2–3.5 cm. broad, elliptic, acute or short-acuminate, cuneate at the base, glabrous above or with a few scattered trichomes, strigillose below and tomentose in the axils of the veins; veins commonly 4 on either side of the midrib, 3 arising from its basal half, impressed above; petioles 5–10 mm. long; inflorescence subtended by 2 pairs of cataphylls, these 1 cm. long, 0.5 cm. broad, lanceolate, acuminate, brown often with yellow scarious margins, strigillose dorsally, hoary at the base; pedicels 1 cm. long, white-villose; sepals 0.5 mm. long; petals 3 mm. long; style 1 mm. long;

drupes at first whitish, passing through yellow and red to almost black, 1-1.5 cm. long, about half as thick, ellipsoid, acute at both ends.

TYPE LOCALITY: Deer Creek, near Nevada [City], California.

DISTRIBUTION: Foothills of the Sierra Nevada and northern Coast Range, California.

ILLUSTRATIONS: Jepson, Fl. Calif. 2: 679; McMinn, Ill. Man. Calif. Shrubs 375; Pac. R. R. Rep. 41⁽¹⁾: pl. 8.

Section Discocrania Harms in E. & P. Nat. Pl. 3^o: 266. 1898. Subg. *Apocarpea* Nakai, Bot. Mag. Tokyo 23: 41, in part. 1909. Subg. *Discocrania* Wanger. in Engler, Pflanzenreich 41 (4²²⁹): 84. 1910. Shrubs and small trees; inflorescence a congested cyme simulating a pedunculate capitule, the peduncle subtended by reduced leaves or by scale-like cataphylls, the sessile flowers surrounded by usually 4 cataphylls (bracts) which are not petaloid and are deciduous at anthesis; drupes ellipsoid, dark red.

15. *Cornus disciflora* Moc. & Sessé; DC. Prodr. 4: 273. 1830.

Cornus capitata Sessé & Moc. Fl. Mex. 28. 1893. Not *C. capitata* Wall. 1820.

Cornus grandis sensu Rose, Contr. U. S. Nat. Herb. 8: 54. 1903. Not *C. grandis* Schlecht. & Cham. 1830.

Benthamia disciflora Nakai, Bot. Mag. Tokyo 23: 41. 1909. (Nomen nudum.)

Benthamia grandis Nakai, Bot. Mag. Tokyo 23: 41. 1909. (Nomen nudum.)

Shrubs and small trees to 10 m. high (according to Hinton); branchlets minutely appressed-pubescent, green or red, soon becoming light grey; leaf-blades commonly 7-14 cm. long, 2-6 cm. broad, lanceolate to elliptic, acute or acuminate, cuneate at the base, rather coriaceous, glabrous above, paler beneath and minutely strigillose with forked trichomes about 0.2 mm. from point to point; veins usually 3 or 4 on either side of the midrib and spaced equally along it; petioles commonly 5-20 mm. long; inflorescence appearing more or less continuously from August to May, occasionally subtended by 2 pairs of cataphylls like those of *C. florida* but these usually lacking, the uppermost foliage leaves of the branch often reduced and soon deciduous, the involucre deciduous at anthesis leaving an often lobed hairy rim beneath the flower-cluster; flowers essentially sessile, 15-25 in a cluster about 1.5 cm. across, subtended by an inner ring of minute hairy bracts (? prophylls); hypanthium about 1 mm. high, hairy; calyx 2 mm. high, the lobes obtuse; petals 3 mm. long, reflexed; style less than 2 mm. long; drupes dark red (drying black), nearly 2 cm. long, 1 cm. broad, ellipsoid, pubescent, usually 1-3 in a cluster, the endocarp 1.2 cm. long, 0.6 cm. broad, smooth.

TYPE LOCALITY: "Mexico."

DISTRIBUTION: Sonora, Zacatecas, and Hidalgo to Panama.

ILLUSTRATION: Moc. & Sessé, Calq. Dess. pl. 442.

Cornus disciflora f. *floccosa* (Wanger.) Rickett, Bull. Torrey Club 72: 223. 1945. *Cornus floccosa* Wanger. Repert. Sp. Nov. 6: 101. 1908. *Cornus disciflora* var. *floccosa* Standl. Field. Mus. Publ. Bot. 8: 321. 1931. Leaves short-tomentose on the lower surface, often ferruginous. TYPE LOCALITY: San Nicolás, Distrito Federal. DISTRIBUTION: With the typical form.

Section Cynoxylon Raf. Med. Bot. 132. 1828. Sect. *Benthamia* K. Koch, Dendr. 694. 1869. Subg. *Apocarpea* Nakai, Bot. Mag. Tokyo 23: 41, in part. 1909. Subg. *Benthamia* C. K. Schneid. Handb. Laubh. 2: 453. 1909. Trees and shrubs; inflorescence a congested cyme simulating a pedunculate capitule, the peduncle subtended by 1 or 2 pairs of scale-like cataphylls, the sessile flowers surrounded by 4-7 cataphylls (bracts) which enlarge at anthesis to form a conspicuous petaloid involucre; flowers yellow; drupes ellipsoid or prismatic, red.

16. *Cornus florida* L. Sp. Pl. 117. 1753.

Benthamia florida Spach, Hist. Vég. 8: 107. 1839.

Cynoxylon floridum Britt. & Shaf. N. Am. Trees 744. 1908.

Benthamia florida Nakai, Bot. Mag. Tokyo 23: 41. 1909. (Nomen nudum.)

Small trees, or sometimes shrubs; branchlets green or red, minutely strigillose, becoming grey, the pith brown; bark of the trunk grey, fissured in roughly rectangular blocks; leaf-blades commonly 5-8 cm. long, 2-4 cm. broad (sometimes up to 12 cm. long, 6.5 cm. broad), ovate to elliptic or obovate, abruptly acuminate, cuneate and often asymmetric at the base, strigillose on both surfaces and paler beneath and somewhat villose along the midrib and veins especially

when young; veins 4-6 on either side of the midrib, usually 4 arising from its basal half; petioles commonly about 1 cm. long, occasionally to 2 cm.; inflorescence appearing in autumn, the subtending cataphylls narrowly lanceolate, ferruginous ventrally with a hoary-strigillose tip, the lower pair deciduous with the foliage (except sometimes in western plants), the upper persisting through the winter; bracts of the involucre 4, at anthesis commonly 3-15 cm. long, 2.5-4.5 cm. broad, white, parallel-veined, obovate, the retuse apex callose, minutely pubescent dorsally especially at base and apex; flowers yellowish, 20-30 in a cluster 1-1.5 cm. across, subtended by an inner ring of obtuse bracts (? prophylls) each about 1 mm. long and broad; hypanthium 2.5 mm. high, canescent; calyx 2 mm. high, campanulate, the sepals united about half their length; petals 3.5 mm. long, revolute; style 2-2.5 mm. long; drupe red (drying black), about 1.5 cm. long, 0.8 cm. broad, ellipsoid, crowned by the persistent calyx and style, usually 1-6 in a cluster, the endocarp about 1.0 cm. long, 0.5 cm. broad, smooth, acute.

TYPE LOCALITY: "Virginia."

DISTRIBUTION: Southern Maine and southern Ontario to eastern Kansas, south to Florida, Mississippi, Louisiana, and eastern Texas.

ILLUSTRATIONS: W. Barton, Veg. Mat. Med. pl. 3; Bot. Mag. pl. 526; Britt. & Brown, Ill. Fl. 2: 543; ed. 2: 664; Britt. & Shaf. N. Am. Trees 746; Deam, Trees Ind. ed. 3, pl. 121; Emerson, Trees & Shrubs Mass. ed. 3, pl. 118; Guimp. Otto & Hayne, Abb. Fremden Holz. 1: pl. 19; Hough, Handb. Trees N. States 356, 357; Illick, Penn. Trees ed. 2, pl. 126; Keeler, Nat. Trees 171, 173; Keeler, North. Shrubs 243; Lounsbury, Guide Trees pl. 101; Mathews, Field Book Am. Trees & Shrubs 333; Millsp. Am. Med. Pl. pl. 71; Rickett, Green Earth 283; J. E. Rogers, Tree Book pl. facing 411; W. E. Rogers, Tree Fl. 417-419, 422, 423; Sarg. Man. 786; Sarg. Silva 5: pl. 212, 213.

Cornus florida subsp. *urbiniiana* (Rose) Rickett, Bull. Torrey Club 72: 223. 1945. *Cornus grandis* Schlecht. & Cham. Linnaea 5: 171. 1830. *Cornus urbiniana* Rose, Contr. U. S. Nat. Herb. 8: 53. 1903. *Cornus florida* var. *urbiniiana* Wanger. in Engler, Pflanzenreich 41 (4229): 87. 1910. *Benthamidia florida* var. *urbiniiana* Moldenke, Rev. Sudam. Bot. 6: 177. 1940. Bracts of the involucre much narrower, commonly about 2 cm. broad, linear, the callous apex broadly acute, not retuse; flowers 10-20 in a cluster; drupes 1-3 in a cluster. TYPE LOCALITY: Cerro de San Cristobal near Orizaba, Vera Cruz. DISTRIBUTION: Nuevo Leon and Vera Cruz.

Cornus florida f. *rubra* (Weston) Palmer & Steyerl. Rhodora 40: 133. 1938. *Cornus florida rubra* Weston, Univ. Bot. 1: 73. 1770. *Cornus florida* var. *rubra* Hort.; Rehder in L. H. Bailey, Cyc. Am. Hort. 1: 378. 1900. *Cynoxylon floridum* var. *rubrum* Moldenke, Bull. Torrey Club 33: 56. 1932. *Benthamidia florida* var. *rubra* Moldenke, Torreya 34: 8. 1934. Bracts of the involucre dusky rose. TYPE LOCALITY: None given. DISTRIBUTION: With the typical form of the species. ILLUSTRATIONS: Bot. Mag. pl. 8315; Rev. Hortic. 66: pl. facing 500.

Cornus florida f. *xanthocarpa* Rehder, Jour. Arnold Arb. 2: 179. 1921. Drupes yellow. TYPE LOCALITY: Saluda, North Carolina (cult.). DISTRIBUTION: Long Island.

17. *Cornus Nuttalli* Audubon, Birds pl. 367. 1837

(nomen nudum); Ornith. 4: 482. 1838.

Cynoxylon Nuttallii Shafer in Britt. & Shaf. N. Am. Trees 746. 1908.
Benthamidia Nuttallii Nakai, Bot. Mag. Tokyo 23: 41. 1909. (Nomen nudum.)
Benthamidia Nuttallii Moldenke, Phytologia 1: 167. 1935.

Trees to 20 m. high; branchlets at first green, becoming dark red or almost black, the pith brown; bark of the trunk scaly, brown; leaf-blades commonly 6-12 cm. long, 3-7 cm. broad, elliptic to obovate, short-acuminate, cuneate at the base, minutely strigillose above, the under surface paler and pubescent with both appressed forked and short spreading trichomes; veins usually 4 or 5 on either side of the midrib, 3 or 4 arising from its basal half; petioles 0.5-1 cm. long; inflorescence appearing in autumn, subtended by a pair of reduced leaves and a pair of cataphylls, the latter lanceolate, acuminate, pubescent ventrally, usually persistent through the winter; flowers surrounded but not enclosed by the bracts in the winter, the cluster often cernuous; bracts of the involucre at anthesis 4-7, 4-6 cm. long, 3-6 cm. broad, white or pink-tinged, parallel-veined, generally obovate with a tapering base, short-acuminate, at first pubescent dorsally with appressed white trichomes; flowers subtended also by several series of small obtuse bracts (? prophylls) about 1 mm. long and broad; flowers yellowish-green or red, about 75 crowded into a cluster about 2 cm. across; hypanthium 3 mm. high; calyx 2.5 mm. high, the segments rounded; petals 4 mm. long, revolute; style 2 mm. long; drupes red, congested (but not coalescent) in a cluster 2.5-3 cm. across, 20-40 maturing, each 1-1.5 cm. long, about half as thick, more or less ellipsoid but prismatic by mutual pressure, the calyx and style persistent on the summit, the endocarp ellipsoid, about 9 mm. long, 5 mm. broad, smooth.

TYPE LOCALITY: "On the Columbia River," northwestern Oregon or southwestern Washington.

DISTRIBUTION: Southwestern British Columbia to northern California west of the Cascade Mountains and the Sierra Nevada.

ILLUSTRATIONS: Armstrong, Field Book W. Wild Fl. 339; Audubon, Birds *pl.* 367; Bot. Mag. *pl.* 8311; Britt. & Shaf. N. Am. Trees 747; Eastw. Handb. Trees Calif. *pl.* 51; Eliot, For. Trees Pac. Coast *f.* 228-230; Gard. Chron. III. 633: 204; Garden 78: 290; 84: 228; Jepson, Man. Fl. Pl. Calif. 734; Kew Bull. 1915: *pl.* facing 178; Nutt. Sylva 3: *pl.* 97; Sarg. Man. 787; Sarg. Silva 5: *pl.* 214, 215; Sudw. For. Trees Pacif. Slope 414, 415.

Section *Arctocrania* Endl. Gen. 1: 798. Mr 1839. Sect. *Cornion* Spach, Hist. Vég. 8: 103. O 1839. Subg. *Arctocrania* Wanger. in Engler, Pflanzenreich 41 (4²⁹): 81. 1910. Leafy stems herbaceous, from woody rhizomes; inflorescence a congested cyme simulating a capitule or small umbel, each of the 4 primary branches subtended by a petaloid bract, these together composing an involucre; flowers greenish, purplish, or blue; 1 or more petals dorsally awned; drupes globose, red.

Cornus canadensis L. Sp. Pl. 118. 1753.

Cornus cyananthus Raf. Atl. Jour. 151. 1832.

Cornus unalaschensis Ledeb. Fl. Ross. 2: 378. 1844.

Chamaepericlymenon canadense Asch. & Graebn. Fl. Nordostd. Flachl. 799. 1898 (nomen nudum); N. Taylor, Mem. N. Y. Bot. Gard. 5: 484. 1915.

Cornus canadensis var. *intermedia* Farr, Contr. Bot. Lab. Univ. Pa. 2: 423. 1904.

Cornella canadensis Rydb. Bull. Torrey Club 33: 147. 1906.

Cornella unalaschensis Rydb. Bull. Torrey Club 33: 147. 1906.

Arctocrania unalaschensis Nakai, Bot. Mag. Tokyo 23: 39. 1909. (Nomen nudum.)

Arctocrania canadensis Nakai, Bot. Mag. Tokyo 23: 40. 1904.

Cornus canadensis f. *elongata* Peck, Bull. N. Y. State Mus. 150: 44. 1911.

Svida unalaschensis A. Heller, Cat. N. Am. Pl. ed. 3, 273. 1914. (Nomen nudum.)

Cynoxylon canadense J. H. Schaffn. Cat. Ohio Pl. 222. 1914.

Mesomora canadensis Nieuwl.; Lunell, Am. Midl. Nat. 4: 487. 1916.

Chamaepericlymenum unalaschensis Rydb. Fl. Rocky Mts. 635. 1917.

Cornus canadensis var. *alpestris* House, Bull. N. Y. State Mus. 254: 539. 1924.

Flowering stems commonly 7-20 cm. high (exclusive of the peduncle), having usually 4-6 leaves apparently whorled at the summit (each leaf of the terminal pair subtending 1 or 2 leaves on an undeveloped axillary branch), usually with a pair of scale-like prophylls 2-6 cm. below, these often foliaceous especially on western plants and sometimes almost equaling the terminal leaves; leaf-blades commonly 4-6.5 cm. long, 2.5-4.5 cm. broad, ovate to elliptic, obovate, or rhombic, acute or short-acuminate, narrowed at the base to a petiolar portion 2-4 mm. long, sparsely strigillose above, the under surface glabrous; veins 2 or 3 on either side of the midrib, arising from its basal one-fourth or one-third; inflorescence commonly of 15-30 flowers in a cyme 10-15 mm. across, the peduncle sparsely strigillose or glabrous, 1-3 cm. long, the 4 primary branches 1-1.5 mm. long, each bearing a bract; bracts of the involucre usually 10-15 mm. long and nearly as broad (sometimes to 25 mm. long and 15 mm. broad), the opposite pairs often unequal, white, ovate, acuminate, parallel-veined; pedicels 1-1.5 mm. long, strigillose; hypanthium 1-1.5 mm. high, hoary; sepals 0.4 mm. long, broadly triangular, usually glabrous; petals 1.5 mm. long, yellowish or partly or wholly purplish, cucullate, the awn 0.6 mm. long; style 1.5-2 mm. long, often purplish; drupes commonly 10-15 in a cluster, globose, red, about 8 mm. in diameter, the style persistent, the endocarp about 2 mm. in diameter, globose, smooth, commonly unilocular and 1-seeded.

TYPE LOCALITY: "Canada."

DISTRIBUTION: Greenland; Labrador to Alaska, south to New Jersey, West Virginia, Kentucky, Wisconsin, Minnesota, South Dakota, Idaho, and California, and in the Rocky Mountains to New Mexico; northeastern Asia.

ILLUSTRATIONS: Armstrong, Field Book W. Wild Fl. 341; Bot. Mag. *pl.* 880; Britt. & Brown, Ill. Fl. 2: 543; ed. 2. 2: 664; Brown & Schäffer, Alp. Fl. Can. *pl.* facing 204; Dana, Wild Fl. ed. 1900. 37; House, Wild. Fl. N. Y. *pl.* 150; Jepson, Fl. Calif. 2: 680; L'Hér. *Cornus pl.* 1; Mathews, Field Book 319; Miller & Whiting, Wild Fl. 225; M.-Victorin, Fl. Laurent. 408; Peterson, Wild Fruits 109.

NOTE: In Labrador this species hybridizes with *Cornus suecica*.

Cornus canadensis f. *purpurascens* (Miyabe & Tatewaki) Hara, Rhodora 44: 20. 1942. *Chamaepericlymenum canadense* f. *purpurascens* Miyabe & Tatewaki, Trans. Sapporo Nat. Hist. Soc. 15: 43. 1937. *Cornus canadensis* f. *rosea* Fernald, Rhodora 43: 156. 1941. Bracts of the involucre purplish-rose. TYPE LOCALITY: Tonnai, Toyohara, Japan. DISTRIBUTION: Eastern Canada, Newfoundland, and Maine; Alaska; Japan.

Cornus suecica L. Sp. Pl. 118. 1753.*Cornus borealis* Krasch.; Gort. Fl. Ingr. 24. 1761.*Cornus herbacea* Pall. Fl. Ross. 1: 121. 1784.*Cornus biramis* Stokes, Bot. Mat. Med. 1: 221. 1812.*Chamaepericlymenum suecicum* Asch. & Graebn. Fl. Nordostd. Flachl. 539. 1898.*Cornella suecica* Rydb. Bull. Torrey Club 33: 147. 1906.*Artocrania suecica* Nakai, Bot. Mag. Tokyo 23: 39. 1909.

Flowering stems 5–15 cm. high (exclusive of the peduncle), bearing several pairs of subequal leaves (or the lowest pair shorter and sometimes scale-like), the terminal leaves sometimes subtending leaves from undeveloped axillary branches and with them simulating a whorl; leaves sessile, the blades commonly 2–3 cm. long, 1.5–2.5 cm. broad (sometimes to 4.5 cm. long), lanceolate to ovate and elliptic or oval or almost orbicular, broadly acute or obtuse, cuneate to rounded and somewhat clasping at the base, sparsely strigillose above, the under surface glabrous; veins 5–7, arising from the base, or in leaves of vigorous branches sometimes the lateral 4–6 from the basal one-fourth of the midrib; inflorescence commonly of 10–15 flowers in a cyme 6–10 mm. across, the primary branches usually not discernible, the cyme therefore umbelliform and the bracts apparently arising from the summit of the peduncle, the peduncle 0.8–2 cm. long, sparsely strigillose or glabrous; bracts of the involucre usually 8–12 mm. long, 4.5–9 mm. broad, ovate, acute to obtuse, parallel-veined; pedicels about 1 mm. long; hypanthium 1.5 mm. long, blue or purplish, sparsely strigillose especially toward the base; sepals 0.3–0.5 mm. long, triangular, blue or purplish, usually ciliate with white trichomes; petals 1–1.5 mm. long, blue or purplish, cucullate, the awn 0.5 mm. long; style 1.5 mm. long, blue or purplish; drupes globose, red, about 8 mm. in diameter, the style persistent, the endocarp about 3 mm. in diameter, globose, slightly compressed, lightly grooved on each face, bilocular, often 1-seeded.

TYPE LOCALITY: "Suecia, Norvegia, Russia."

DISTRIBUTION: Labrador, Newfoundland, and Nova Scotia, westward in the St. Lawrence Valley to Rivière du Loup, northward to Alaska; northern Europe and Asia.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. 2: 543; ed. 2. 2: 665; Curt. Fl. Lond. ed. 2. pl. 194; Fl. Dan. 1: pl. 5; Hegi, Ill. Fl. Mittel-Eur. 5: 1552–1555; L. Fl. Lapp. pl. 5, f. 3; M.-Victorin, Fl. Laurent. 408; Reichenb. Ic. Fl. Germ. 24: pl. 145; Smith, Engl. Bot. pl. 310; Sv. Bot. pl. 201; Syme, Engl. Bot. ed. 3. pl. 634.

NOTE: In Labrador this species hybridizes with *Cornus canadensis*.

DOUBTFUL SPECIES

CORNUS FOEMINA Mill. Gard. Dict. ed. 8. *Cornus* no. 4. 1768. Sometimes interpreted as *C. racemosa*, but the description is inadequate.CORNUS CANDIDISSIMA Mill. Gard. Dict. ed. 8. *Cornus* no. 6. 1768. Formerly interpreted as *C. racemosa*. The description seems to be based upon a mixture of species.

CORNUS ANGUSTIFOLIA Weston, Univ. Bot. 1: 73. 1770.

CORNUS FASTIGIATA Michx. Fl. Bor. Am. 1: 92. 1803. Specimens of *C. racemosa* and *C. stricta* are so labeled in the Michaux herbarium in Paris.

CORNUS POLYGAMUS Raf. Fl. Ludov. 78. 1817.

CORNUS OBLIQUA Raf. West. Rev. 1: 229. 1819. Formerly interpreted as *C. Purpusi*; and a specimen so labeled by Rafinesque and deposited in the herbarium of the New York Botanical Garden is that species; the description, however, is incompatible with it, suggesting rather *C. stricta*.

CORNUS SUFFRUTICOSA Raf. Atl. Jour. 151. 1832.

CORNUS CINEREA Raf. Alsog. 59. 1838.

CORNUS SEROTINA Raf. Alsog. 60. 1838. "vel lancifolia."

CORNUS ATRATA Raf. Alsog. 61. 1838.

CORNUS PARVIFOLIA Raf. Alsog. 61. 1838.

CORNUS IGNORATA K. Koch, Dendr. 1: 684. 1869. *C. Amomum* ex. spec. fide Koehne, Mitt. Deuts. Dendr. Ges. 12: 48. 1903; not ex. descr. Type locality "Japan."

Family 2. NYSSACEAE

BY HAROLD WILLIAM RICKETT

Trees and shrubs. Leaves alternate, petiolate, estipulate. Inflorescence a raceme, spike, umbel, or capitule. Flowers small, mostly dioecious. Calyx minute or obsolete. Petals 5 or more, imbricate. Stamens 5-10, often in 2 cycles. Anthers introrse, dorsifixed or basifixed. Style 1, simple and frequently reflexed or coiled, or cleft, arising from a fleshy disc (this central and pulvinate in staminate flowers). Ovary inferior, unilocular. Ovule with 2 integuments. Fruit a drupe.

1. NYSSA L. Sp. Pl. 1058. 1753; Gen. Pl. ed. 5. 478. 1754.

Tupelo Adans. Fam. Pl. 2: 80. 1763.

Trees and shrubs. Leaves membranous or subcoriaceous, entire or irregularly dentate; veins disposed pinnately along the midrib, rather straight; under surface usually bearing very minute cuticular dots and sometimes roughened by larger papillae. Leaves and branchlets usually pubescent when young with appressed and spreading trichomes. Flowers dioecious or polygamo-dioecious, on peduncles arising singly from the axils of cataphylls, bracts, or foliage leaves; staminate flowers in a capitule, umbel, or short raceme; pistillate (or perfect) flowers sessile, solitary or several in a capitule or short spike. Petals usually 5; stamens usually 7-10; style revolute from near the middle. Drupes black, blue, purplish, or red; endocarp smooth or more commonly ridged.

Type species, *Nyssa sylvatica* Marsh.*

Leaves not mucronate; staminate flowers pedicellate in an umbel or raceme; pistillate flowers and (usually) drupes 2 or more on a peduncle; endocarp smooth or obtusely ridged.

Leaves obovate to elliptic, more or less abruptly narrowed to the obtuse or acute apex; drupes on peduncles (1.5-) 3-6 cm. long.

Leaves mostly linear to oblanceolate, rounded or obtuse at the apex; drupes on peduncles 1-3(-5) cm. long.

Trees; leaves mostly 4-12 cm. long; drupes oval.

Shrubs; leaves mostly 2-7 cm. long; drupes globose.

Leaves mucronate; staminate flowers sessile in a capitule; pistillate flowers and drupes solitary; endocarp alate-ridged.

Leaves commonly sinuate-dentate with mucronate teeth, the petioles 2-5 cm. long; drupes purplish.

Leaves entire, the petioles 1 cm. long or less; drupes red.

Trees; leaves rounded or obtuse at the apex; drupes 3-4 cm. long.

Shrubs; leaves acute to acuminate; drupes 2-3 cm. long.

1. *N. sylvatica*.

2. *N. biflora*.

3. *N. ursina*.

4. *N. uniflora*.

5. *N. ogeche*.

6. *N. acuminata*.

1. *Nyssa sylvatica* Marsh. Arbust. 97. 1785.

Nyssa aquatica L. Sp. Pl. 1058, in part. 1753. (Nomen confusum.)

Nyssa multiflora Wangelh. Beytr. Nordam. Holz. 46. 1787.

Nyssa integrifolia Ait. Hort. Kew. 3: 446. 1789.

Nyssa angulosa Poir. in Lam. Encyc. 4: 507. 1797.

Nyssa canadensis Poir. in Lam. Encyc. 4: 507. 1797.

Nyssa caroliniana Poir. in Lam. Encyc. 4: 507. 1797.

Nyssa villosa Michx. Fl. Bor. Am. 2: 258. 1803.

Nyssa montana Hort.; Michx. Fl. Bor. Am. 2: 258, as syn. 1803.

Nyssa integrifolia glauca Hort.; Pers. Syn. Pl. 2: 614. 1807.

Nyssa ciliata Raf. Atl. Jour. 176. 1833.

* *Nyssa aquatica* L., named as *species lectotypica* in the *International Rules of Botanical Nomenclature*, ed. 3. 141 (1935), is a *nomen confusum* which includes plants referable to *Nyssa sylvatica* Marsh. and *Nyssa uniflora* Wangelh. Since most of the synonyms cited by Linnaeus refer to the first of these, it is here designated as type species.

- Nyssa multiflora* var. *sylvatica* S. Wats. Bibl. Ind. 442. 1878.
Nyssa sylvatica var. *aquatica* Sarg. Garden & Forest 2: 435. 1889.
Nyssa sylvatica var. *typica* Fernald, Rhodora 37: 434. 1935.
Nyssa sylvatica var. *dilatata* Fernald, Rhodora 37: 436. 1935.
Nyssa sylvatica var. *caroliniana* Fernald, Rhodora 37: 436. 1935.

Trees usually to 30 m. high, sometimes to 40 m., or occasionally shrubs; branchlets at first green, becoming orange or reddish and finally grey, glabrous or nearly so; bark of the trunk grey, deeply fissured in narrow scaly segments; leaves often crowded near the ends of short branches, the blades commonly 3-10 cm. long, 2.5-6 cm. broad, obovate to elliptic (sometimes almost orbicular), more or less abruptly narrowed to the acute or obtuse apex, cuneate at the base, usually entire but occasionally remotely angulate-dentate or sinuate toward the apex, glabrous above, the under surface more or less villose on the midrib and main veins (the trichomes often rufous) and minutely dotted and often papillose-roughened (when young often pubescent with appressed forked trichomes); petioles 1-2.5 cm. long; peduncles from the axils of the cataphylls and the proximal leaves of the branchlets; staminate inflorescence an umbel or short raceme, on a puberulent peduncle 2.5-4 cm. long, the pedicels 1-5 mm. long, often subtended by small bracts; pistillate inflorescence of 2-8 sessile flowers in a capitule or short spike, the flowers prophyllate and subtended by rufous-pilose bracts 1-2 mm. long, on a clavate hirtellose peduncle 2-5 cm. long; hypanthium about 2 mm. high; petals 1.5 mm. long; drupes 1-1.5 cm. long, 7-10 mm. broad, blue-black, on peduncles usually 2-5 cm. long, the endocarp slightly compressed, marked with about 10 shallow grooves, the intervening sectors often elevated into rounded ridges.

TYPE LOCALITY: "Pennsylvania."

DISTRIBUTION: Maine to Florida, west to southern Ontario, Michigan, southern Missouri, eastern Oklahoma, and eastern Texas.

ILLUSTRATIONS: Britton, N. Am. Trees 738, 739; Britt. & Brown, Ill. Fl. 2: 547; ed. 2. 2: 665; H. P. Brown, Trees N. Y. 318; Deam, Trees Ind. ed. 3. pl. 120; Emerson, Trees & Shrubs Mass. ed. 3. pl. 88; H. Gibson, Am. For. Trees, pl. facing 331; Hough, Handb. Trees N. States 362, 363; Illick, Penn. Trees ed. 2. pl. 128; Keeler, Nat. Trees 178, 179; Lam. Tab. Encyc. pl. 851; Mathews, Field Book Am. Trees & Shrubs 337; Michx. f. Hist. Arb. Am. 2: pl. 21, 22 (the latter as *N. aquatica*); Michx. f. N. Am. Sylva pl. 110, 111 (the latter as *N. aquatica*); J. E. Rogers, Tree Book, pl. facing 407, 410; W. E. Rogers, Tree Fl. 425-427; Sarg. Man. 780; Sarg. Silva 5: pl. 217; C. K. Schneid. Handb. Laubh. 2: f. 304, a-f; 305, a, b; Wangenh. Beytr. Nordam. Holz. pl. 16, f. 39.

NOTE: The extreme variability of this species in the form and dimensions of the leaves (which have been made the basis of several species and varieties) indicates that it contains a genetic complex as yet unanalyzed. West of the Appalachian Mountains in particular occur forms with larger elliptic leaves and with small broadly elliptic, almost orbicular leaves. Where the range overlaps that of *Nyssa biflora*, the variation embraces also the length of the fruiting peduncles and the characters of the endocarp, and yields plants intermediate between the two species; see the note under *Nyssa biflora*.

2. *Nyssa biflora* Walt. Fl. Car. 253. 1788.

- Nyssa sylvatica* var. *biflora* Sarg. Silva 5: 76. 1893.
Nyssa servatilis * E. H. L. Krause, Beih. Bot. Centr. 32: 333. 1914.

Trees to 12 m. high, often growing in water and the base of the trunk then much enlarged; branchlets reddish, becoming dark grey, glabrous; bark of the trunk grey, deeply fissured; leaf-blades commonly 4-12 cm. long, 1.5-4.5 cm. broad, subcoriaceous, narrowly elliptic to oblanceolate, rounded to obtuse or sometimes acute at the apex, gradually tapering to the base, glabrous above, the under surface paler, glabrous except on the midrib, minutely dotted and often papillose-roughened; petioles 1-1.5 cm. long; peduncles from the axils of the cataphylls and proximal leaves of the branchlets; staminate inflorescence an umbel or short raceme, on a peduncle 1.5-3 cm. long, the pedicels 3-7 mm. long, often subtended by small bracts; pistillate inflorescence of usually 2 sessile flowers, subtended by several rufous-pilose bracts about 1 mm. long, on a peduncle 1-3 cm. long; hypanthium about 2 mm. high; petals about 1 mm. long; drupes 1-1.5 cm. long, 8-10 mm. broad, blue-black, on peduncles usually 1-3 cm. long, the endocarp flattened and costate with 8-10 obtuse ridges.

TYPE LOCALITY: None stated.

DISTRIBUTION: In the coastal plain from eastern Maryland to Florida, thence west to southeastern Louisiana; inland to central Georgia, Alabama, and Mississippi.

* As "*N. du. servatilis*."

ILLUSTRATIONS: Britton, N. Am. Trees 737; Britt. & Brown, Ill. Fl. 2: 547; ed. 2. 2: 666; Hough, Handb. Trees N. States 364, 365; Mathews, Field Book Am. Trees & Shrubs 337; Sarg. Man. 782; Sarg. Silva 5: pl. 218; C. K. Schneid. Handb. Laubh. 2: f. 305, c, d.

NOTE: This species probably hybridizes with *Nyssa sylvatica* in the southeastern coastal plain, since here we find plants which have leaves intermediate in character between those of the two species, variously combined with fruiting peduncles from 1 to 6 cm. long, and with variously marked endocarps.

3. *Nyssa ursina* Small, *Torreya* 27: 92. 1927.

Shrubs; branchlets at first pubescent, green or red, becoming glabrous and dark red and finally brown or dark grey; leaves often crowded on short lateral branches, the blades 2-7 cm. long, 0.7-1.3 cm. broad, coriaceous, elliptic to spatulate, rounded to obtuse at the apex, tapering to the base, glabrous; the under surface paler, minutely dotted and papillose-roughened; petioles 2-5 cm. long; peduncles from the axils of the cataphylls and of bracts on the proximal part of the branchlets, these sometimes foliaceous; staminate inflorescence a 2-4-flowered umbel on a peduncle 1-2 cm. long; pistillate inflorescence and flowers as in *Nyssa biflora* but smaller; drupes globose, about 1 cm. in diameter, black, on peduncles 1-2 cm. long, the endocarp oval, costate with several blunt ridges.

TYPE LOCALITY: Swamp north of Port St. Joe [Gulf County], Florida.

DISTRIBUTION: Known only from the Apalachicola River delta, Florida.

4. *Nyssa uniflora* Wangenh. *Beytr. Nordam. Holz.* 83. 1787.

Nyssa aquatica L. Sp. Pl. 1058, in part. 1753. (Nomen confusum.)

Nyssa denticulata Ait. Hort. Kew. 3: 446. 1789.

Nyssa palustris Salisb. Prodr. 175. 1796.

Nyssa angulisans Michx. Fl. Bor. Am. 2: 259. 1803.

Nyssa tomentosa Michx. Fl. Bor. Am. 2: 259. 1803.

? *Nyssa montana* Gaertn. Fruct. 3: 201. 1805.

Nyssa grandidentata Michx. f. Hist. Arb. Am. 2: 252. 1813.

Nyssa denticulata Pursh, Fl. Am. Sept. 1: 178. 1814.

Nyssa candicans var. *grandidentata* D. J. Browne, Trees Am. 426. 1857.

Trees to 30 m. high, often growing in water and the base of the trunk then much enlarged; branchlets red, at first tomentose, becoming glabrous and light brown or greyish and marked by large raised almost orbicular leaf-scars; bark of the trunk brownish, fissured in long scaly segments; leaf-blades commonly 10-15 cm. long, 6-8 cm. broad (sometimes to 25 cm. long and 10 cm. broad), ovate to broadly elliptic or obovate, sharply acuminate to a mucronate apex, cuneate to cordate at the base, entire or more commonly irregularly and remotely sinuate-dentate with mucronate teeth (occasionally merely undulate), glabrous above, the under surface paler, at first tomentose, later glabrous or sparsely pilose, very minutely dotted; petioles commonly 3-5 cm. long; peduncles clustered, mostly from the axils of the cataphylls, some from bracts (sometimes foliaceous) on the proximal part of the branchlets; staminate inflorescence a dense capitule on a bibracteate peduncle about 1.5 cm. long; petals 2-3 mm. long; pistillate flowers solitary, each subtended by several rufous-pubescent bracts 5-10 mm. long, the peduncle 2.5-3 cm. long; petals 4 mm. long; drupes 2.5-3 cm. long, about 1.5 cm. broad, oblong or obovoid, dark purple, crowned by the persistent calyx and disc, on a peduncle 6-10 cm. long, the endocarp compressed, with about 10 narrow alate ridges.

TYPE LOCALITY: None stated.

DISTRIBUTION: Virginia to Florida, west in the coastal plain to Texas, north in the Mississippi valley to southern Missouri and southern Illinois.

ILLUSTRATIONS: Britton, N. Am. Trees 740, f. 677; Britt. & Brown, Ill. Fl. 2: 547, f. 2723; ed. 2. 2: 666, f. 3194; H. Gibson, Am. For. Trees, pl. facing 337; Hough, Handb. Trees N. States 366, 367 (as *N. sylvatica*); Mathews, Field Book Am. Trees & Shrubs 337; Michx. f. Hist. Arb. Am. 2: pl. 19; Michx. f. N. Am. Sylva pl. 112; Sarg. Man. 784; Sarg. Silva 5: pl. 220; Wangenh. *Beytr. Nordam. Holz.* pl. 27, f. 57.

5. *Nyssa ogeche* Marsh. *Arbust.* 97. 1785.

Nyssa capitata Walt. Fl. Car. 253. 1788.

Nyssa tomentosa Poir. in Lam. Encyc. 4: 508. 1797.

Nyssa candicans Michx. Fl. Bor. Am. 2: 259. 1803.

Nyssa oye-chee Steud. Nom. Bot. Phan. 558. 1821.

Trees to 20 m. high, or shrubby; branchlets orange or reddish, puberulent, becoming grey, marked by conspicuous triangular leaf-scars; bark of the trunk dark brown, irregularly fissured, scaly; leaf-blades commonly 9–15 cm. long, 3–6 cm. broad, linear or oblong to oblanceolate or obovate, rounded or obtuse and apiculate at the apex, cuneate at the base, glabrous and shining above, the under surface paler and tomentose to villose on the midrib and often on the veins; petioles 0.5–1 cm. long; peduncles from the axils of the cataphylls and of bracts (these sometimes foliaceous) on the proximal part of the branchlets, and sometimes from the axils of the lower leaves; staminate inflorescence a dense capitule, on a pubescent bibracteate peduncle 1.5–2.5 cm. long; petals 1.5 mm. long, pubescent; pistillate flowers solitary, each subtended by several tomentose bracts, the peduncle 0.5–1.5 cm. long, tomentose; hypanthium about 2 mm. high, densely tomentose; petals 2 mm. long and broad, almost orbicular, pubescent on both surfaces; disc conical; drupes 2.5–3.5 cm. long, 1.5–2 cm. broad, red, crowned by the persistent conical disc, on peduncles about 1.5 cm. long, the endocarp compressed, with 10–12 alate papery ridges.

TYPE LOCALITY: None stated.

DISTRIBUTION: In the coastal plain, South Carolina to northern Florida, locally in western Florida.

ILLUSTRATIONS: Britton, N. Am. Trees 740; Michx. f. Hist. Arb. Am. 2: *pl.* 20; Michx. f. N. Am. Sylva *pl.* 113; Sarg. Man. 783; Sarg. Silva 5: *pl.* 219; C. K. Schneid. Handb. Laubb. 2: *f.* 304, *g-n*; 305, *e.*

6. *Nyssa acuminata* Small, Fl. SE. U. S. 852. 1903.

Nyssa ogeche var. *acuminata* Eyles, Castanea 6: 35. 1941.

Shrubs to 3 m. high; branchlets dark red, becoming brown, glabrous; leaves often crowded toward the ends of the branchlets, the blades commonly 6–12 cm. long, 2–3 cm. broad, linear or narrowly elliptic to oblanceolate, acute or acuminate to occasionally obtuse or rounded at the apex, apiculate, tapering to the base, glabrous or thinly tomentose or pilose on the midrib and larger veins on the under surface; petioles 0.5–1 cm. long; inflorescence and flowers unknown to the writer; drupes 2–3 cm. long, about 7 mm. broad, oval, red, tipped by the conical disc, on peduncles 5–10 mm. long from the axils of the cataphylls and of bracts on the proximal part of the branchlets, the endocarp like that of *Nyssa ogeche*.

TYPE LOCALITY: Darien Junction [Warsaw, McIntosh County], Georgia.

DISTRIBUTION: McIntosh and Charlton counties, Georgia.

ILLUSTRATION: Castanea 6: 33.

NOTE: The relationship between this and *Nyssa ogeche* is perhaps too close for specific distinction; but the restriction of its range and the occurrence of plants intermediate in character scarcely prove that it is, to use Eyles' words, "a local manifestation" of the latter species (Castanea 6: 35. 1941). Further evidence is needed for satisfactory disposition.

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| 1: 97-160. <i>pl. 39-58.</i> 1831. | 2: 49-192. <i>pl. 139-198.</i> 1838. |
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| 2: 1-60. <i>pl. 101-200.</i> 1774. | 5: 1-56. <i>pl. 401-450.</i> App. <i>pl. 1-50.</i> 1778. |
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[The plates were issued in parts of 25 plates each, without regard to the sequence later assigned to them.]

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| 2: 1-22. 1793. <i>pl. 201-454.</i> 1786-1793. |
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17-87. *pl. 26-100*. 1756. 195-220. *pl. 202-226*. 1759.

89-142. *pl. 101-150*. 1757. 221-262. *pl. 227-262*. 1760.

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[p. 1-11, a circular, in English and French. p. 12 bears title "Florula kentuckiensis. Catalogue of the principal trees, shrubs and plants of Kentucky." p. 17. "II. Catalogue. List of the useful plants, shrubs and trees either medical, tinctorial or economical, wanted for the Botanic Garden of Transylvania University." p. 20. "III. Catalogue. Alphabetical list of the ornamental, fragrant or singular plants, shrubs and trees, wanted by the Botanic Garden." Lists without descriptions or citations.]

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- Sargent, Charles Sprague, 1841-1927 (Sarg.).**
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2: 1-421. "1796." *pl. 1-358.***Schlechtendal, Diederich Franz Leonhard von, 1794-1866 (Schlecht.).***Linnaea* 9: 589-610. ?1834.—*De plantis mexicanis a G. Schiede M. Dre. collectis nuntium adfert.**Linnaea* 26: 365-384. Au 1854.—*De plantis variis mexicanis.***Schlechtendal, Diederich Franz Leonhard von, 1794-1866; Chamisso, Ludolf Adalbert von, 1781-1838 (Schlecht. & Cham.).***Linnaea* 5: 72-174. Ja 1830.—*Plantarum mexicanarum a cel. viris Schiede et Deppe collectarum recensio brevis.**Linnaea* 5: 206-298. Ap 1830.—*Plantarum mexicanarum a cel. viris Schiede et Deppe collectarum recensio brevis. (Continuatio.)***Schmidt, Friedrich, 1832-1908 (F. Schmidt).***Mém. Acad. St.-Pétersb.* VII. 12²: 1-227. *pl. 1-8.* Je 1868.—*Reisen im Amur-Lande und auf der Insel Sachalin. Botanischer Theil.***Schneider, Camillo Karl, 1876- (C. K. Schneid.).**Handb. Laubh. 1904-1912.—*Illustriertes Handbuch der Laubholzkunde.*1: 1-304. 1904. 2: 241-496. 1909.
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Bibl. Ind. 1–476. Mr 1878.—Bibliographical index to North American botany. Part I. Polypetalae.

Smithson. Misc. Coll. no. 258.

Bot. Calif. 2: 1–559. 1880.—Geological survey of California. Botany. Volume II.

Bot. King's Expl. 1–525. *pl.* 1–40. 1871.—United States geological exploration of the Fortieth Parallel. Clarence King, Geologist-in-charge. [Volume 5.] Botany.

Proc. Am. Acad. 11: 105–148. F 1876.—Botanical contributions. [Contributions to American botany. VI.]

- Proc. Am. Acad. 12: 246-278. 13 Je 1877.—Descriptions of new species of plants, with revisions of certain genera. [Contributions to American botany. VII.]
- Proc. Am. Acad. 14: 213-303. J1 1879.—Contributions to American botany. [IX.]
- Proc. Am. Acad. 17: 316-382. 10 Au 1882.—Contributions to American botany. [X.]
- Proc. Am. Acad. 18: 96-196. 23 Au 1883.—Contributions to American botany. [XI.]
- Proc. Am. Acad. 20: 324-378. 21 F 1885.—Contributions to American botany. [XII.]
- Proc. Am. Acad. 21: 414-468. 2 Je 1886.—Contributions to American botany [XIII.]
- Proc. Am. Acad. 22: 396-481. 25 Je 1887.—Contributions to American botany [XIV.]
- Proc. Am. Acad. 23: 249-287. 29 My 1888.—Contributions to American botany [XV.]
- Proc. Am. Acad. 25: 124-163. 25 S 1890.—Contributions to American botany [XVII.]
- Proc. Am. Acad. 26: 124-163. 31 J1 1891.—Contributions to American botany [XVIII].
- Watson, William, 1858-1925 (W. Wats. Kew).**
Gard. Chron. III. 63: 203, 204. f. 88. 18 My 1918.—Notes from Kew.—V.
- Weaver, John Ernst, 1884- (Weaver).**
Carn. Inst. Wash. Publ. 286: i-vii, 1-128. f. 1-58. pl. A-C, 1-30. 1919.—The ecological relations of roots.
- Weber, Georg Heinrich, 1752-1828 (Weber).**
- Weberbauer, August, 1871- (A. Weberb.).**
In Engler & Drude, Veg. Erde 12: 1-XII, 1-355. f. 1-63. pl. 1-40. maps 1, 2. 1911.—Die Pflanzenwelt der peruanischen Anden.
- Weston, Richard, 1732-1806 (Weston).**
Univ. Bot. 1770-1777.—The universal botanist and nurseryman: containing descriptions of the species and varieties of all the trees, shrubs, herbs, flowers, and fruits, natives and exotics: at present cultivated in the European nurseries, greenhouses, and stoves, or described by modern botanists; arranged according to the Linnaean system, with their names in English.
[Title-page also in Latin.]
1: i-xvi, 1-360. 1770.
2: i-xiv, 1-384. 1771.
3: 385-748. 1772.
4: 1-212, xvii-lxxx, [i]-[xxx], i-iii. expl. of pl. pl. 1-17. 1777.
- Wibel, August Wilhelm Eberhard Christoph, 1775-1814 (Wibel).**
Prim. Fl. Werth. 1-372. 1799.—Primitiae florum werthemensis.
- Wiggers, Friedrich Heinrich, (Wiggers).**
Prim. Fl. Holsat. 1-112. 29 Mr 1780.—Primitiae florum holsaticae quas praeside D. Ioh. Christiano Kefstems med. prof. ord. acad. imp. nat. cur. coll. pro summis in medicina honoribus publice defendet auctor Fridericus Henricus Wiggers husumensis.
[On dedication page the name is Wichers. In Praemonita: "nomina pleraque linnaeana sunt, relique celeberrimi praeceptoris Weberi, ex scriptis & praelectionibus eiusdem collecta . . ."]
- Wight, Robert, 1796-1872 (Wight).**
Ic. Pl. Ind. Or. 1838-1853.—Icones plantarum Indiae orientalis; or figures of Indian plants.
[In 6 volumes.]
2³: 1-10. pl. 515-631. ?1842.
- Wight, Robert, 1796-1872; Arnott, George Arnott Walker, 1799-1868 (Wight & Arn.).**
Prodr. Fl. Ind. Or. i-xxvii, 1-480. 1834.—Prodromus florum peninsulae Indiae orientalis: containing abridged descriptions of the plants found in the peninsula of British India, arranged according to the natural system.

Willdenow, Carl Ludwig, 1765-1812 (Willd.).

Sp. Pl. 1797-1830.—Caroli a Linné Species plantarum. Editio quarta, post Reichardianam quinta.

1:	1-722. 1797.	4:	1-629. 1805.
1:	723-1568. 1798.	4:	631-1157. 1806.
2:	1-823. 1799.	5 ¹ :	1-542. 1810.
2:	835-1340. 1800.	5 ² :	1-122. 1830.
3:	1-847. 1800.	6 ¹ :	1-161. 1824.
3:	849-1474. 1803.	6 ² :	1-128. 1825.
3:	1475-2409. 1804.		

[Vol. 5, part 2 by Schwaegrichen; Vol. 6 by Link.]

Willkomm, Heinrich Moritz, 1821-1895; Lange, Johan Martin Christian, 1818-1898 (Willk. & Lange).

Prodr. Fl. Hisp. 1861-1893.—Prodromus florae hispanicae seu synopsis methodica omnium plantarum in Hispania sponte nascentium vel frequentius cultarum quae innotuerunt. . . .

1:	i-xxx, 1-316. 1861.	3:	1-1144. 1880.
2:	1-680. 1870.	4:	i-x, 1-370. 1893.

Wilson, Ernest Henry, 1876-1930 (E. H. Wilson).

More Aristocr. i-xiv, 1-288. *illustr.* 1928.—More aristocrats of the garden. [43 unnumbered plates]

Wislizenus, Friedrich Adolph, 1810-1889 (Wisliz.).

Tour Northern Mex. 1-141. 1848.—Memoir of a tour to northern Mexico, connected with Col. Doniphan's expedition, in 1846 and 1847.

U. S. public document; 30th Congr., 1st Sess.; Senate; Misc. no. 26.

Wittmack, Marx Carl Ludewig, 1839-1929 (Wittm.).

Gartenflora 42: 344. *f.* 71. 1893.—*Oreopanax Sanderianum* Hemsley. [Anonymous.]

Wolff, Karl Friedrich August Hermann, 1866-1929 (H. Wolff).

In Engler, Pflanzenreich 43 (4²²⁸): 1-214. *f.* 1-23. 2 Au 1910. 61 (4²²⁸): 1-305. *f.* 1-42. 16 D 1913. 90 (4²²⁸): 1-398. *f.* 1-26. 29 Ap 1927.—Umbelliferae.

[One unnumbered plate at the end of Heft 61.]

Repert. Nov. Sp. 7: 274-279. 20 S 1909.—Species novae generis *Eryngii* Americae centralis et australis.

Repert. Nov. Sp. 7: 345, 346. 15 D 1909.—*Eryngium affine* nov. spec.

Repert. Sp. Nov. 8: 306-308. 1 Je 1910.—Umbelliferae [novae mexicanae].

Repert. Sp. Nov. 8: 414, 415. 10 Au 1910.—*Eryngia nova americana* duo.

Repert. Sp. Nov. 8: 524-526. 15 O 1910.—Umbelliferae novae I.

Repert. Sp. Nov. 9: 417-422. 15 Au 1911.—Umbelliferae novae. I.

Wood, Alphonso, 1810-1881 (Wood).

Bot. & Fl. 1-392. 1870.—The American botanist and florist. Part fourth, descriptive botany, being a simple analytical flora.

Class-Book ed. 1861. 1-829. 1861.—Class-book of botany.

Wooton, Elmer Ottis, 1865- ; Standley, Paul Carpenter, 1884- (Wooton & Standley).

Contr. U. S. Nat. Herb. 16: 109-196, vii-xi. *pl.* 48-50. 12 F 1913.—Descriptions of new plants preliminary to a report upon the flora of New Mexico.

Wright, Charles, 1811-1885 (C. Wright).**Yabe, Y., (Yabe).**

Jour. Coll. Sci. Univ. Tokyo 16⁴: 1-108. *pl.* 1-3. 30 My 1902.—Revisio Umbelliferarum japonicarum.

SERIALS *

- Act. Soc. Linn. Bordeaux**—Actes de la Société Linnéenne de Bordeaux. Vols. 4-88. 1830-1936.
 Vols. 1-3 (1826-1829) as Bulletin d'histoire naturelle de la Société Linnéenne de Bordeaux. Vols. 1-62 (1826-1908) also numbered in 7 series.
- Acta Hort. Petrop.**—Acta horti petropolitani. Vols. 1-44. 1871-1931.
- Acta Lit. Univ. Hafn.**—Acta literaria universitatis hafniensis. Vol. 1. 1778.
- Addisonia**—Addisonia. Colored illustrations and popular descriptions of plants. Vols. 1-22→. 1916-1945→.
- Allg. Bot. Zeits.**—Allgemeine botanische Zeitschrift. Vols. 1-33. 1895-1927.
- Am. Jour. Bot.**—American journal of botany. Vols. 1-32→. 1914-1945→.
- Am. Jour. Sci.**—The American journal of science and arts. Vols. 1-50. 1818-1845.
 Vol. 1. was entitled: The American journal of science, more especially of mineralogy, geology, and the other branches of natural history; including also agriculture and the ornamental as well as useful arts.
- Am. Jour. Sci. II.**—The American journal of science and arts. Second series. Vols. 1-50. 1846-1870.
- Am. Midl. Nat.**—The American midland naturalist. Vols. 1-31→. 1909-1945→.
 The first four issues (1: 1-104) as The midland naturalist.
- Am. Mo. Mag.**—The American monthly magazine and critical review. Vols. 1-4. 1817-1819.
- Am. Nat.**—The American naturalist. Vols. 1-79→. 1867-1945→.
- Anal. Acad. Ci. Habana**—Anales de la (Real) Academia de Ciencias médicas, físicas y naturales de la Habana. Vols. 1-74. 1864-1937.
- Anal. Ci. Nat.**—Anales de ciencias naturales. Vols. 3-7. 1801-1804.
 Continuation of Anales de historia natural.
- Anal. Hist. Nat.**—Anales de historia natural. Vols. 1, 2. 1799-1800.
 Continued as Anales de ciencias naturales.
- Anal. Soc. Ci. Argent.**—Anales de la Sociedad científica argentina. Vols. 1-139→. 1874-1945→.
- Anal. Soc. Esp. Hist. Nat.**—Anales de la Sociedad española de historia natural. Vols. 1-30. 1872-1901.
- Ann. Gén. Sci. Phys.**—Annales générales des sciences physiques. Vols. 1-8. 1819-1821.
- Ann. Inst. Col. Marseille**—Annales de l'Institut colonial de Marseille. Vols. 1-14. 1893-1906.
 Vol. 1 as Annales de l'Institut botanico-géologique colonial de Marseille. Beginning with Vol. 11 (1903), numbered also as 2e. série. Continued as Annales du Musée colonial de Marseille.
- Ann. Lyc. N. Y.**—Annals of the Lyceum of Natural History of New York. Vols. 1-11. 1823-1877.
 Superseded by Annals of the New York Academy of Sciences.
- Ann. Mo. Bot. Gard.**—Annals of the Missouri Botanical Garden. Vols. 1-32→. 1914-1945→.
- Ann. Mus. Bot. Lugd.-Bat.**—Annales musei botanici lugduno-batavi. Vols. 1-4. 1863-1870.
- Ann. Rep. N. Y. State Mus.**—Annual report of the New York State Museum (of Natural History). Vols. 24-72. 1872-1920.
 Continuation of: Annual Report of the Regents of the University of the State of New York on the condition of the State Cabinet of Natural History, and the historical and antiquarian collection annexed thereto.

* The inclusion of certain completed works (e.g. Bot. Mex. Bound. Surv.) as serials, while others (e.g. Engler, Pflanzenreich) are otherwise treated, arises in expediency of citation rather than in any logical distinction.

Under present conditions it is of course impossible to know whether many European and some American serials are "current." The marks in this list relating to this point are largely guesses.

- Ann. Sci. Nat. III.**—Annales de sciences naturelles. Troisième série. Botanique. Vols. 1–20. 1844–1853.
- Ann. Soc. Bot. Lyon.**—Annales de la Société botanique de Lyon. Vols. (Années) 1–43. 1873–1921.
Subsequently merged with Annales de la Société Linnéenne de Lyon.
- Ann. Soc. Linn. Lyon II.**—Annales de la Société Linnéenne de Lyon. Nouvelle série. Vols. 1–80. 1853–1937.
- Arch. Bot.**—Archiv für die Botanik. Vols. 1–3. 1796–1799.
- Archivio Bot.**—Archivio botanico. Vols. 1–15. 1925–1939.
Vols. 1, 2 were entitled Archivio botanico per la sistemática, fitogeografia e genetica (storica e sperimentale) e *Bullettino dell'Istituto Botanico della R. Università di Modena*. Vols. 11–15 (1935–1939) numbered also as nuova serie, Vols. 1–5.
- Ark. Bot.**—Arkiv för botanik. Vols. 1–31→. 1903–1944→.
- Atl. Jour.**—Atlantic journal, and friend of knowledge. 1832–1833.
Edited, published, and almost entirely written by Rafinesque.
- Auk**—The auk. A quarterly journal of ornithology. Vols. 1–61→. 1884–1944→.
Continuation of Bulletin of the Nuttall Ornithological Club.
- Beih. Bot. Centr.**—Beihefte zum Botanischen Centralblatt. Vols. 1–60→. 1891–1904→.
- Beitr. Pfl. Russ. Reich.**—Beiträge zur Pflanzenkunde des Russischen Reiches. Parts 1–11. 1844–1859.
Title also in Russian.
- Belg. Hortic.**—La Belgique horticole, journal des jardins, des serres et des vergers. Vols. 1–35. 1851–1886.
Vols. 15–24 as: *La Belgique horticole. Annales d'horticulture belge et étrangère*. Vols. 25–35 as: *La Belgique horticole. Annales de botanique et d'horticulture*.
- Ber. Deuts. Bot. Ges.**—Berichte der Deutschen Botanischen Gesellschaft. Vols. 1–69→. 1883–1941→.
- Bibl. Univ. Sci. & Arts**—Bibliothèque universelle des sciences, belles-lettres et arts. Sciences et arts [series]. Vols. 1–60. 1816–1835.
Continuation of Bibliothèque britannique; continued as Bibliothèque universelle de Genève. Besides the series entitled *Sciences et arts*, there were two others, dealing with literature and with agriculture.
- Biol. Abstr.**—Biological abstracts. Vols. 1–19→. 1926–1945→.
- Boissiera**—Boissiera. Fasc. 1–7→. 1936–1943→.
"Supplément de Candollea." Largely extracted from other publications.
- Bonplandia**—Bonplandia. Zeitschrift für die gesammte Botanik. Vols. 1–10. 1853–1862.
- Bost. Jour. Nat. Hist.**—Boston journal of natural history. Vols. 1–7. 1834–1863.
- Bot. Cab.**—The botanical cabinet. *pl. 1–2000*. 1817–1853.
In 20 volumes.
- Bot. Calif.**—Geological Survey of California. Botany. Vols. 1, 2. 1876–1880.
- Bot. Gaz.**—The botanical gazette. Vols. 2–106→. 1876–1945→.
Continuation of (Vol. 1) Botanical bulletin.
- Bot. Jahrb.**—Botanische Jahrbücher für Systematik, Pflanzengeschichte und Pflanzengeographie. Vols. 1–71→. 1880–1941→.
- Bot. Mag.**—Curtis's botanical magazine (or, flower-garden displayed). Vols. 1–164→ (*pl. 1–9666*→). 1787–1944→. General indexes [to Vols. 1–53, 1787–1826]. 1828. A new and complete index [to Vols. 1–130, 1787–1904]. 1906.
Vols. 1–14 were entitled: The botanical magazine, or flower-garden displayed. The last four words were dropped in 1845, with Vol. 71. Various explanatory phrases have also formed part of the title.
Vols. 54–70 (1826–1844) were also numbered as New series, Vols. 1–17; Vols. 71–130 (1845–1904) as Series III, Vols. 1–60; Vols. 131–146 (1905–1920) as Series IV, Vols. 1–16.

- Bot. Mag. Tokyo**—The botanical magazine. Vols. 1-55. 1887-1941.
Vols. 1-10 have title-pages in Japanese only, but at least some covers in English. Vols. 11-16 were "edited by the Tokyo Botanical Society." Vols. 17-45 were "published by the Tokyo Botanical Society." Vols. 46-55 were "published by the Botanical Society of Japan."
- Bot. Mex. Bound. Surv.**—Report on the United States and Mexican Boundary Survey. Volume II. Part I. Botany of the boundary. 1-270, 1-78. Ap 1859.
- Bot. Misc.**—Botanical miscellany. Vols. 1-3. 1829-1833.
See Kew Bull. 1936: 85-94.
- Bot. Surv. Nebr.**—University of Nebraska. Botanical survey of Nebraska. Vols. 1-7. 1892-1904.
Later issues (New series) were reprinted from other serials.
- Bot. Zeit.**—Botanische Zeitung. Vols. 1-68. 1843-1910.
- Brittonia**—Brittonia. A series of botanical papers. Vols. 1-5→. 1931-1945→.
- Bull. Acad. Belg. II.**—Bulletins de l'Académie royale des sciences, des lettres et des beaux-arts de Belgique, 2me série. Vols. 1-50. 1857-1881.
- Bull. Bot. Seringe**—Bulletin botanique ou collection de notices originales et d'extraits des ouvrages botaniques . . . par N. C. Seringe. 1830-1832.
- Bull. Calif. Acad.**—Bulletin of the California Academy of Science. Vols. 1, 2. 1884-1887.
- Bull. Calif. Exp. Sta.**—University of California. (College of Agriculture.) Agricultural Experiment Station. Bulletin. Nos. 1-690→. 1874-1945→.
- Bull. Colo. Exp. Sta.**—Colorado Agricultural Experiment Station. Colorado State College. Bulletin. Nos. 1-486→. 1890-1944→.
Title varies.
- Bull. Herb. Boiss. II.**—Bulletin de l'Herbier Boissier. 2me série. Vols. 1-8. 1900-1909.
- Bull. N. Y. Bot. Gard.**—Bulletin of the New York Botanical Garden. Vols. 1-13. 1896-1929.
- Bull. N. Y. Publ. Lib.**—Bulletin of the New York Public Library. Vols. 1-49→. 1897-1945→.
- Bull. N. Y. State Mus.**—Museum bulletin. Education department bulletin. N. Y. State Museum. Nos. 1-327. 1887-1942.
Different numbers are assigned each bulletin as a Museum bulletin and as an Education department bulletin. The title has varied greatly. Nos. 1-54 were numbered also as Vols. 1-10 (1887-1902). Nos. 1-46 were entitled Bulletin of the New York State Museum (of Natural History). The present title begins with no. 119.
No. 1 is dated Mr 1892; no. 2 is dated 1887.
- Bull. So. Calif. Acad.**—Bulletin of the Southern California Academy of Sciences. Vols. 1-44→. 1902-1945→.
- Bull. Soc. Bot. Fr.**—Bulletin de la Société botanique de France. Vols. 1-86. 1854-1939.
- Bull. Soc. Bot. Genève II.**—Bulletin de la Société botanique de Genève. 2me série. Vols. 1-23→. 1909-1942→.
- Bull. Soc. Nat. Mosc.**→Bulletin de la Société impériale des naturalistes de Moscou. Vols. 1-62. 1829-1887.
- Bull. Soc. Nat. Mosc. II.**—Bulletin de la Société (impériale) des naturalistes de Moscou. Nouvelle série. Vols. 1-47→. 1887-1938→.
In two sections (biologique, géologique) since 1917. Title also in Russian from that time.
- Bull. Torrey Club**—Bulletin of the Torrey Botanical Club. Vols. 1-72→. 1870-1945→.
- Bull. U. S. Dep. Agr.**—U. S. Department of Agriculture. Bulletin. Nos. 1-1500. 1913-1929. Index of Department Bulletins. 1936.
Nos. 1-226 as Bulletin of the U. S. Department of Agriculture.
- Bull. U. S. Dep. Agr. Bot.**—(U. S.) Department of Agriculture. Division of Botany. Bulletin. Nos. 1-29. 1886-1901.
Earlier numbers have "Botanical Division."
- Bull. U. S. Dep. Agr. Pl. Ind.**—U. S. Department of Agriculture. Bureau of Plant Industry—Bulletin. Nos. 1-285. 1901-1913.
- Bull. U. S. Nat. Mus.**—Smithsonian Institution. United States National Museum. Bulletin. Nos. 1-185→. 1875-1944→.

- Bull. Univ. Mont. Biol.**—Bulletin of the University of Montana. Biological series. Nos. 1-15. 1901-1910.
- Bull. W. Va. Exp. Sta.**—Agricultural Experiment Station. College of Agriculture, Forestry, and Home Economics. West Virginia University. Bulletin. Nos. 1-315→. 1888-1943→.
- Canad. Dep. Agr. Farms. Bull. II.**—Canada. Department of Agriculture. Farmers' Bulletin. Nos. 1-128→. 1936-1945→.
- Carn. Inst. Wash. Publ.**—Carnegie Institution of Washington. Publications. Vols. 1-550→. 1902-1943→.
- Castanea**—Castanea. The journal of the Southern Appalachian Botanical Club. Vols. 1-10→. 1936-1945→.
- Colo. Expl. Exp.**—Report upon the Colorado River of the West, explored in 1857 and 1858 by Lieutenant Joseph C. Ives, Corps of Topographical Engineers. Vols. 1-5. App. A-D. 1860-1861.
- Comp. Bot. Mag.**—Companion to the Botanical magazine. Vols. 1, 2. 1835-1837. See Kew Bull. 1933: 362-364.
- Contr. Bot. Lab. Univ. Pa.**—Contributions from the botanical laboratory (and the Morris Arboretum) of the University of Pennsylvania. Vols. 1-14→. 1892-1939→. Vols. 1, 2 as: Publications of the University of Pennsylvania. Contribution from the botanical laboratory.
- Contr. Gray Herb.**→Contributions from the Gray Herbarium of Harvard University. (New series.) Nos. 1-152→. 1891-1944→. The early numbers were mostly reprinted from other serials; beginning with no. 52 many are original publications. The words "new series" appear only occasionally after no. 75.
- Contr. Herb. Frankl. & Marsh.**—Contributions from the herbarium of Franklin and Marshall College, Lancaster, Pa. Vol. 1. 1895.
- Contr. U. S. Nat. Herb.**—Contributions from the United States National Herbarium. Vols. 1-29→. 1890-1945→.
- Denks. Bot. Ges. Regensb.**—Denkschriften der Königlich-(bairischen) botanischen Gesellschaft in Regensburg. Vols. 1-6. 1815-1890. Vols. 7-12 (Neue Folge, Vols. 1-6). 1898-1913. The title appears as Denkschriften der Kgl. bayr. botanischen Gesellschaft; der K. bayer. botanischen Gesellschaft; etc.
- Edinb. Jour. Sci.**—Edinburgh journal of science. Vols. 1-10. 1824-1829.
- Erythea**—Erythea, a journal of botany, West American and general. Vols. 1-8. 1893-1922.
- Field Mus. Publ. Bot.**—Publications of Field Museum of Natural History. Botanical Series. Vols. 1-23. 1895-1944. Vols. 1, 2 as Publications of the Field Columbian Museum. Individual parts are entitled: Field Museum of Natural History. Publication. Botanical Series.
- Fl. Dan.**—Icones plantarum sponte nascentium in regno Daniae et Norvegiae, in ducatibus Slesvici et Holsatiae, et in comitatibus Oldenburgi et Delmenhorstiae: ad illustrandum opus. . . . Florae danicae nomine inscriptum. Nos. 1-51 (*pl. 1-3060*). 1761-1883.
- Fl. Dan. Suppl.**—Icones plantarum sponte nascentium in regnis Sueciae et Norvegiae, supplementum operis Florae danicae nomine inscripti. Nos. 1-3 (*pl. 1-180*). 1833-1874.
- Flora**—Flora, oder (allgemeine) botanische Zeitung. Vols. 1-136→. 1818-1943→. Allgemeines Sach- und Namen-Register [to Vols. 1-25]. 1851. Vols. 26-75 (1843-1892) form Neue Reihe, Vols. 1-30. Vols. 101-136 (1910-1943) are also numbered as Neue Folge, Vols. 1-36.
- Gard. Chron. III.**—The gardeners' chronicle. Third series. Vols. 1-117→. 1887-1945→.
- Garden**—The Garden. Vols. 1-91. 1871-1927.
- Garden & Forest**—Garden and Forest. Vols. 1-10. 1888-1897.
- Gartenflora**—Gartenflora. Vols. 1-83. 1852-1934.
- Ges. Nat. Freunde Berlin Mag.**—Der Gesellschaft naturforschender Freunde zu Berlin. Magazin für die neusten Entdeckungen in der gesammten Naturkunde. Vols. 1-8. 1807-1818.

- Hook. Ic.**—(Hooker's) *Icones plantarum*; or figures . . . of new or rare plants, selected from the Kew herbarium. Vols. 1-35→ (*pl. 1-3425*→). 1837-1940→.
Vols. 1-10 had "from the author's herbarium. By Sir William Jackson Hooker."
The volumes are numbered also in 5 series.
- Jour. Acad. Phila.**—Journal of the Academy of Natural Sciences of Philadelphia. Vols. 1-8. 1817-1842.
- Jour. Acad. Phila. II.**—Journal of the Academy of Natural Sciences of Philadelphia. Second series. Vols. 1-16. 1847-1918.
- Jour. Arnold Arb.**—Journal of the Arnold Arboretum. Vols. 1-26→. 1920-1945→.
- Jour. Bot.**—The journal of botany, British and foreign. Vols. 1-80→. 1863-1942→.
- Jour. Bot. Schrad.**—Journal für die Botanik. Herausgegeben von Medicinalrath Schrader. 1799-1801. 1799-1803.
- Jour. Coll. Sci. Univ. Tokyo**—Journal of the College of Science, Imperial University (of Tokyo), (Japan). Vols. 1-45. 1887-1925.
Continued as Journal of the Faculty of Science, Imperial University of Tokyo; in 5 sections.
- Jour. de Bot. Desv.**—Journal de botanique, rédigée par une société de botanistes. Vols. 1, 2. 1808, 1809.
Edited by Nicaise Auguste Desvaux.
- Jour. de Phys.**—Journal de physique, de chimie, d'histoire naturelle et des arts. Vols. 1-96. 1773-1823.
- Jour. Linn. Soc.**—Journal of the Linnean Society (of London). Botany. Vols. 1-52→. 1856-1944→.
Vols. 1-8 as Journal of the proceedings of the Linnean Society.
- Jour. Russe Bot.**—Journal russe de botanique. 1908-1915.
Title also in Russian.
- Jour. Soc. Bibl. Nat. Hist.**—The Journal of the Society for the Bibliography of Natural History. Vol. 1¹¹→. 1936-1940→.
- Jour. Wash. Acad.**—Journal of the Washington Academy of Sciences. Vols. 1-35→. 1911-1945→.
- Kew Bull.**—Royal (Botanic) Gardens, Kew. Bulletin of miscellaneous information. 1887-1941→.
- Leafl. W. Bot.**—Leaflets of western botany. Vols. 1-4→. 1932-1945→.
- Linn. Samf. Handl.**—Linnéiska samfundet handlingar. Vol. 1. 1832.
- Linnaea**—Linnaea. Ein Journal für die Botanik in ihrem ganzen Umfange. Vols. 1-43. 1826-1882.
- Lond. Jour. Bot.**—The London journal of botany. Vols. 1-7. 1842-1848.
- Madroño**—Madroño. A West American journal of botany. Vols. 1-8→. 1916-1945→.
Vols. 1, 2 as: Madroño. Journal of the California Botanical Society.
- Mazama**—Mazama. A record of mountaineering in the Pacific Northwest. Vols. 1-27→. 1896-1945→.
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COMPLETED VOLUMES

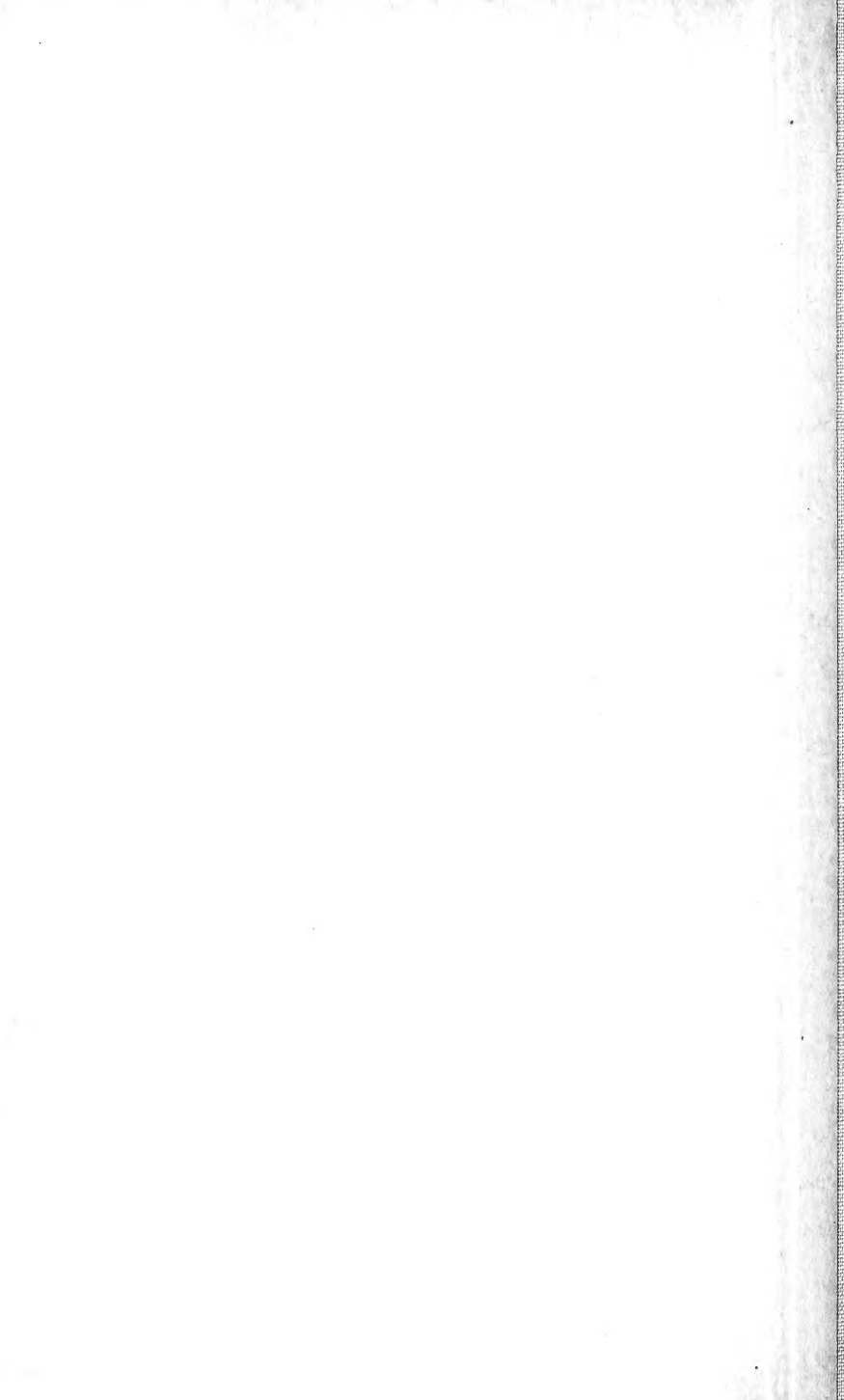
- 9: i-iv, 1-542. (Agaricales:) Polyporaceae (pars), Boletaceae, Agaricaceae (pars). Complete in 7 parts.
- 7: i-iv, 1-1151. Ustilaginales: Ustilaginaceae, Tilletiaceae. Uredinales: Coleosporiaceae, Uredinaceae, Aecidiaceae. Complete in 15 parts.

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- 3¹: 1-88. Hypocreales: Nectriaceae, Hypocreaceae. Fimetaryales: Chaetomiaceae, Fimetaryaceae.
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- 16¹: 1-88. Ophioglossales: Ophioglossaceae. Marattiales: Marattiaceae. Filicales: Osmundaceae, Ceratopteridaceae, Schizaeaceae, Gleicheniaceae, Cyatheaceae (pars).
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- 22¹: 1-80. Rosales: Podostemonaceae, Crassulaceae, Penthoraceae, Parnasiaceae. 22²: 81-191. Saxifragaceae, Hydrangeaceae, Cunoniaceae, Iteaceae, Pterostemonaceae, Hamamelidaceae, Altingiaceae, Phyllonomaceae. 22³: 193-292. Grossulariaceae, Platanaceae, Crossosomataceae, Connaraceae, Calycanthaceae, Rosaceae (pars). 22⁴: 293-388. 22⁵: 389-480. 22⁶: 481-560. Rosaceae (pars).
- 23¹: 1-76. 23²: 77-136. 23³: 137-194. (Rosales:) Mimosaceae. 23⁴: 195-268. Krameriaceae, Caesalpiniaceae (pars). 23⁵: 269-349. Caesalpiniaceae (pars).
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