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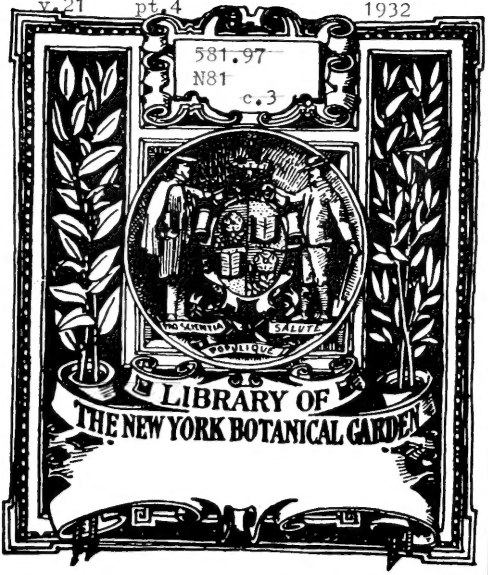
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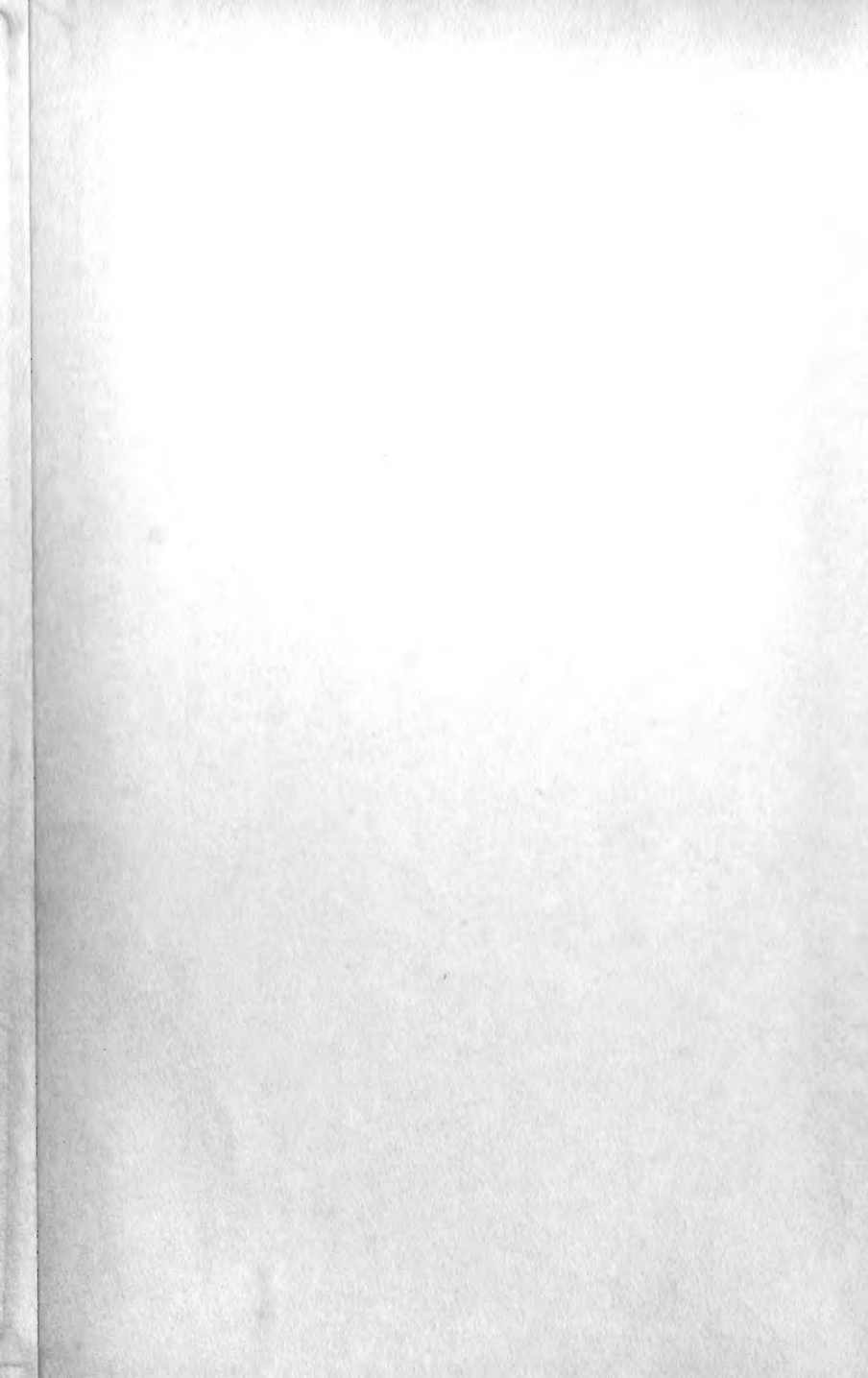
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1932







NORTH AMERICAN FLORA

(CHENOPODIALES)

BATIDACEAE, PETIVERIACEAE, TETRAGONIACEAE, BASELLACEAE

PERCY WILSON

PORTULACACEAE

PER AXEL RYDBERG

TALINUM, TALINARIA, TALINOPSIS, PORTULACA

PERCY WILSON



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Family 4. BATIDACEAE

BY PERCY WILSON

Maritime shrubs, with prostrate or ascending branched stems. Leaves opposite, sessile, semi-terete, fleshy. Flowers small, dioecious, in axillary strobiles. Staminate strobiles 8-12-flowered, with persistent imbricate scales, each subtending a flower; perianth cup-shaped, 2-lobed; stamens 4 or 5, inserted at the base of the perianth; filaments stout, alternating with staminodia; anthers 2-celled, introrse. Pistillate strobile 4-12-flowered, the scales deciduous; perianth wanting; ovary sessile, 4-celled; stigma sessile; ovules 1 in each cavity, erect, anatropous. Fruit with spongy pericarp. Seeds with a membranous testa; endosperm none; cotyledons oblong, fleshy.

1. *BATIS* [P. Br.] L. Syst. Nat. ed. 10. 1289, 1380. 1759.

Characters of the family.

Type species, *Batis maritima* L.

1. *Batis maritima* L. Syst. Nat. ed. 10. 1289. 1759.

Batis californica Torr. Obs. Batis 8. 1853.

A glabrous shrub, with ascending or prostrate branches 0.5-1.5 m. long; leaves linear or linear-oblongate, 1-3.6 cm. long, acutish; strobiles solitary in the axils along the branches, ellipsoid, ovoid, or cylindrical, 0.3-1.6 cm. long, the staminate mostly sessile, the pistillate short-peduncled; bracts reniform or suborbicular, longer than the perianth; stamens exserted, longer than the triangular staminodia; fruit ellipsoid or cylindrical, 1-2.5 cm. long.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: North Carolina to Florida and Texas; California; Mexico; Central America; West Indies; also in Hawaii and South America.

ILLUSTRATIONS: Torr. Obs. Batis pl. 11; Fawcett & Rendle, Fl. Jam. 3: f. 7; Mart. Fl. Bras. 3^e: pl. 126; E. & P. Nat. Pl. 3^{me}: f. 71; Jacq. Sel. Stirp. Am. pl. 40, f. 4; Jacq. Sel. Stirp. Pict. pl. 246; Lam. Tab. Encyc. pl. 806; Hutchinson, Fam. Fl. Pl. f. 62; Le Maout & Dec. Traité Gén. 454; ed. 2. 466; Schnizl. Ic. pl. 241*; Baillon, Dict. Bot. 1: 383; Baillon, Hist. Pl. 9: f. 299-301; Descourt. Pl. Ant. pl. 496; Lindl. Veg. Kingd. 198; A. W. Schimp. Pfl.-Geog. f. 10; Bot. Tidssk. 22: pl. 9; 29: f. 18.

EXCLUDED SPECIES

BATIS AMERICANA L. Mant. 2: 499. 1771. Error for *Trophis americana* L.

BATIS ? *VERMICULATA* Hook. Fl. Bor. Am. 2: 128. 1838 = *Sarcobatus vermiculatus* (Hook.) Torr.



Family 5. PETIVERIACEAE

By PERCY WILSON

Herbs, sometimes woody at the base, or unarmed or occasionally spiny shrubs or trees. Leaves alternate. Stipules absent or minute. Flowers perfect or unisexual, in terminal or axillary racemes, or rarely in panicles. Sepals 4 or 5, equal or unequal, often persistent in fruit. Petals wanting, or rarely 5. Stamens 3 to many; filaments free or united at the base; anthers 2-celled. Disc present or wanting. Gynoecium 1- to many-carpellary, the carpels free or connate; ovary superior or partly inferior; styles as many as the carpels, free or rarely connate, or nearly wanting; stigmas capitate, penicillate or papillose; ovule solitary in each carpel, campylotropous. Fruit drupe-like, berry-like, achene-like, or capsular. Seed erect, often compressed; testa membranaceous or crustaceous; aril wanting, or rarely present; embryo annular, semi-annular or erect; cotyledons incumbent, foliaceous and plicate-convolute or linear and semicylindric; radicle elongate.

Ovary superior.

Petals wanting; fruit baccate or achene-like.

Gynoecium 1- or 2-carpellary, rarely 3-carpellary; ovary 1-celled; ovule 1.

Flowers perfect.

Fruit drupe-like; stigma 1.

Stamens 4; erect herbs; stigma capitate.

Stamens 8 or more; woody vines; stigma penicillate.

Fruit dry.

Stamens 12; shrubs or small trees; stigma 1, penicillate.

Stamens 3-9, herbs.

Fruit elongate, bearing 3-6 hooked bristles at the top;

sepals 4; stigma solitary, penicillate.

Fruit subglobose, echinate or smooth; sepals 5, rarely 4;

stigmas 2, linear.

Flowers unisexual; stigmas 2, rarely 3, linear or filiform; fruit drupe-like.

Sepals 4, rarely 5; tips of the branches spinescent.

Sepals 5; tips of the branches not spinescent; unarmed or armed trees or shrubs.

Gynoecium 5-16-carpellary.

Petals 5; ovary 1-celled; ovules 3-5; stigmas 3-5; fruit a capsule; shrub or woody vine.

Ovary partly inferior, 3- or 4-celled; stigmas 3 or 4; fruit indehiscent; vine.

1. RIVINA.
2. TRICHOSTIGMA.

3. FLUECKIGERA.

4. PETIVERIA.

5. MICROTEA.

6. PHAULOTHAMNUS.

7. ACHATOCARPUS.

8. PHYTOLACCA.

9. STEGNOSPERMA.

10. AGDESTIS.

1. RIVINA [Plumier] L. Sp. Pl. 121. 1753.

Rivina L. Gen. Pl. ed. 5. 57. 1754.

Piercea Mill. Gard. Dict. ed. 7. 1759.

Solanoides Tourn.; Moench. Meth. 307. 1794.

Tithonia [L.] Kuntze, Rev. Gen. 552. 1891.

Erect herbs, sometimes woody below. Leaves alternate. Flowers small, perfect, in axillary or terminal racemes. Sepals 4, erect in fruit. Stamens 4; filaments filiform; anthers dorsifixed. Ovary 1-carpellary, 1-celled; style short, sometimes curved; stigma capitate; ovule 1. Fruit small, drupe-like. Seed erect; testa crustaceous, smooth or hairy; embryo annular; endosperm mealy; cotyledons convolute; radicle stout.

Type species, *Rivina humilis* L.

1. *Rivina humilis* L. Sp. Pl. 121. 1753.

- Rivina humilis canescens* L. Sp. Pl. 122. 1753.
Rivina humilis glabra L. Sp. Pl. 122. 1753.
Rivina laevis L. Mant. 41. 1767.
Piercea glabra Mill. Gard. Dict. ed. 8. Piercea no. 1. 1768.
Piercea tomentosa Mill. Gard. Dict. ed. 8. Piercea no. 2. 1768.
Solanoides pubescens Moench, Meth. 307. 1794.
Solanoides laevis Moench, Meth. 307. 1794.
Solanoides undulata Moench, Meth. Suppl. 106. 1802.
? *Rivina purpurascens* Schrad. Gen. Pl. 17. 1808.
Rivina glabrata H.B.K. Nov. Gen. & Sp. 2: 184. 1817.
Rivina portulacoides Nutt. Trans. Am. Phil. Soc. II. 5: 167. 1837.
Rivina acuminata Raf. New Fl. 4: 13. 1838. Not *R. acuminata* H.B.K. 1817.
Piercea acuminata Raf. New Fl. 4: 13. 1838.
Piercea obliquata Raf. New Fl. 4: 13. 1838.
Piercea obliquata Raf. New Fl. 4: 13. 1838.
Piercea canescens G. Don; Steud. Nom. Bot. ed. 2. 2: 460. 1841.
Rivina laevis acuminata Moq. in DC. Prodr. 13²: 12. 1849.
Rivina purpurascens mollis Moq. in DC. Prodr. 13²: 13. 1849.
Rivina humilis plumbaginifolia Moq. in DC. Prodr. 13²: 13. 1849.
Rivina plumbaginifolia Willd.; Moq. in DC. Prodr. 13²: 13, as synonym. 1849.
Rivina mexicana Moc. & Sessé; Moq. in DC. Prodr. 13²: 14. 1849.
Rivina laevis pubescens Griseb. Fl. Brit. W. Ind. 59. 1859.
Rivina viridiflora Bello, Anal. Soc. Esp. Hist. Nat. 12: 105. 1883.
Tithonia humilis Kuntze, Rev. Gen. 552. 1891.
Tithonia humilis canescens f. *albiflora* Kuntze, Rev. Gen. 552. 1891.
Tithonia humilis glabra Kuntze, Rev. Gen. 552. 1891.
Rivina humilis laevis Millsp. Field Mus. Publ. Bot. 2: 41. 1900.

Plant 3-9 dm. high, the stems and foliage glabrous or pubescent; leaf-blades ovate to oblong or lanceolate, 2.5-12 cm. long, 1.5-6 cm. broad, membranous, undulate or entire, acuminate or acute at the apex, narrowed or subtruncate at the base, the petioles 0.9-7 cm. long; racemes slender, 4-20 cm. long, several- to many-flowered; pedicels slender, 3-5 mm. long; sepals greenish, pinkish, or purple, oblong-cuneate, 2-2.2 mm. long, 0.7-0.8 mm. broad, obtuse; stamens shorter than the sepals; filaments 1.2-1.4 mm. long; anthers 0.6-0.7 mm. long, cordate at the base; fruit 4-4.5 mm. in diameter, red or yellowish; seed 2.5-3 mm. long.

TYPE LOCALITY: Not given.

DISTRIBUTION: Florida to Oklahoma and Texas; Mexico; Central America; West Indies; also in South America and the Old World tropics.

ILLUSTRATIONS: Engler, Pflanzenreich 4⁸³: f. 30; Fawcett & Rendle, Fl. Jam. 3: f. 53; Baillon, Hist. Pl. 4: f. 45-50; Lam. Tab. Encyc. pl. 81, f. 1; Payer, Organog. pl. 63, f. 1; Pluk. Phyt. pl. 112, f. 2; J. Comm. Horti Amst. Rar. Pl. 1: pl. 66; Schrad. Gen. Pl. pl. 5; Moc. & Sessé, Calc. Dess. pl. 1095; Bot. Mag. pl. 2333; Rendle, Classif. Fl. Pl. 2: f. 50; Mart. Fl. Bras. 14²: pl. 76; Addisonia pl. 410; Cycl. Am. Hort. f. 2134; Stand. Cycl. Hort. f. 3412.

2. *TRICHOSTIGMA* A. Rich. in Sagra, Hist. Cuba 10: 306. 1845.

Villamilla R. & P.; Benth. & Hook. Gen. Pl. 3: 81. 1880.

Woody vines, or shrubs. Leaves alternate, the blades entire. Flowers perfect, in terminal and axillary many-flowered racemes; bracts deciduous; bractlets subterminal, persistent. Sepals 4, concave, spreading or reflexed in fruit. Stamens 8-25; filaments cylindrical or very short; anthers dorsifixed. Ovary 1-carpellary, 1-celled; style short; stigma sessile, penicillate; ovule 1. Fruit drupe-like, subglobose; testa crustaceous; embryo annular; endosperm farinaceous; cotyledons curved; radicle stout.

Type species, *Trichostigma rivinoides* A. Rich.

Stamens 8-12; filaments filiform, 2 mm. or more long.

Stamens 20-25; filaments short, less than 1 mm. long.

1. *T. octandrum*.

2. *T. polyandrum*.

1. *Trichostigma octandrum* (L.) H. Walt. in Engler, Pflanzenreich 4⁸³: 109. 1909.

- Rivina humilis scandens* L. Sp. Pl. 122. 1753.
Rivina octandra L. Cent. Pl. 2: 9. 1756.
Rivina dodecandra Jacq. Obs. Bot. 1: 6. 1764.
Rivina scandens Mill. Gard. Dict. ed. 8. Rivinia no. 2. 1768.
Rivina americana Raf. Fl. Tell. 3: 56. 1837.

Trichostigma ricinoides A. Rich. in Sagra, Hist. Cuba 10: 306. 1845.
Ricina octandra obtusifolia Moq. in DC. Prodr. 13: 11. 1849.
Villamilla octandra Hook. f.; Benth. & Hook. Gen. Pl. 3: 81. 1880.

A glabrous woody vine, sometimes 10 m. or more long, climbing on shrubs and low trees, the branches long and slender; leaf-blades oblong, elliptic, elliptic-lanceolate, or rarely ovate, membranous, 4-15 cm. long, 1.5-5.8 cm. broad, acute to acuminate, rarely obtuse at the apex, narrowed or sometimes rounded at the base, entire; petioles 0.6-3.5 cm. long; racemes loosely many-flowered, as long as the leaves or longer; pedicels 3-9 mm. long; bracts lanceolate, about 2 mm. long; bractlets triangular or triangular-lanceolate, terminal, 0.5 mm. long; sepals greenish-white, ovate, obtuse, 3.5-4 mm. long, 2.5-3 mm. broad, at length reflexed; stamens 8-12; fruit subglobose, black, 5.5-6 mm. in diameter; seed compressed, 4-5 mm. long, black, shining.

TYPE LOCALITY: Tropical America.

DISTRIBUTION: Southern peninsular Florida and the Keys; West Indies; Mexico; Central America; also in South America.

ILLUSTRATIONS: Jacq. Obs. Bot. pl. 2; Jacq. Sel. Stirp. Pict. pl. 21; Engler, Pflanzenreich 4⁸²: f. 31; P. Br. Hist. Jam. pl. 23, f. 2; Fawcett & Rendle, Fl. Jam. 3: f. 54; Plumier, Pl. Am. pl. 241.

2. *Trichostigma polyandrum* (Loesener) H. Walt. in Engler, Pflanzenreich 4⁸³: 112. 1909.

Ricina polyandra Loesener, Bot. Jahrb. 23: 123. 1896.
Villamilla polyandra H. Walt. Bot. Jahrb. 37: Beibl. 85: 24. 1906.

A weak shrub or woody vine, with slender branches; leaf-blades elliptic to oval or somewhat obovate, 6-15 cm. long, 2-8.5 cm. broad, acuminate to long-acuminate at the apex, acute at the base; petioles 1-3 cm. long, channeled above, glabrous; inflorescence loosely racemose, slender, 0.8-2.5 dm. long; pedicels somewhat angled, glabrous or pubescent, 5-12 mm. long; bracts lanceolate, 1.5-2 mm. long; bractlets small, subterminal; sepals greenish, becoming purplish-red in fruit, elliptic, oval, or ovate, 5-6 mm. long, 2.5-3 mm. broad, reflexed in fruit; stamens 20-25; anthers oblong-linear, 1.8-2 mm. long; ovary glabrous; style short; fruit purple-black, 4.5-5.5 mm. in diameter; seed compressed, 4 mm. long.

TYPE LOCALITY: Department of Matagalpa, Nicaragua.

DISTRIBUTION: Central America.

3. *FLUECKIGERA* Kuntze, Rev. Gen. 550. 1891.

Ladenbergia Klotzsch; Moq. in DC. Prodr. 13: 14. 1849. Not *Ladenbergia* Klotzsch, 1846.

Shrubs or small trees, with alternate leaves. Flowers perfect, racemose. Sepals 4, rarely 5, persistent in fruit. Stamens 12; filaments filiform; anthers dorsifixed. Ovary 1-carpellary, 1-celled; style short, subterminal; stigma penicillate; ovule 1. Fruit subglobose, somewhat compressed. Seed erect, lenticular; testa crustaceous; embryo annular; endosperm farinaceous; cotyledons oblong; radicle conic.

Type species, *Ladenbergia seguieroides* Klotzsch.

Fruiting sepals 4-5 mm. long; fruit subglobose, 2 mm. in diameter.

Fruiting sepals 8-13 mm. long; fruit broadly ellipsoid, 3 mm. long.

1. *F. seguieroides*.

2. *F. macrantha*.

1. *Flueckigera seguieroides* (Klotzsch) Kuntze, Rev. Gen. 551. 1891.

Ladenbergia seguieroides Klotzsch; Moq. in DC. Prodr. 13: 14. 1849.

Ricina seguieroides Klotzsch; Moq. in DC. Prodr. 13: 14, as synonym. 1849.

A shrub, with slender branches; leaf-blades elliptic to oval, 9-13 cm. long, 3.5-6.5 cm. broad, acute to acuminate at the apex, acute or obtuse at the base, glabrous or nearly so, the midvein prominent beneath; petioles 1.5-4 cm. long; racemes elongate, slender, 15-30 cm. or more long, about 1.5 cm. broad, the rachis angled, puberulent; pedicels slender, 4-5 mm. long; bracts subterminal, obovate, 0.9 mm. long, 0.5 mm. broad, acute; sepals elliptic, 4-5 mm. long, 1.8-2.5 mm. broad; filaments 2.5-3 mm. long; anthers linear, 1.3 mm. long; ovary ovoid, glabrous, 1 mm. long; fruit subglobose, 2 mm. in diameter; seed 1.8 mm. long.

TYPE LOCALITY: Colombia.

DISTRIBUTION: Martinique (according to H. Walter); also in northern South America.

ILLUSTRATION: Engler, Pflanzenreich 4³³: f. 32.

2. *Flueckigera macrantha* (Standley) P. Wilson.

Ledenbergia macrantha Standley, Jour. Wash. Acad. 13: 350. 1923.

A tree, 6 m. high or sometimes more, with somewhat pendent branches, the twigs sparsely pubescent when young; leaf-blades elliptic to broadly ovate, 4–8 cm. long, 2.5–4.5 cm. broad, acute to acuminate or obtuse at the apex, acute or obtuse at the base, thin, glabrous above, villous beneath along the midvein below the middle; petioles slender, 2–4.5 cm. long, sparsely villous; racemes 10–15 cm. or more long; sepals oblong-oblancoleate, in fruit 8–13 mm. long, 2.5–4.5 mm. broad, glabrate, conspicuously veined; fruit ellipsoid, 3 mm. long.

TYPE LOCALITY: Along roadside at Puerta de la Laguna, near San Salvador.

DISTRIBUTION: Salvador.

4. PETIVERIA L. Sp. Pl. 342. 1753.

Erect, strong-scented herbs. Leaves alternate, entire; stipules minute. Flowers perfect, in terminal and axillary racemes. Sepals 4, spreading in flower, erect in fruit. Stamens 4–9; filaments subulate; anthers linear, 2-cleft at apex and base. Ovary 1-celled, 1-carpellary, with 3–6 deflexed hook-like processes at the top; stigma sessile, penicillate on the ventral side. Fruit achene-like, elongate, cuneate, keeled on both sides, 2-lobed at the top and bearing 3–6 hooked bristles. Seed erect, linear; endosperm scanty; embryo erect; cotyledons foliaceous, unequal in size; radicle stout.

Type species, *Petiveria alliacea* L.

1. *Petiveria alliacea* L. Sp. Pl. 342. 1753.

Petiveria octandra L. Sp. Pl. ed. 2. 486. 1762.

Petiveria foetida Salisb. Prodr. 214. 1796.

Petiveria alliacea grandifolia Moq. in DC. Prodr. 13²: 9. 1849.

Petiveria octandra Moq. in DC. Prodr. 13²: 9. 1849.

Petiveria ochroleuca Moc. & Sessé; Moq. in DC. Prodr. 13²: 9. 1849.

Petiveria hexandria Sessé & Moc. Fl. Mex. ed. 2. 90. 1894.

An erect herb, 5–10 dm. high, the stems puberulent above or glabrate, woody at the base; leaf-blades elliptic, oblong, or obovate, 3–15 cm. long, 1.5–6 cm. broad, glabrous or sparingly pubescent, acuminate, acute, or occasionally obtuse or rounded at the apex, narrowed at the base; petioles 0.4–1.5 cm. long; racemes slender, 0.8–3.8 dm. long, loosely flowered, puberulent; sepals greenish-white, oblong-linear, 3.5–4 mm. long, 0.8–0.9 mm. broad; filaments subulate, 2–3 mm. long; ovary oblong-ellipsoid, 1–1.5 mm. long, pilose; fruit wedge-shaped, compressed, 8 mm. long.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Florida; Texas; West Indies; Mexico; Central America; also in South America.

ILLUSTRATIONS: Engler, Pflanzenreich 4³³: f. 34; Fawcett & Rendle, Fl. Jam. 3: f. 55; Lam. Tab. Eneye. pl. 272; Baillon, Hist. Pl. 4: f. 51, 52; Gaertn. Fruct. pl. 75; Descourt. Fl. Ant. pl. 374; Bot. Cab. pl. 148; Moc. & Sessé, Calq. Dess. pl. 1094; Jacq. Sel. Stimp. Pict. pl. 104; Schnizl. Ic. pl. 208, f. 13–17; Sw. Obs. pl. 10, f. 3; Plumier, Pl. Am. pl. 219; Zorn, Ic. Pl. Med. pl. 501.

5. MICROTEA Sw. Prodr. 4, 53. 1788.

Schollera Rohr, Skr. Nat.-Selsk. Kjøb. 2¹: 210. 1792.

Erect or decumbent annual herbs, with alternate, petioled or sessile, entire leaves. Flowers minute, racemose or paniculate. Sepals 5, rarely 4. Stamens 3–9; filaments linear; anthers didymous. Ovary 1-celled; stigmas 2, linear, oblong-triangular, triangular-lanceolate, or sometimes 3-parted; ovule campylotropous. Fruit subglobose, echinate, tubercled or smooth. Seed erect, crustaceous; embryo semi-annular; endosperm fleshy; cotyledons elongate, concave; radicle short, fleshy.

Type species, *Microtea debilis* Sw.

Fruit covered with a honeycomb-like network uniting the spine-like tubercles. 1. *M. debilis*.

Fruit reticulate-veined, without spine-like tubercles. 2. *M. portoricensis*.

1. *Microtea debilis* Sw. Prodr. 53. 1788.

Schollera debilis Rohr, Skr. Nat.-Selsk. Kjob. 2: 210. 1792.

A glabrous, prostrate or ascending, annual herb; basal leaves spatulate, elliptic-spatulate, or spatulate-obovate, 5-9 cm. long, 1.3-3 cm. broad, the stem-leaves lanceolate to ovate, spatulate, or obovate, 1.5-7 cm. long, 0.5-3 cm. broad, acute at the apex, tapering at the base; inflorescence racemose; pedicels short; sepals 5, elliptic, 0.5-0.6 mm. long, about 0.3 mm. broad, acutish, greenish-white; stamens 5; filaments subulate-linear, 0.4 mm. long; anthers minute; ovary subglobose, echinate, 0.5 mm. long; stigmas 2, ovate-triangular or short-triangular-lanceolate, 0.2 mm. long; fruit broadly subglobose or globose-ellipsoid, greenish, 1.1-1.2 mm. in diameter, covered with a honeycomb-like network uniting the spine-like tubercles; seed 0.9-1 mm. wide, black.

TYPE LOCALITY: St. Kitts.

DISTRIBUTION: West Indies; Central and South America.

ILLUSTRATIONS: Fawcett & Rendle, Fl. Jam. 3: f. 53; Sw. Fl. Ind. Occ. pl. 12, f. 1; Lam. Tab. Encyc. pl. 132.

2. *Microtea portoricensis* Urban, Ber. Deuts. Bot. Ges. 3: 324.
1885.

A glabrous prostrate annual herb, with slender branches; basal leaves spatulate or spatulate-obovate, 4.5-7 cm. long, 1-2 cm. broad, the stem-leaves elliptic-spatulate to orbicular-spatulate or orbicular-ovate, 1.5-5 cm. long, 0.6-1.8 cm. broad, acute at the apex, gradually or abruptly narrowed at the base; inflorescence racemose; pedicels short; sepals 4 or 5, oblong-elliptic, 0.7-0.8 mm. long, 0.4 mm. broad, rounded at the apex, greenish-brown; stamens 3 or 4; filaments linear, 0.5-0.6 mm. long; anthers minute; ovary globose, 0.4-0.5 mm. in diameter; stigmas 2, ovate-triangular or short-triangular-lanceolate, 0.2 mm. long; fruit subglobose, 0.9-1 mm. in diameter, greenish, reticulate-veined, without spine-like tubercles; seed 0.8 mm. wide, black.

TYPE LOCALITY: Near Cabo Rojo, Porto Rico.

DISTRIBUTION: Waste places, Cuba, Haiti, and Porto Rico.

ILLUSTRATION: Engler, Pflanzenreich 4²: f. 38.

6. *PHAULOTHAMNUS* A. Gray, Proc. Am. Acad. 20: 293. 1885.

Shrubs, often with spine-like branches. Leaves alternate. Flowers dioecious. Sepals 4, rarely 5. Staminate flowers: stamens 12-14, inserted at the base of the perianth; filaments filiform; anthers oblong, 2-celled; ovary rudimentary. Pistillate flowers: stamens abortive; ovary elliptic-ovoid or ovoid, 1-celled; ovule solitary, campylotropous; stigmas 2. Fruit drupe-like. Seed reniform; testa crustaceous; aril none; embryo annular; endosperm farinaceous; cotyledons linear; radicle slender.

Type species, *Phaulothamnus spinescens* A. Gray.

1. *Phaulothamnus spinescens* A. Gray, Proc. Am. Acad. 20: 294.
1885.

A glabrous shrub, 9-18 dm. high, with a grayish bark and horizontal spine-tipped branches; leaf-blades oblong-obovate or spatulate, 1-2.4 cm. long, 0.4-1 cm. broad, rounded at the apex; petioles 1 mm. long or less; inflorescence racemose, usually shorter than the leaves; flowers slender-pedicelled; bracts subulate, 1 mm. long; sepals elliptic, about 2.5 mm. long, 1.4-1.9 mm. broad, rounded at the apex; staminate flowers: filaments slender, about 1 mm. long; anthers 1.8-2 mm. long; pistillate flowers: ovary 2 mm. long; stigmas papillose, 2-2.5 mm. long; fruit 4-5 mm. in diameter, white, translucent; seed 2.9 mm. broad, black, shining.

TYPE LOCALITY: Northwestern Sonora, Mexico.

DISTRIBUTION: Texas; northwestern Mexico.

ILLUSTRATION: Engler, Pflanzenreich 4²: f. 42.

7. *ACHATOCARPUS* Triana, Ann. Sci. Nat. IV. 9: 45. 1858.

Shrubs or trees, with alternate entire leaves. Flowers dioecious, racemose or paniculate. Sepals 5, persistent in fruit. Staminate flowers: stamens 10-15, the filaments inserted at the base of the perianth; anthers basifixed. Pistillate flowers: stamens wanting; ovary slightly compressed, 1-celled; stigmas 2, rarely 3, reflexed, linear or filiform, papillate or fimbriate; ovule 1, campylotropous; fruit drupe-like. Seed erect, black; testa crustaceous; embryo annular; endosperm farinaceous; cotyledons linear; radicle elongate.

Type species, *Achatocarpus nigricans* Triana.

Mature leaf-blades pubescent beneath.

1. *A. oaxacanus*.

Mature leaf-blades glabrous beneath.

2. *A. gracilis*.

Leaf-blades obovate-oblancoelate, usually obtuse at the apex.

Leaf-blades elliptic-lanceolate to elliptic, rarely somewhat obovate, acute to acuminate at the apex.

3. *A. nigricans*.

1. *Achatocarpus oaxacanus* Standley, Contr. U. S. Nat. Herb. 23: 264. 1922.

A shrub (or tree?), the twigs puberulent, armed with slender spines 6 mm. long or less; leaf-blades elliptic or obovate, 4.5-7 cm. long, 2.3-3.6 cm. broad, obtuse or rounded at the apex, acute to acuminate at the base, coriaceous, mucronulate; racemes numerous, few-flowered, 2.5 cm. long or less; rachis pubescent; pedicels 1-2 mm. long; sepals obovate to suborbicular, 2 mm. long, rounded at the apex, minutely puberulent or glabrate; fruit 3-4 mm. in diameter, glabrous.

TYPE LOCALITY: Between Jamiltepec and Rio Verde, Oaxaca.

DISTRIBUTION: Known only from the type locality.

2. *Achatocarpus gracilis* H. Walt. in Engler, Pflanzenreich 4⁸³: 137. 1909.

An erect glabrous tree, the slender branches unarmed or armed with spines 10 mm. long; leaf-blades obovate-oblancoelate, 6 cm. long, 2 cm. broad, obtuse or acutish at the apex, acute at the base, coriaceous, mucronulate; petioles 3-6 mm. long; staminate inflorescence paniculate, 20-40-flowered; pedicels slender, 2-4 mm. long; bracts subulate, 0.8 mm. long; sepals elliptic, 2.5 mm. long, 1.8 mm. broad, rounded at the apex; filaments 2 mm. long; anthers about 2 mm. long.

TYPE LOCALITY: Petatlan, Guerrero.

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Engler, Pflanzenreich 4⁸³: f. 41.

3. *Achatocarpus nigricans* Triana, Ann. Sci. Nat. IV. 9: 46. 1858.

Achatocarpus mexicanus H. Walt. in Engler, Pflanzenreich 4⁸³: 139. 1909.

A shrub, or sometimes a tree, 2-10 m. or more in height, the branches unarmed or armed with spines 7-10 mm. long; leaf-blades elliptic or elliptic-lanceolate, 5-13 cm. long, 2.3-5.8 cm. broad, acute, obtuse, or sometimes rounded at the apex, acute to acuminate at the base, glabrous, the midvein impressed above, prominent beneath, the lateral veins sometimes rather indistinct; petioles 0.5-1 cm. long; flowers short-pedicelled; staminate flowers paniculate, the sepals elliptic to somewhat obovate, 2.6-3 mm. long, 1.2-1.6 mm. broad; stamens 12-16; filaments 1.5 mm. long; anthers oblong, 1.5-1.8 mm. long; pistillate flowers racemose or in raceme-like panicles, the sepals elliptic to oval, about 2.3 mm. long, 1.2-1.5 mm. broad; ovary ellipsoid, compressed, 2.5 mm. long; stigmas linear-filiform, papillose, 1.5-2 mm. long; fruit subglobose; seed compressed, 3.5 mm. in diameter.

TYPE LOCALITY: Colombia.

DISTRIBUTION: Southern Mexico; Salvador; also in northern South America.

8. PHYTOLACCA [Tourn.] L. Sp. Pl. 441. 1753.

Sarcoca Raf. Fl. Tell. 3: 55. 1837.

Large perennial herbs, shrubs, or trees, the stems erect or sometimes weak and vine-like. Leaves alternate, petioled or sessile, the blades entire; stipules wanting. Inflorescence racemose, paniculate, or spicate, often terminal. Flowers perfect or dioecious. Pedicels with bracts at the base and often 1 or more bracts above. Sepals 5, rarely 6, equal or unequal, glabrous or slightly pubescent. Stamens 6-33, in 1 or 2 series; filaments subulate or filiform, free or slightly connate at the base; anthers dorsifixed, oblong or elliptic. Ovary subglobose, composed of 5-16 distinct or somewhat united carpels. Fruit a depressed-globose, 5-16-celled, fleshy berry. Seeds 1 in each cavity, erect, compressed; aril wanting; embryo annular; endosperm farinaceous; cotyledons semi-terete; radicle elongate.

Type species, *Phytolacca americana* L.

Inflorescence paniculate at the base, racemose above.

Inflorescence racemose.

Sepals 5-6 mm. long.

Sepals 2.5-3.3 mm. long.

Carpels free at the apex in flower.

Carpels connate in flower.

Sepals unequal, the outer narrower than the inner.

Sepals equal or nearly so.

Racemes 5-30 cm. long, equaling or often shorter than the leaves, sometimes longer; sepals persistent in fruit; berry 6-11 mm. in diameter; seeds more than 2 mm. long.

Pedicels none, or if present, up to 5 mm. long; berry 6-8 mm. in diameter; seeds 2.2-2.8 mm. long.

Pedicels mostly 5-12 mm. long; berry 9-11 mm. in diameter; seeds 3-4 mm. long.

Racemes nodding in fruit; berry depressed, shorter than its stalk.

Racemes permanently erect; berry globose or subglobose, longer than its stalk.

Racemes 2-7 dm. long, often several times longer than the leaves; sepals usually deciduous in fruit; berry 6.5-7 mm. in diameter; seeds 2 mm. long.

1. *P. thyrsoiflora*.

2. *P. Meziana*.

3. *P. rugosa*.

4. *P. heterotepala*.

5. *P. icosandra*.

6. *P. americana*.

7. *P. rigida*.

8. *P. rivinoides*.

1. *Phytolacca thyrsoiflora* Fenzl; J. A. Schmidt, in Mart. Fl. Bras.

14²: 343. 1872.

A plant up to 2 m. or more tall, with angled branches; leaf-blades lanceolate to elliptic or ovate, 10-13 cm. long, 4-5.3 cm. broad, acuminate at the apex, tapering at the base; petioles 1-2 cm. long, grooved above; inflorescence paniculate at the base, racemose above, 1.5-2.5 dm. long; bracts and bractlets lanceolate; flowers pedicelled; sepals greenish-white, broadly elliptic to oval-ovate, 3-3.5 mm. long, 2-3 mm. broad, rounded at the apex, persistent in fruit; stamens 10, inserted on the disc; filaments subulate, 2 mm. long; anthers elliptic, 0.8 mm. long; ovary subglobose, 7-8-carpellary, the carpels connate; fruit depressed-globose, 5-7 mm. in diameter; seeds subreniform, 2.8-3 mm. long.

TYPE LOCALITY: Brazil.

DISTRIBUTION: South America; reported from Santo Domingo.

ILLUSTRATION: Mart. Fl. Bras. 14²: pl. 80.

2. *Phytolacca Meziana* H. Walt. in Engler, Pflanzenreich 4⁸³: 57.

1909.

Phytolacca icosandra octogyna Donn. Smith, Bot. Gaz. 18: 210. 1893.

A shrubby herb, with rather thick, angled, glabrous branches; leaf-blades elliptic-oblong or ovate-oblong, 10-13 cm. long, 3-4.4 cm. broad, acute to long-acuminate at the apex, acute at the base; petiole slender, 2.5-4.5 cm. long, channeled above, glabrous; inflorescence suberect, 1.5-1.8 dm. long, about 2.5 cm. broad, many-flowered, the rachis pubescent; pedicels 7-8 mm. long, slender; bracts subulate, membranaceous, equaling or longer than the pedicels; bractlets 3 mm. long; sepals oblong-elliptic, 5-6 mm. long, 2.5-2.8 mm. broad, rounded at the apex; stamens 12-25, inserted on the disc, shorter than the sepals; filaments filiform, 3 mm. long;

anthers elliptic, 1.5 mm. long; ovary 7- or 8-carpellary; styles erect, recurved at the apex; fruit unknown.

TYPE LOCALITY: San Miguel Uspantán, Department Quiché, Guatemala.
DISTRIBUTION: Guatemala.

3. *Phytolacca rugosa* Braun & Bouché, Ind. Sem. Hort. Berol. 1851:
13. 1852.—Linnaea 25: 297. 1853.

A shrubby herb, 1 m. or more in height, with erect branches; leaf-blades elliptic-lanceolate or elliptic, 6–13 cm. long, 2.5–5 cm. broad, acuminate at both ends; petioles 1.5–4.5 cm. long, angled, channeled above, glabrous; racemes shorter or longer than the leaves; pedicels 3–4 mm. long, slender, subterete; bracts subulate, equaling or shorter than the pedicels; bractlets subulate, smaller than the bracts; sepals oblong-elliptic, 2.5–3 mm. long, 1.8–2 mm. broad, rarely larger, rounded at the apex, often recurved in fruit; stamens 8–10; filaments subulate, 2–2.2 mm. long; anthers elliptic, 0.7 mm. long; ovary subglobose, 8-, rarely 6- or 7- or 9-carpellary; styles cylindrical, recurved, distant in fruit; fruit 5.5–6 mm. in diameter; seed subreniform, 2.5 mm. long.

TYPE LOCALITY: Guatemala.
DISTRIBUTION: Mexico and Central America; also in South America.

4. *Phytolacca heterotepala* H. Walt. in Engler, Pflanzenreich 4⁸³:
51. 1909.

A shrub, with slender, subterete or slightly angled, glabrous branches; leaf-blades elliptic or ovate-elliptic, 13 cm. long, 5.5 cm. broad, acute or obtuse at the apex, acuminate or broadly acute at the base; petioles 2 cm. long; racemes peduncled, suberect, 2.5 dm. long, 13 mm. broad; pedicels 4 mm. long; bracts linear, 4 mm. long; bractlets subulate, membranaceous, 1 mm. long; sepals white, unequal, the outer 3 mm. long, 1.5 mm. broad, the inner broader, 3 mm. long, 2.2 mm. broad; filaments subulate-filiform, compressed, 2 mm. long; anthers elliptic, 0.8 mm. long; ovary 8- or 9-carpellary, the carpels connate; styles recurved, 7 mm. long; fruit "red," 11 mm. in diameter; seeds subreniform, 2.5 mm. long.

TYPE LOCALITY: Tacubaya, Mexico.
DISTRIBUTION: Mexico. (No specimens seen; description compiled.)

5. *Phytolacca icosandra* L. Syst. Nat. ed. 10. 1040. 1759.

- Phytolacca americana* β L. Sp. Pl. 441. 1753.
Phytolacca octandra L. Sp. Pl. ed. 2. 631. 1762.
Phytolacca mexicana Mill. Gard. Dict. ed. 8. Phytolacca no. 2. 1768.
Phytolacca triquetra Moench, Meth. Suppl. 107. 1802.
Phytolacca sessiliflora Kunth & Bouché, Ind. Sem. Hort. Berol. 1848: 15. 1849.—Ann. Sci. Nat. III. 11: 230. 1849.
Phytolacca octandra grandiflora Moq. in DC. Prodr. 13²: 32. 1849.
Phytolacca octandra angustifolia Moq. in DC. Prodr. 13²: 32. 1849.
Phytolacca longespica Moq. in DC. Prodr. 13²: 33. 1849.
? *Phytolacca purpurascens* Braun & Bouché, Ind. Sem. Hort. Berol. 1851: 13. 1852.—Linnaea 25: 297. 1853.
Phytolacca Nova-Hispania Millsp. Field Mus. Publ. Bot. 2: 41. 1900.
Phytolacca icosandra angustitepala H. Walt. in Engler, Pflanzenreich 4⁸¹: 61. 1909.
Phytolacca icosandra sessiliflora H. Walt. in Engler, Pflanzenreich 4⁸¹: 61. 1909.

An herb, up to 2.5 m. or more high, with angled branches; leaf-blades narrowly elliptic to ovate-elliptic or oval, 7–20 cm. long, 2.5–9.5 cm. broad, sometimes larger, acute to acuminate and often mucronate at the apex, narrowed at the base; petioles 1.5–6 cm. long, grooved above; racemes peduncled, 7–25 cm. long; rachis usually pubescent; pedicels 2–5 mm. long, or flowers subsessile; bracts and bractlets subulate; sepals greenish-white or purplish, elliptic to ovate or oval, 2.5–3.2 mm. long, 1.5–3 mm. broad, persistent in fruit; stamens 8–20; filaments 2 mm. long; anthers elliptic, 1 mm. long; ovary subglobose, 6–10-carpellary; styles cylindrical, recurved; berry depressed-globose, 6–8 mm. in diameter; seed obliquely obpyriform, 2.2–2.8 mm. long, black, shining.

TYPE LOCALITY: Said to have come from Malabar.
DISTRIBUTION: West Indies; Mexico; Central America; also in South America; recorded from the Old World.

ILLUSTRATIONS: Bot. Mag. pl. 2633; Gaertn. Fruct. pl. 77, f. 8; Fawcett & Rendle, Fl. Jam. 3: f. 56; Rendle, Classif. Fl. Pl. 2: f. 51; Mill. Fig. Pl. pl. 207.

6. *Phytolacca americana* L. Sp. Pl. 441. 1753.

Phytolacca decandra L. Sp. Pl. ed. 2. 631. 1762.

Phytolacca vulgaris Crantz, Inst. 2: 484. 1766.

?*Phytolacca americana lancifolia* H. Walt. in Engler, Pflanzenreich 4⁸³: 55. 1909.

A glabrous succulent herb, 1.5 m. or more high, with an unpleasant odor, the large perennial parsnip-like root poisonous; leaf-blades oblong-lanceolate, ovate-lanceolate, or ovate, 10–30 cm. long, 3–13 cm. broad, acute or acuminate at both ends, often mucronate; petioles slender, 1–6 cm. long, grooved above; racemes peduncled, 8–30 cm. long, nodding in fruit; pedicels glabrous or puberulent, often reflexed, 6–12 mm. long, each with a subulate-lanceolate bract at its base and usually 2 similar ones above; sepals greenish-white or pinkish, oval to suborbicular, 2.8–3.3 mm. long, 1.9–3 mm. broad; stamens 9–12, commonly 10, shorter than the sepals; filaments subulate, 2–2.5 mm. long; anthers oblong, about 1 mm. long; ovary 10-carpellary, green, the carpels connate; styles recurved; berry dark-purple, depressed, 9–11 mm. in diameter; seed suborbicular, 3–4 mm. long, black, shining.

TYPE LOCALITY: Virginia.

DISTRIBUTION: Maine and Ontario to Minnesota, Texas, and Georgia; Mexico (?); Bermuda. Naturalized in Europe.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1415; ed. 2. f. 1715; Bot. Mag. pl. 931; Schkuhr, Handb. pl. 126; Baillon, Hist. Pl. 4: f. 21–28; E. & P. Nat. Pl. 3¹⁰: f. 3, L-N; W. Barton, Veg. Mat. Med. pl. 48; Millsp. Am. Med. Pl. pl. 139; Britton, Fl. Bermuda f. 141; Pammel, Man. Pois. Pl. f. 211; Hegi, Ill. Fl. Mittel-Eur. 3: f. 561; Georgia, Man. Weeds f. 81; U. S. Dep. Agr. Farm. Bull. 188: f. 10, 11; Bull. U. S. Dep. Agr. 26: f. 4; House, Wild Fl. N. Y. pl. 50; Bigel. Am. Med. Bot. pl. 3; Torr. Fl. N. Y. pl. 94; Lindl. Med. Bot. f. 186; Garden 21: 179; Dana, Wild Fl. pl. 27; Miller & Whiting, Wild Fl. 518; A. Kerner, Nat. Hist. Pl. 2: f. 283; Bull. U. S. Dep. Agr. Pl. Ind. 107: f. 7; Bull. N. J. Exp. Sta. 135: f. 5.

7. *Phytolacca rigida* Small, Bull. N. Y. Bot. Gard. 3: 422. 1905.

A glabrous herb, 1–3 m. or more tall, similar to *P. americana* L., the stem and branches greenish-purple; leaf-blades oblong-lanceolate or lanceolate, 6–20 cm. long, 1.7–7.5 cm. broad, occasionally larger, acuminate at the apex, narrowed at the base into the petiole; petiole slender, 0.5–2.5 cm. long; racemes peduncled, 5–25 cm. long, erect in fruit; bracts and bractlets lanceolate; flowers pedicelled; sepals ovate or elliptic-ovate, 3 mm. long, apiculate, purplish in fruit; stamens 9–11, the filaments subulate, 2.5 mm. long; anthers elliptic, 0.8 mm. long; styles recurved; berry globose or subglobose, dark-purple, 9–11 mm. in diameter; seeds suborbicular, 3–3.5 mm. long, 3 mm. wide, black, shining.

TYPE LOCALITY: Florida.

DISTRIBUTION: Florida and Mississippi.

8. *Phytolacca rivinoides* Kunth & Bouché, Ind. Sem. Hort. Berol.

1848: 15. 1849.—Ann. Sci. Nat. III. 11: 231. 1849.

Phytolacca icosandra Wright, Mem. 268. 1828. Not *P. icosandra* L. 1759.

A glabrous herb, the stems weak, vine-like, 4–5 m. long; leaf-blades elliptic, ovate, or ovate-lanceolate, 8–17 cm. long, 2.5–8.5 cm. broad, acuminate to long-acuminate at the apex, acute or cuneate at the base; petioles slender, 0.8–3.5 cm. long, grooved above; racemes peduncled, 2–7 dm. long; pedicels 4.5–10 mm. long, divergent, each with a subulate bract at its base and usually 2 similar ones above; sepals pinkish-white, elliptic to oval, about 2.5 mm. long, 1.5–2 mm. broad, usually deciduous in fruit; stamens 9–22, inserted on the disc, shorter than the sepals; filaments subulate, 1.8 mm. long; anthers elliptic, 0.7–0.8 mm. long; ovary depressed-globose, 10–16-carpellary; styles cylindrical, recurved; berry black, 6.5–7 mm. in diameter; seeds suborbicular, 2 mm. long, rather dull.

TYPE LOCALITY: Caracas.

DISTRIBUTION: Cuba; Jamaica; Santo Domingo; Porto Rico; St. Kitts to Trinidad; Mexico; Central America; also in South America.

ILLUSTRATION: Bot. Mag. pl. 4967.

DOUBTFUL AND EXCLUDED SPECIES

PHYTOLACCA ALTAMIRANI Goyena, Fl. Nicar. 307. 1909.

PHYTOLACCA DIOICA L., credited by Miller to Mexico, is a South American species.

9. **STEGNOSPERMA** Benth. Bot. Voy. Sulph. 17. 1844.

Chlamydosperma A. Rich. in Sagra, Hist. Cuba 10: 308, as synonym. 1845.

Shrub or woody vine; leaves alternate, petioled. Inflorescence racemose, terminal. Flowers perfect. Sepals 5. Petals 5, shorter than the sepals. Stamens 10, unequal, the 5 larger alternate with the petals; filaments subulate, united at the base, persistent in fruit; anthers dorsifixed, sagittate at the base, the apex rounded. Ovary 1-celled; stigmas 3-5; ovules 3-5, erect. Capsule hard and brittle, 1-celled, 3-5-valved, 1-5-seeded. Seeds inclosed in a fleshy aril. Embryo slightly curved; cotyledons flattened, equal; radicle cylindrical.

Type species, *Stegnosperra halimifolium* Benth.

1. **Stegnosperra halimifolium** Benth. Bot. Voy. Sulph. 17. 1844.

Diospyros obovata Spreng. Syst. 2: 203. 1825. Not *D. obovata* Jacq. 1798.
Stegnosperra cubense A. Rich. in Sagra, Hist. Cuba 10: 309. 1845.

A glabrous shrub, or a vine sometimes 8 m. long; leaf-blades obovate or elliptic, 1.5-7.5 cm. long, 0.9-3.5 cm. broad, rounded or obtuse and occasionally emarginate, or rarely acute at the apex, acute to acuminate at the base, often rather indistinctly veined; petioles 3-9 mm. long; flowering racemes erect, cylindrical, rather dense, 4-14 cm. long, 2-2.5 cm. broad; pedicels 5-9 mm. long; sepals 5 mm. long, 3 mm. broad; petals elliptic to oval, 4-4.2 mm. long, 2.5-3 mm. broad, white; filaments 2.5-4 mm. long; anthers 2 mm. long; ovary broadly ellipsoid, 2-2.3 mm. in diameter; capsule subglobose, 7-9 mm. in diameter; seed 4 mm. long, black.

TYPE LOCALITY: Cape San Lucas, Lower California.

DISTRIBUTION: Cuba; Jamaica; Hispaniola; Porto Rico; Lower California and Sonora to Central America.

ILLUSTRATIONS: Benth. Bot. Voy. Sulph. *pl. 12*; Engler, Pflanzenreich 4⁹³: *f. 36*; Fawcett & Rendle, Fl. Jam. 3: *f. 57*; Sagra, Hist. Cuba 10: *pl. 44*.

10. **AGDESTIS** Moc. & Sessé; DC. Syst. 1: 543. 1818.

A vine with a large tuberous root. Leaves alternate. Flowers perfect, in axillary or terminal panicles. Sepals 4, rarely 5. Stamens 15-20; filaments filiform; anthers dorsifixed. Ovary partly inferior, 3- or 4-celled; style cone-like; stigmas 3 or 4, subterete, erect in the bud, recurved in flower, papillose; ovule solitary, campylotropous. Fruit small, turbinate, dry, surrounded by the persistent star-like perianth-segments. Seeds lenticular; testa crustaceous; embryo annular; endosperm sparingly farinaceous; cotyledons oblong; radicle short.

Type species, *Agdestis clematidea* Moc. & Sessé.

1. **Agdestis clematidea** Moc. & Sessé; DC. Syst. 1: 543. 1818.

Agdestis teterrima De-Not. Ind. Sem. Hort. Genuens. 1855: 29. 1856.—*Linnaea* 28: 356. 1857.

A long glabrous vine, with slender angled branches and ill-smelling foliage; leaf-blades broadly ovate to orbicular, 2-5.5 cm. long, 2-5.3 cm. broad, acute to acuminate or occasionally obtuse at the apex, usually deeply cordate at the base; panicles erect, 8-15 cm. or more long, 4-8 cm. broad; flowers sweet-scented, pedicelled, 10-15 mm. broad; sepals oblong to obovate, 4.5-6.5 mm. long, 1.5-3 mm. broad, rounded or obtuse at the apex, white, rather prominently reticulate-veined; filaments 4-5 mm. long; anthers oblong, 1.3 mm. long, emarginate at the apex, cordate at the base; ovary glabrous; stigmas linear; fruit minute.

TYPE LOCALITY: Nova Hispania.

DISTRIBUTION: Western Texas, Mexico, and Central America; also in South America; cultivated in the West Indies; naturalized in Florida and Cuba.

ILLUSTRATIONS: Baillon, Hist. Pl. 4: *f. 44*; Engler, Pflanzenreich 4⁹³: *f. 37*; E. & P. Nat. Pl. 3^{1b}: *f. 2J*; Hemsl. Biol. Centr. Am. Bot. *pl. 71*; Moc. & Sessé, Calq. Dess. *pl. 12*.

DOUBTFUL SPECIES OF PETIVERIACEAE

GYROSTEMON RAMULOSUS Desf., a native of West Australia, is credited to Nicaragua by Miguel Ramirez Goyena in his *Flora Nicaraguense* 308. 1911. Perhaps in cultivation.

Family 6. TETRAGONIACEAE

BY PERCY WILSON

Mostly prostrate or ascending, often succulent, annual or perennial herbs or shrub-like plants. Leaves opposite, alternate, or falsely whorled. Stipules none or scarious. Flowers perfect, polygamodioecious or unisexual. Calyx usually 4- or 5-lobed or parted. Petals none or numerous. Stamens few to many; anthers oblong or linear, 2-celled. Disc none or annular. Ovary superior, or partly or wholly inferior, 1- to many-celled; styles as many as the cells of the ovary; ovules many, few or sometimes solitary in each cell. Fruit a capsule with loculicidal or circumscissile dehiscence, or rarely indehiscent and baccate, or nut-like. Seeds many or solitary; embryo more or less curved; cotyledons narrow; radicle terete.

Calyx free from the ovary; petals none.

Capsule dehiscent by valves.

Ovules solitary in each cell of the ovary.

Ovules usually many in each cell of the ovary.

Seeds without a strophiole.

Capsule 1-celled; style none.

Capsule 3-5-celled; styles 2-5.

Seeds with a strophiole at the hilum.

Capsule circumscissile.

Ovary 1-2-celled; stipules present.

Stamens 1-3; calyx-lobes unappendaged; ovules numerous.

Stamens 5-10; calyx-lobes appendaged on the back below the apex; ovules few.

Ovary 3-5-celled; stipules none.

Calyx-tube partially or wholly adnate to the ovary.

Petals none.

Petals numerous.

Fruit a capsule.

Valves of the capsule with a central, acute-edged, expanding keel and a broad, erect or inflexed wing on each margin.

Valves of the capsule without wings or flaps.

Fruit indehiscent.

1. *GALENIA*.

2. *GEOCARPON*.

3. *MOLLUGO*.

4. *GLINUS*.

5. *CYPSELEA*.

6. *TRIANTHEMA*.

7. *SESUVIUM*.

8. *TETRAGONIA*.

9. *MESEMBRYANTHEMUM*.

10. *APTENIA*.

11. *CARPOBROTUS*.

1. *GALENIA* L. Sp. Pl. 359. 1753.

Herbs or low shrubs with spreading or prostrate branches. Leaves alternate or opposite, often somewhat fleshy, entire. Flowers small, sessile or pedicellate, axillary or in cymes. Calyx-lobes 4 or 5. Petals none. Stamens 8 or 10, in pairs at the sinuses of the perianth; anthers longitudinally dehiscent. Ovary 2-5-celled; ovule solitary; styles 2-5. Capsule membranaceous, 2-5-celled or by abortion sometimes 1-celled, loculicidally dehiscent. Seeds solitary, attached to a long funicle; embryo slightly curved.

Type species, *Galenia africana* L.

1. *Galenia secunda* (L. f.) Sond. in Harv. & Sond. Fl. Cap. 2:

474. 1862.

Aizoon secundum L. f. Suppl. 261. 1781.

A decumbent herb, sometimes forming dense mats, the stems much branched, several dm. long, pubescent with rather long stiff white hairs; branchlets short, leafy; leaf-blades obovate or obovate-spatulate, 0.5-2 cm. long, 0.3-1.2 cm. broad, rounded or acutish at the

apex, narrowed at the base, strigose on both surfaces, pitted; flowers sessile, axillary, solitary; calyx-lobes elliptic or lanceolate-oblong, 2 mm. long, 0.8-1 mm. broad, pubescent, ciliate near the tip, pubescent on the back; filaments filiform.

TYPE LOCALITY: South Africa.

DISTRIBUTION: On ballast, New Jersey; Florida; also in South Africa.

2. *GEOCARPON* Mackenzie, *Torreyia* 14: 67. 1914.

A small glabrous annual. Leaves opposite, connate at the base. Stipules none. Flowers axillary. Calyx-lobes 5, unappendaged. Petals none. Stamens 5, inserted on the calyx-tube; filaments flattened, the anthers minute, 2-celled; ovary ovoid, many-ovuled; style none; stigmas 3, stigmatose along the inner surface. Capsule 1-celled, dehiscent by 3 valves; seeds minute; embryo minute, curved; cotyledons fleshy.

Type species, *Geocarpum minimum* Mackenzie.

1. *Geocarpum minimum* Mackenzie, *Torreyia* 14: 67. 1914.

Branches 1-4 cm. long; stem-leaves sessile, the blades linear-elliptic to ovate, 2.8-4 mm. long, 0.8-2 mm. broad; basal leaf-blades linear, flat, 4-6 mm. long, 1-1.5 mm. broad; flowers sessile; calyx-lobes ovate, 1.5-1.7 mm. long, 1 mm. broad, acutish, green, 3-nerved, slightly exceeding the capsule; filaments slender, about 1 mm. long; anthers about 0.1 mm. long; ovary 1.8 mm. high; capsule ovoid, about 4 mm. long, 2 mm. in diameter, the sharp tips slightly exceeding the stigmas; seeds yellowish-brown, 0.3 mm. long, microscopically tuberculate.

TYPE LOCALITY: In sandy barrens near Alba, Jasper County, Missouri.

DISTRIBUTION: Missouri.

3. *MOLLUGO* L. Sp. Pl. 89. 1753.

Lampetia Raf. Fl. Tell. 3: 34. 1837.

Annual or perennial herbs, often prostrate, much-branched and not very succulent. Leaves whorled, opposite, or basal. Flowers perfect. Calyx 5-parted, persistent. Petals none. Stamens 3-10. Ovary 3-5-celled, superior; styles 2-5; ovules numerous. Capsule thin-membranaceous, 3-5-celled, loculicidally 3-5-valved. Seeds small, few or numerous, reticulate, granular, or sculptured; embryo curved; cotyledons narrowly oblong, fleshy.

Type species, *Mollugo verticillata* L.

Leaves in whorls at the nodes; peduncles axillary.

Plant annual; stamens 3-5; seeds brown.

Stamens 3 or 4; seeds wrinkled, 0.5-0.6 mm. long, ridged along the back; prostrate or sometimes ascending herb.

Pedicels 1-2 mm. long, more or less pilose; leaves 2-10 mm. long; seeds with several ridges down the back and on the sides.

Pedicels 3 mm. or more long, usually glabrous; leaves often more than 10 mm. long.

Seeds usually with several ridges down the back and on the sides; leaves often more than 1 mm. broad.

Seeds with one ridge down the back; leaves 0.2-1 mm. broad.

Stamens usually 5; seeds finely reticulate, 0.3-0.4 mm. long, with or without a ridge along the back; suberect or ascending herb.

Plant perennial; stamens 6-9.

Stamens 6-8; capsule globose, 3-8-seeded; seeds 0.8-0.9 mm. long, 0.7-0.8 mm. broad, black.

Stamens 9.

Capsule 3-6-seeded; seeds 1-1.3 mm. long, 1 mm. broad, black.

Capsule 10-13-seeded; seeds 0.6-0.7 mm. long, 0.5 mm. broad, brown.

Leaves and peduncles basal; seeds black.

Plant annual or occasionally perennial; leaves chartaceous, mostly in a rosette; seeds 0.4-0.5 mm. long.

Plant perennial; leaves rigid, coriaceous, distichously alternate, crowded on short branches; seeds 0.6-0.7 mm. long.

1. *M. brevipes*.

2. *M. verticillata*.

3. *M. Berteriana*.

4. *M. Cerviana*.

5. *M. pinosia*.

6. *M. enneandra*.

7. *M. cubensis*.

8. *M. nudicaulis*.

9. *M. cuneifolia*.

1. *Mollugo brevipes* Urban, Ark. Bot. 22A¹⁷: 11. 1929.

Mollugo brevipes var. *angustissima* Urban, Ark. Bot. 22A¹⁷: 12. 1929.

A glabrous or nearly glabrous, much-branched, prostrate or ascending, annual herb; leaves whorled, about 4-6 at each node, the blades linear-oblong to obovate-oblong, 3-10 mm. long, 0.3-2 mm. broad, rounded or acutish at the apex, tapering at the base into the petiole; flowers 1-3 at each node, the pedicels 1-2 mm. long, puberulent; sepals about 1.8 mm. long, 1-1.2 mm. broad; stamens 3; styles 3; ovary 3-celled; capsule ovoid or ovoid-globose, 1.8-2 mm. long, 1.3-1.7 mm. in diameter, 15-25-seeded; seeds reniform, 0.6 mm. long, 0.5 mm. broad, ridged, brown.

TYPE LOCALITY: Near Mendoza, Pinar del Rio, Cuba.

DISTRIBUTION: Cuba.

2. *Mollugo verticillata* L. Sp. Pl. 89. 1753.

?*Mollugo dichotoma* Schrank, Pl. Rar. Hort. Monac. pl. 64. 1821.

?*Mollugo arenaria* H.B.K. Nov. Gen. & Sp. 6: 20. 1823.

?*Mollugo Schrankii* Seringe, in DC. Prodr. 1: 391. 1824.

Pharnaceum verticillatum Spreng. Syst. 1: 949. 1825.

?*Pharnaceum arenarium* Spreng. Syst. 1: 949. 1825.

Mollugo verticillata scrobiculata Camb. in St.-Hil. Fl. Bras. Merid. 2: 170. 1830.

Mollugo verticillata latifolia Fenzl, Ann. Wiener Mus. 1: 376. 1836.

Mollugo juncea Fenzl, Ann. Wiener Mus. 1: 378. 1836.

Mollugo verticillata scrobiculata lusus juncea Rohrb. in Mart. Fl. Bras. 14²: 242. 1872.

A glabrous, dichotomously branched, prostrate or ascending, annual herb; leaves whorled, 3-6 or more at each node, the blades obovate, spatulate-lanceolate, or linear, unequal, 7-35 mm. long, 0.8-11 mm. broad, obtuse, rounded, or acutish at the apex, tapering at the base into the petiole; flowers 2-5 from each node, subtended by foliaceous bracts; pedicels 3-14 mm. long; sepals oblong or elliptic, 1.8-2.5 mm. long, 0.6-1.1 mm. broad; stamens usually 3, occasionally 4; capsule ovoid or ellipsoid, 2.5-3 mm. long, 1.5-2.1 mm. in diameter, 20-30-seeded; seeds dark-brown, reniform, 0.6 mm. long, brown, ridged along the back and sides.

TYPE LOCALITY: Virginia.

DISTRIBUTION: Throughout temperate and tropical North America; also in South America and the Old World.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1425; ed. 2, f. 1735; Fawcett & Rendle, Fl. Jam. 3: f. 60; Mart. Fl. Bras. 14²: pl. 55, f. 2; A. Gray, Gen. Ill. pl. 101; Pluk. Phyt. pl. 332, f. 5; Gaertn. Fruct. pl. 130, f. 11; E. & P. Nat. Pil. 3^{1b}: f. 16, A; Lam. Tab. Encyc. pl. 52, f. 1; Bull. Mich. Exp. Sta. 267: f. 67; Georgia, Man. Weeds f. 87.

3. *Mollugo Berteriana* Seringe, in DC. Prodr. 1: 391. 1824.

Pharnaceum lineare Bertero; Seringe, in DC. Prodr. 1: 391, as synonym. 1824.

Pharnaceum Berterianum Spreng. Syst. 1: 949. 1825.

A glabrous, prostrate, annual herb; leaves whorled, 4-6 at each node, the blades linear or linear-obovate, 15-20 mm. long, 0.2-1 mm. broad, obtuse or acutish at the apex, narrowed at the base into the petiole; flowers 2 or more at each node; pedicels 5-15 mm. long; sepals oblong, 2.5 mm. long, 0.6 mm. broad, obtuse at the apex; stamens usually 3; capsule ellipsoid or obovoid, about 2 mm. long, 1.5-2 mm. in diameter, 10-16-seeded; seeds dark-brown, 0.5 mm. broad, with a solitary ridge along the back.

TYPE LOCALITY: Porto Rico.

DISTRIBUTION: White sand, Porto Rico.

4. *Mollugo Cerviana* (L.) Seringe, in DC. Prodr. 1: 392. 1824.

Pharnaceum Cerviana L. Sp. Pl. 272. 1753.

An ascending or suberect, much-branched, annual herb, with terete filiform stems 4-20 cm. high; leaves glaucous, the basal leaves in a rosette, the blades spatulate or linear-spatulate, 3-15 mm. long, 1-3 mm. or more broad, mostly withered at flowering time; stem-leaves whorled, the blades linear, 4-20 mm. long, 0.5-1.5 mm. broad, the uppermost sometimes reduced to

minute bracts; flowers in whorls; pedicels capillary, often longer than the leaves; sepals elliptic or obovate-elliptic, about 1 mm. long, 1-nerved; stamens usually 5; capsule subglobose, 1.5–1.8 mm. in diameter; seeds brown, 0.3–0.4 mm. long, finely reticulate.

TYPE LOCALITY: Europe.

DISTRIBUTION: Texas to Lower California and Mexico; recorded as found in ballast in the vicinity of New York City; also in the Galapagos Islands, the Mediterranean region, Africa, Asia, and Australia.

ILLUSTRATIONS: Lam. Tab. Encyc. pl. 214, f. 1; Pluk. Phyt. 332. f. 11.

5. *Mollugo pinosia* Urban, Ark. Bot. 22A¹⁷: 13. 1929.

A low perennial herb, with glabrous stems; leaves whorled, 3–6 at each node, the blades linear-filiform or narrowly oblong-linear, 5–12 mm. long, 0.2–0.7 mm. broad, rounded or obtuse at the apex, narrowed at the base; flowers 1 or 3 at the nodes; pedicels 5–8 mm. long, filiform; sepals lanceolate to oblong-elliptic, 2.5 mm. long, obtuse at the apex; stamens 6–8, the filaments 2 mm. long; styles 3; capsule globose, 3–8-seeded; seeds reniform, 0.8–0.9 mm. long, 0.7–0.8 mm. broad, black, slightly ridged.

TYPE LOCALITY: Near Los Indios, Isle of Pines.

DISTRIBUTION: Isle of Pines.

6. *Mollugo enneandra* C. Wright; Sauv. Anal. Acad. Ci. Habana 5: 202. 1868.

A perennial herb, with slender glabrous stems; leaves whorled, 3–5 at each node, the blades spatulate-ob lanceolate or linear, 4–14 mm. long, 0.5–3 mm. broad, obtuse at the apex, tapering at the base into the petiole; flowers 2 or 3 from each node, slender-pedicelled, the pedicels 7–16 mm. long, filiform; sepals elliptic to oblong-elliptic, 2.5 mm. long, 1 mm. broad; stamens 9; capsule 3–6-seeded; seeds black, 1–1.3 mm. long, about 1 mm. broad, ridged.

TYPE LOCALITY: Sandy pinelands, Coloma, Pinar del Rio, Cuba.

DISTRIBUTION: Cuba.

7. *Mollugo cubensis* Urban, Ark. Bot. 22A¹⁷: 12. 1929.

A glabrous perennial herb, with nearly prostrate or ascending stems; leaves whorled, 4–6 at each node, the blade narrowly obovate or oblong, 5–11 mm. long, 0.8–3 mm. or occasionally 5 mm. broad, obtuse or rounded at the apex, narrowed at the base; flowers 2 or 3 at each node; pedicels 10–16 mm. long, filiform; sepals elliptic or somewhat lanceolate, 1.8–2 mm. long, 0.6–0.8 mm. broad, obtuse at the apex; stamens 9; capsule short-ovate, 1.6–1.7 mm. long, 10–13-seeded; seeds 0.6–0.7 mm. long, 0.5 mm. broad, brown, ridged.

TYPE LOCALITY: Near La Grifa, Pinar del Rio, Cuba.

DISTRIBUTION: Cuba.

8. *Mollugo nudicaulis* Lam. Encyc. 4: 234. 1796.

Pharnaceum spatulatum Sw. Fl. Ind. Occ. 568. 1797.

Pharnaceum bellidifolium Poir. in Lam. Encyc. 5: 262. 1804.

Mollugo bellidifolia Seringe, in DC. Prodr. 1: 391. 1824.

Lampetia nudicaulis Raf. Fl. Tell. 3: 34. 1837.

Mollugo nudicaulis bellidifolia Rohrb. in Mart. Fl. Bras. 14²: 244. 1872.

Mollugo nudicaulis navassensis Ekman; Urban, Ark. Bot. 22A¹⁷: 14. 1929.

A glabrous annual or occasionally a perennial, 8–30 cm. high, with a taproot; leaves in a basal rosette, erect-spreading, the blades obovate or spatulate, 1.5–6 cm. long, 5–16 mm. broad, rounded at the apex, narrowed at the base into the petiole, membranous; cymes long-peduncled, the peduncles grooved; bracts small, 0.8–1 mm. long; flowers greenish-white or pale-salmon-colored; sepals elliptic to oval, 2 mm. long, 0.8–1 mm. broad; stamens 4 or 5; capsule ellipsoid, 2–2.2 mm. long, 1.2–1.5 mm. in diameter; seeds reniform, 0.4–0.5 mm. long, minutely granulate, black.

TYPE LOCALITY: Ceylon.

DISTRIBUTION: Cuba; Jamaica; Hispaniola; Porto Rico; St. Thomas; Buck Island; St. Croix; Virgin Gorda; St. Lucia; Guadeloupe?; also in South America, tropical Africa, India, and New Caledonia.

ILLUSTRATIONS: Sloane, *Hist. Jam. pl. 129, f. 2*; Plumier, *Pl. Am. pl. 21, f. 1*; Burm. *Thes. Zeyl. pl. 8, f. 2*.

9. *Mollugo cuneifolia* (Griseb.) Urban, *Ark. Bot.* 22A¹⁷: 14. 1929.

Mollugo nudicaulis cuneifolia Griseb. *Cat. Pl. Cub.* 22. 1866.

A perennial herb, 6-13 cm. high, with a woody caudex; leaves all basal, distichously alternate, crowded on short branches of the caudex, round-spatulate or subcuneate, 14-18 mm. long, 6-14 mm. broad, coriaceous, rather prominently few-veined; cymes long-peduncled, the peduncles 5-7 cm. long, obscurely grooved; bracts small, 1.4-1.6 mm. long; outer sepals elliptic or oblong-elliptic, the inner ovate, 3 mm. long, 1-1.3 mm. broad; stamens 4 or 5, the filaments 1.5-1.8 mm. long, connate at the base; capsule ovate or elliptic-ovate, 2.2-5 mm. long, 1.2-1.3 mm. in diameter, 12-20-seeded; seeds reniform, 0.6-0.7 mm. long, 0.5 mm. broad, minutely granulate, black.

TYPE LOCALITY: Near Baracoa, Oriente, Cuba.

DISTRIBUTION: Cuba.

4. GLINUS [Loefl.] L. *Sp. Pl.* 463. 1753.

Procumbent or ascending herbs with branched stems. Leaves mostly whorled, unequal. Flowers in dense glomerules in the axils. Calyx-lobes 5. Petals none. Stamens 3-5, or more; filaments filiform; anthers 2-celled. Ovary 3-5-celled; ovules numerous; style short, with 3-5 stigmas. Capsule loculicidally 3-5-valved. Seeds numerous, smooth or tuberculate, with a strophiole, the funicle long and slender; embryo curved; cotyledons oblong, fleshy.

Type species, *Glinus lotoides* L.

Seeds light-brown, smooth.

Seeds blackish-brown, tuberculate.

1. *G. radiatus*.

2. *G. lotoides*.

1. *Glinus radiatus* (R. & P.) Rohrb. in *Mart. Fl. Bras.* 14²: 238.

1872.

Mollugo radiata R. & P. *Fl. Per.* 1: 48. 1798.

Mollugo glinoides Camb. in *St.-Hil. Fl. Bras. Merid.* 2: 171. 1830.

Glinus Cambessedesii Fenzl, *Ann. Wiener Mus.* 1: 358. 1836.

Glinus Cambessedesii nudiusculus Fenzl, *Ann. Wiener Mus.* 1: 359. 1836.

Mollugo spathulata Poepp.; Fenzl, *Ann. Wiener Mus.* 1: 359, as synonym. 1836.

Glinus Cambessedesii spathulatus Poepp.; Griseb. *Cat. Pl. Cub.* 22. 1866.

Glinus radiatus nudiusculus Fenzl; Rohrb. in *Mart. Fl. Bras.* 14²: 239. 1872.

Mollugo Cambessedesii Coult. *Contr. U. S. Nat. Herb.* 2: 138. 1891.

An annual herb, with stellate tomentose foliage; stems 1-3 dm. long; leaf-blades obovate, rounded-spatulate or elliptic, 0.5-2 cm. long, 0.2-1.5 cm. broad, occasionally larger, acute or rounded at the apex; petioles slender, 1-6 mm. long; flowers in clusters of 3-8; calyx-lobes oblong or lanceolate, 2.6-2.8 mm. long, stellate-tomentose; stamens 3-5, shorter than the calyx-lobes; filaments filiform, about 1 mm. long; anthers 0.5 mm. long; capsule ellipsoid, 3-3.5 mm. long; seeds numerous, brown, 0.4 mm. long, smooth and shining.

TYPE LOCALITY: Chile.

DISTRIBUTION: Texas; Mexico; Cuba; Jamaica; Hispaniola; Central and South America; recorded from Lower California.

ILLUSTRATIONS: *Mart. Fl. Bras.* 14²: *pl. 55, f. 1*; *St.-Hil. Fl. Bras. Merid. pl. 109*; Fawcett & Rendle, *Fl. Jam.* 3: *f. 59*; E. & P. *Nat. Pil.* 3^{1b}: *f. 16, C, D*.

2. *Glinus lotoides* L. *Sp. Pl.* 463. 1753.

Glinus dictamnoides Burm. f. *Pl. Ind.* 113. 1768.

Glinus lotoides candidus Fenzl, *Ann. Wiener Mus.* 1: 357. 1836.

Glinus lotoides virens Fenzl, *Ann. Wiener Mus.* 1: 358. 1836.

Mollugo Glinus A. Rich. *Tent. Pl. Abyss.* 1: 48. 1847.

A diffusely branched, more or less stellate-tomentose, annual herb, the stems procumbent or ascending, 0.7–3.5 dm. long; leaf-blades orbicular or obovate, 0.5–2.5 cm. long, 0.4–1.5 cm. broad, rounded or abruptly acute at the apex, narrowed at the base into a slender petiole; flowers clustered in the axils; calyx-lobes lanceolate, 4 mm. long, 2.5–2.7 mm. broad, stellate-tomentose; stamens 3–5; filaments filiform, 1.5 mm. long; anthers 0.5 mm. long; capsule ellipsoid, 3.8–4.5 mm. long; seeds blackish-brown, tuberculate, 0.6 mm. long.

TYPE LOCALITY: Spain.

DISTRIBUTION: California; Oklahoma; Arkansas; Louisiana; also in the Old World. Introduced from Europe.

ILLUSTRATIONS: Hutchinson, *Fam. Fl. Pl. f. 54*; Sibth. *Fl. Graeca pl. 472*; Lam. *Tab. Encyc. pl. 413, f. 1*; Gaertn. *Fruct. pl. 130, f. 12*; Burm. *f. Fl. Ind. pl. 36, f. 1*; Engler & Drude, *Veg. Erde 9: t. 207, E-K*; 9: *f. 89, E-K*.

5. CYPSELEA Turpin, *Ann. Mus. Paris* 7: 219. 1806.

Radiana Raf. *Specchio* 1: 88. 1814.

Prostrate herbs, with slender branched stems. Leaves opposite, those of a pair unequal. Stipules scarious, lacinate. Calyx-lobes 5, unequal, unappendaged. Petals none. Stamens 1–5, alternate with the sepals. Ovary 1-celled, superior; styles 2; ovules numerous. Capsule circumscissile at the base. Seeds many, minute; testa smooth; embryo curved; cotyledons small, fleshy.

Type species, *Cypselea humifusa* Turpin.

Calyx-lobes green; pedicels 1–2 mm. long; stamens 3.

1. *C. humifusa*.

Calyx-lobes red; pedicels 3–7 mm. long; stamens 5.

2. *C. rubriflora*.

1. *Cypselea humifusa* Turpin, *Ann. Mus. Paris* 7: 219. 1806.

Radiana petiolata Raf. *Specchio* 1: 88. 1814.

A much-branched herb, forming mats up to 20 cm. or more in diameter; leaf-blades elliptic, 1.5–6 mm. long, 0.8–3 mm. broad, or sometimes larger, obtuse or rounded at the apex, acute or rounded at the base, entire; petioles slender, sometimes nearly as long as the leaf-blades; flowers axillary, greenish, short-pedicelled; calyx-lobes ovate or elliptic-ovate, 1–1.5 mm. long, 0.7–1 mm. broad, obtuse or acutish; filaments filiform; anthers about 0.3 mm. long; capsule subglobose, 1.5 mm. in diameter; seeds brown, 0.2–0.3 mm. long.

TYPE LOCALITY: Santo Domingo.

DISTRIBUTION: Florida; California; Cuba; Hispaniola; Water Island, St. Thomas; Anagada; Guadeloupe; Margarita.

ILLUSTRATIONS: *Ann. Mus. Paris* 7: *pl. 12*; Tratt. *Gen. Nov. Pl. [pl. 16]*.

2. *Cypselea rubriflora* Urban, *Ark. Bot.* 22A¹⁷: 15. 1929.

A prostrate herb, forming mats 14 cm. or more wide; leaf-blades oblong to elliptic or obovate, 1.5–3 mm. long, 0.5–1.3 mm. broad, rounded or obtuse at the apex, acutish at the base, entire; petioles slender; flowers axillary; pedicels 3–7 mm. long; calyx-lobes lanceolate, 1.5 mm. long, 1–1.1 mm. broad at the base; stamens 5, the anthers ovate; styles scarcely any; capsule short-ovate; seeds numerous, 0.2 mm. long, brown.

TYPE LOCALITY: Near Caimito de Hanabana, Matanzas, Cuba.

DISTRIBUTION: Cuba.

6. TRIANTHEMA [Sauvages] L. Sp. Pl. 223. 1753.

Reme Adans. *Fam. Pl.* 2: 245. 1763.

Portulacastrum Juss.; *Medic. Phil. Bot.* 1: 99. 1789.

Fleshy prostrate herbs, with branching stems. Leaves opposite, entire, those of a pair unequal; petiole with a sheathing base. Flowers small, axillary, sessile or peduncled, solitary or in cymes or clusters. Calyx-lobes 5, often appendaged on the back below the apex. Petals none. Stamens 5–10 or more, inserted near the top of the calyx-tube. Ovary 1- or 2-celled, few-ovuled; styles 1 or 2. Capsule membranous or coriaceous, purplish above, green below, bearing at the summit on one side a short, fleshy, sometimes shallowly lobed appendage, at length circumscissile. Seeds reniform; testa rough; embryo annular; endosperm farinaceous; cotyledons oblong, fleshy.

Type species, *TriantHEMA Portulacastrum* L.

1. *Trianthes Portulacastrum* L. Sp. Pl. 223. 1753.*Trianthes monogynum* L. Mant. 69. 1767.*Trianthes procumbens* Mill. Gard. Dict. ed. 8. *Trianthes* no. 1. 1768.

A more or less succulent perennial herb, the branches sometimes 10 dm. long; leaf-blades obovate, suborbicular or elliptic, 1-4 cm. long, 0.5-3.3 cm. broad, rounded, notched, or apiculate at the apex, acute or occasionally rounded at the base, the petioles 0.3-2 cm. long; flowers axillary, partly concealed in the petiolar sheath; sepals ovate-lanceolate or lanceolate, 4-5 mm. long, pinkish or purplish within; capsule 4-5 mm. long, crested; seeds black, about 1.8-2 mm. in diameter, rough.

TYPE LOCALITY: Curaçao.

DISTRIBUTION: Florida; Texas to southern California; Mexico; Central America; Cuba and Jamaica to Trinidad; not infrequent on ballast in the middle Atlantic United States; also in northern South America and the Old World tropics.

ILLUSTRATIONS: Herm. Parad. pl. 213; Ann. Sci. Nat. III. 18: pl. 12; Fawcett & Rendle, Fl. Jam. 3: f. 62; Lam. Tab. Encyc. pl. 375, f. 1.

7. *SESUVIUM* L. Syst. Nat. ed. 10. 1058. 1759.*Squibbia* Raf. New Fl. 4: 16. 1838.

Fleshy, annual or perennial, prostrate or ascending herbs or shrubby plants. Leaves opposite, without stipules, the petioles often dilated and connate at the base. Flowers axillary, sessile or pedicelled. Calyx-lobes 5, usually with horn-like appendages on the back below the apex. Petals none. Stamens 5 to many, inserted on the calyx-tube; filaments filiform. Ovary 3-5-celled; ovules numerous in the cells; styles 3-5, papillose on the inside. Capsule membranous, 3-5-celled, circumscissile. Seeds stalked, several to many in each cavity; embryo annular; cotyledons oblong, fleshy.

Type species, *Sesuvium Portulacastrum* L.

Stamens 5.

Stamens numerous.

Calyx-lobes 3-7 mm. long; flowers pedicelled or sessile; styles usually 3.

Leaf-blades oblanceolate to oblong, 1-6 cm. long, rather flat or elliptic in cross section; internodes usually 2-10 cm. long.

Stem spreading, decumbent, often rooting at the nodes; flowers commonly distinctly pedicelled; calyx-lobes 5.5-7 mm. long; leaves smooth or slightly verrucose; filaments lanceolate, 4.5-5.5 mm. long.

Stem more erect than in the preceding, not rooting at the nodes; flowers often sessile; calyx-lobes 4.5 mm. long; leaves finely verrucose with crystalline globules; filaments subulate-lanceolate, 2.5-3 mm. long.

Leaf-blades obovoid, 0.4-1.6 mm. long, elliptic to terete in cross section; internodes 0.4-1.5 cm. long; filaments 2-3 mm. long. -

Calyx-lobes 9-12 mm. long; flowers sessile; styles 5.

1. *S. maritimum*.2. *S. Portulacastrum*.3. *S. verrucosum*.4. *S. microphyllum*.5. *S. crithmoides*.1. *Sesuvium maritimum* (Walt.) B.S.P. Prel. Cat. N. Y. 20. 1888.*Pharneauum maritimum* Walt. Fl. Car. 117. 1788.*Sesuvium pentandrum* Ell. Bot. S.C. & Ga. 1: 556. 1821.*Mollugo maritima* Springe, in DC. Prodr. 1: 393. 1824.*Squibbia maritima* Raf. New Fl. 4: 16. 1838.

A glabrous, fleshy, procumbent or sometimes erect annual herb; leaf-blades obovate or spatulate, 0.6-2 cm. long, 2-8 mm. broad, rounded at the apex, narrowed at the base into a petiole; flowers rather small, sessile or nearly so, usually solitary in the axils; calyx-lobes 5, lanceolate or oblong-lanceolate, 2-2.2 mm. long, about 1.5 mm. broad, hooded, the back prolonged into an appendage; stamens 5; capsule ovoid, 4-4.5 mm. high, 2-2.5 mm. in diameter; seeds black, 0.7-0.8 mm. long, smooth and lustrous.

TYPE LOCALITY: Carolina.

DISTRIBUTION: Long Island to Florida and Texas; Bahamas; Cuba; Porto Rico.

ILLUSTRATIONS: Britt. & Brown III. Fl. f. 1124; ed. 2. f. 1733; A. Gray, Gen. III. pl. 100.

2. *Sesuvium Portulacastrum* L. Syst. Nat. ed. 10. 1058. 1759.

- Portulaca Portulacastrum* L. Sp. Pl. 446. 1753.
 ?*Sesuvium revolutifolium* Ortega, Dec. 19. 1797.
 ?*Sesuvium Ortegae* Spreng. Bot. Gart. Halle Nachtr. 1: 36. 1801.
Sesuvium pedunculatum Pers. Syn. Pl. 2: 39. 1806.
Sesuvium sessile Pers. Syn. Pl. 2: 39. 1806.
Halimus Portulacastrum Kuntze, Rev. Gen. 263. 1891.

A glabrous, fleshy, perennial herb, with trailing stems, often rooting at the lower nodes and sometimes forming patches 2 m. broad; leaf-blades oblanceolate to oblong, 1.5-6 cm. long, 3-15 mm. broad, acute or acutish at the apex, the base clasping; flowers pedicelled, solitary in the axils; calyx-lobes lanceolate, 5.5-7 mm. long, 2-4.5 mm. broad at the base, hooded, purple within, the back prolonged into an appendage; stamens numerous; filaments 4.5-5.5 mm. long; anthers oblong-elliptic, 1-1.2 mm. long; ovary ovoid-globose, 3-3.5 mm. long, 3-3.2 mm. in diameter; styles sometimes distinct to the base; capsule conic, 9-11 mm. high, 5-6 mm. in diameter; seeds black, 1.2-1.5 mm. long, smooth and lustrous.

TYPE LOCALITY: Curaçao.

DISTRIBUTION: Southeastern United States to Texas; Bermuda; West Indies; Mexico; Central America; also in South America and the Old World tropics.

ILLUSTRATIONS: Fawcett & Rendle, Fl. Jam. 3: f. 61; Britton, Fl. Bermuda f. 144; Herm. Parad. pl. 112; Pluk. Phyt. pl. 216; E. & P. Nat. Pfl. 3^{1b}: f. 17; Jacq. Sel. Stirp. Am. pl. 95; Rendle, Classif. Fl. Pl. 2: f. 54; Engler & Drude, Veg. Erde 9^a: f. 93; Mart. Fl. Bras. 14: pl. 70; DC. Pl. Grasses pl. 9; Jacq. Sel. Stirp. Pict. pl. 142; Bot. Tidsskr. 29: 229.

3. *Sesuvium verrucosum* Raf. New Fl. 4: 16. 1838.

- Sesuvium Portulacastrum subsessile* A. Gray; S. Wats. Bibl. Ind. 411. 1878. Not *S. Portulacastrum subsessile* Camb. (in St.-Hil. Fl. Bras. Merid. 2: 200.) 1830.
Sesuvium sessile B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 259. 1897. Not *S. sessile* Pers. 1806.

A freely branching prostrate herb, the stems 3-9 dm. long, smooth and often finely verrucose with crystalline globules; leaf-blades oblanceolate or obovate-oblong, 1-3 cm. long, 2-10 mm. broad, rounded or somewhat acutish at the apex, the base clasping; flowers subsessile or short-pedicelled; calyx-lobes broadly ovate-oblong or ovate-lanceolate, 4.5 mm. long, hooded, the back prolonged into an appendage; stamens numerous; capsule conic, about 5 mm. high, 3 mm. in diameter; seeds black, 1 mm. long, smooth, lustrous.

TYPE LOCALITY: Arkansas.

DISTRIBUTION: California, eastward to Arkansas and southward to Mexico; also in Brazil (?).
 ILLUSTRATIONS: Britt. & Brown, Ill. Fl. ed. 2. f. 1734; MacDougal, Bot. Feat. N. Am. Des. pl. 43, 44.

4. *Sesuvium microphyllum* Humb. & Bonpl.; Willd. Enum. 521. 1809.

- Sesuvium spathulatum* H.B.K. Nov. Gen. & Sp. 6: 87. 1823.

A fleshy procumbent maritime herb, with branching stems; leaf-blades obovoid, elliptic to terete in cross-section, 0.4-16 mm. long, 2-7 mm. broad, rounded or obtuse at the apex, narrowed into a short petiole, the base clasping; flowers axillary, solitary, short-pedicelled; calyx-lobes ovate-lanceolate to broadly ovate, 3-4 mm. long, 2-2.5 mm. broad at the base, hooded, whitish or purplish within, the back of some calyx-lobes prolonged into a short appendage; stamens numerous; filaments 3 mm. long; anthers elliptic, 0.7-0.8 mm. long; ovary subglobose or globose-ovoid, 2.3-2.5 mm. long, 1.8-2 mm. in diameter; styles 3 or 4, united above the base; capsule ovoid, 4.5 mm. long, 3-3.5 mm. in diameter; seeds black, 1 mm. long, lustrous.

TYPE LOCALITY: Havana.

DISTRIBUTION: Cuba; Turks Island.

5. *Sesuvium crithmoides* Welw. Apont. 586. 1858.

A glabrous spreading decumbent herb, the foliage and young growth covered with whitish papillae; leaf-blades narrowly linear, 1.8-6 cm. long, 1-3 mm. broad, obtuse at the apex, the base clasping; flowers closely sessile, solitary in the axils; calyx-lobes lanceolate or somewhat ovate-lanceolate, 9-12 mm. long, long-acuminate at the apex, hooded; stamens numerous; filaments subulate, 3 mm. long; anthers oblong, 0.9 mm. long; ovary truncate and shallowly 5-lobed at the summit; styles 5.

TYPE LOCALITY: Angola.

DISTRIBUTION: Waste places among wharves, Brunswick, Georgia (*Harper 1524*, determined at Key by N. E. Brown). Introduced from Angola.

8. *TETRAGONIA* L. Sp. Pl. 480. 1753.

Annual or perennial herbs or shrubby plants. Leaves alternate, often fleshy. Flowers axillary, solitary or few, sessile or pedicelled. Calyx-tube adnate to the ovary, the lobes 3-5, usually fleshy. Petals none. Stamens variable in number, solitary or in fascicles, inserted on the calyx-tube; anthers oblong or linear. Ovary 3-9-, rarely 1- or 2-celled; ovule solitary in each cavity; styles often as many as the ovary-cavities. Fruit nut-like, indehiscent, sometimes horned or winged; seeds subreniform; testa membranaceous; embryo curved.

Type species, *Tetragonia fruticosa* L.

1. *Tetragonia expansa* Murr. Commentat. Gott. 6: 13. 1785.

A succulent annual, glistening with papillae, the branches spreading or procumbent; leaf-blades triangular-ovate or ovate, 3-10 cm. long, 2-7.5 cm. broad, rounded or acutish at the apex, abruptly contracted at the base into a broad petiole; flowers usually solitary, axillary, nearly sessile; calyx urceolate, the lobes 4, triangular to suborbicular, 1-2.3 mm. long, yellowish within; stamens 7-13; ovary 5-9-celled; styles 3 or more; nut angled, cartilaginous, 8-12 mm. long, 7-9 mm. broad, 2-5-horned.

TYPE LOCALITY: Described from a cultivated specimen.

DISTRIBUTION: Escaped from gardens in Connecticut; Florida; California; Bermuda. Native of eastern Asia and New Zealand.

ILLUSTRATIONS: Britton, Fl. Bermuda *f. 145*; Cycl. Am. Hort. *f. 3788*; Bot. Mag. *pl. 2362*; Ann. Sci. Nat. III. 18; *pl. 13*; DC. Pl. Grasses *pl. 114*; E. & P. Nat. Pl. 3^{ib}: *f. 18*; Mart. Fl. Bras. 14: *pl. 71*; Baillon, Hist. Pl. *pl. 9, f. 63-67*; Bull. R. I. Exp. Sta. 41: *f. 8*; Ann. Rep. N. J. Exp. Sta. 20: *f. 15*; Karst. Deuts. Fl. *f. 319*; F. Turner, Forage Pl. Austral. *pl. opp. 36*; Rev. Hort. 1903: *f. 76*; Garden 82: 145.

9. *MESEMBRYANTHEMUM* [Dill.] L. Sp. Pl. 480. 1753.

Cryophytum N. E. Brown; E. P. Phillips, Gen. S. Afr. Pl. 245-. 1926.

Annual herbs covered with glistening papillae. Leaves flat or nearly terete. Calyx 4- or 5-lobed, two of the lobes often large and leafy. Petals numerous, united at the base into a distinct tube. Stamens numerous. Ovary and capsule half or more than half superior, 5-celled; style none; stigmas 5. Fruit a capsule, 5-valved; valves with a central, acute-edged, expanding keel and a broad, erect or inflexed wing on each margin; loculi without wings or tubercles. Seeds small, compressed.

Type species, *Mesembryanthemum crystallinum* L.

Leaf-blades linear, nearly terete.

Leaf-blades flat, ovate to obovate or broadly spatulate.

1. *M. nodiflorum*.

2. *M. crystallinum*.

1. *Mesembryanthemum nodiflorum* L., Sp. Pl. 480. 1753.

Cryophytum nodiflorum L. Bolus, S. Afr. Gard. 17: 326. 1926.

A prostrate or ascending herb; leaves linear, 1-3.5 cm. long, 1-2.6 mm. broad, nearly terete, obtuse; flowers solitary in the axils, subsessile or short-peduncled; calyx 4- or 5-cleft;

petals white, shorter than the calyx-lobes; capsule about 5 mm. high, 3.5 mm. in diameter; seeds dark-brown, about 0.9 mm. long, minutely tuberculate.

TYPE LOCALITY: Egypt.

DISTRIBUTION: Naturalized in southern California and on adjacent islands and in Oregon. Native of the Mediterranean region and Africa.

ILLUSTRATIONS: Sibth. Fl. Graeca *pl.* 480; Coste, Fl. Fr. *f.* 1395.

2. *Mesembryanthemum crystallinum* L. Sp. Pl. 480. 1753.

Cryophytum crystallinum N. E. Brown; E. P. Phillips, Gen. S. Afr. Pl. 245. 1926.

A procumbent, much-branched, succulent herb; leaves opposite, or on the branches alternate, the blades flat, undulate, obovate to broadly spatulate or sometimes ovate, the upper 1.5–4 cm. long, 0.7–3.5 cm. broad, tapering to a clasping base, the lower 5–12 cm. long, 4–7 cm. broad, petioled; flowers axillary, subsessile or short-peduncled, 1.3–2 cm. broad; calyx-tube campanulate, about 6–10 mm. in diameter, the lobes ovate; petals pinkish or white, spreading; carpels 5; capsule about 0.8–1 cm. high, 7–9 mm. in diameter; seeds blackish-brown, 0.9–1 mm. in diameter, minutely tuberculate.

TYPE LOCALITY: Africa.

DISTRIBUTION: Naturalized in California and Lower California, and on adjacent islands; sometimes found on ballast in eastern United States. Also introduced into South America, Greece, northern Africa, and Australia. Native of South Africa.

ILLUSTRATIONS: DC. Pl. Grasses *pl.* 128; Sibth. Fl. Graeca *pl.* 481; Dill. Hort. Elth. *pl.* 180; Hutchinson, Fam. Fl. Pl. *f.* 55; Reichenb. Ic. Fl. Germ. 24: *pl.* 155; Coste, Fl. Fr. *f.* 1396; Stand. Cycl. Hort. *f.* 2367; Gard. III. 2: 147; Garden 12: 281; Baillon, Dict. Bot. 2: 609; Rev. Hortic. 75: *f.* 218; Armstrong, Field Book W. Wild Fl. 109; Karst. Deuts. Fl. *f.* 320.

DOUBTFUL SPECIES

MESEMBRYANTHEMUM MULTIRADIATUM Jacq. Fragm. 44. 1803. A glabrous plant with ascending branches; leaves linear, 3–5 cm. long, 3-angled, rather abruptly acute at the apex; flowers at the ends of the branches, 5.5–6 cm. in diameter, pale-rose-pink; peduncles 4–7 cm. long, the lateral ones with two leaf-like bracts; sepals unlike, the two larger ones keeled at the apex; petals linear-lanceolate, 2.5–3 cm. long, retuse at the apex; filaments white. TYPE LOCALITY: Cape of Good Hope. DISTRIBUTION: Naturalized in California; native of South Africa. ILLUSTRATION: Jacq. Fragm. *pl.* 53, *f.* 1. This species is probably not a true *Mesembryanthemum* but cannot be satisfactorily placed until its fruit is better known.

MESEMBRYANTHEMUM FUGIONIFORME L. A specimen of *CONICOSIA* so labeled was collected by A. A. Heller at Pacific Grove, California, May 13, 1903. The specimen bears no roots and cannot be determined, according to Mr. N. E. Brown, without knowing whether the root is fibrous or fleshy.

MESEMBRYANTHEMUM STENUM Haw. (not the scarlet-flowered *M. coccineum* Haw. as first determined) was reported in Gray's Synoptical Flora as collected at Point Conception near Santa Barbara, California in 1878, where it had become temporarily established.

10. *APTENIA* N. E. Brown, Gard. Chron. III. 78: 412. 1925.

—*Jour. Bot.* 66: 139. 1928.

A prostrate herb. Leaves opposite, the blades rounded or cordate at the base and covered with fine papillae. Calyx 4-lobed down to its union with the ovary, two of the lobes much broader. Petals numerous. Stamens numerous. Ovary partly inferior, 4-celled; stigmas 4. Fruit a capsule, 4-valved; valves without wings or flaps, and their expanding keels neither thin and deep nor toothed. Seeds small, not flat nor winged, tuberculate.

Type species, *Mesembryanthemum cordifolium* L.f.

1. *Aptenia cordifolia* (L.f.) N. E. Brown, *Jour. Bot.* 66: 139. 1928.

Mesembryanthemum cordifolium L.f. Suppl. 260. 1781.

Stems 3–6 dm. or more long, branched; leaves petioled, the blades flat, ovate, 1–3 cm. long, 0.6–2.2 cm. broad, acute at the apex; flowers peduncled, 1.2 cm. or more in diameter; calyx-tube obconic, 6–7 mm. high, the lobes unequal, equaling the tube or longer, the two larger lobes flat, the other two subulate; petals linear; capsule 1.3–1.5 cm. high, 0.8–1 cm. in diameter; seeds 1 mm. or more in diameter.

TYPE LOCALITY: Cape of Good Hope.

DISTRIBUTION: Naturalized in California and Oregon; native of South Africa.

ILLUSTRATIONS: Jacq. Ic. Pl. Rar. *pl.* 387; DC. Pl. Grasses *pl.* 102; Salm-Dyck, Monog. Mesemb. §61, *f.* 1; Meigen, Deuts. Fl. *pl.* 96; Ann. Sci. Nat. III. 18; *pl.* 10, *f.* 17-24; Payer, Organog. *pl.* 80; Trans. S. Afr. Phil. Soc. 9; *pl.* 2, *f.* E; Rev. Hort. 75; *f.* 217; A. Berger, Mesemb. *f.* 8, III, IV.

11. CARPOBROTUS N. E. Brown, Gard. Chron.

III. 78: 433. 1925.

Perennial herbs with trailing stems. Leaves opposite, sharply 3-angled, connate at the base. Flowers large, terminal, solitary. Calyx 5-lobed down to its union with the ovary. Petals numerous, free. Stamens numerous. Ovary inferior, 10-16-celled; stigmas 10-16, plumose. Fruit fleshy or pulpy, indehiscent, 10-16-celled. Seeds obovoid, slightly compressed, on long funicles.

Type species, *Mesembryanthemum edule* L.

Flowers 8-10 cm. in diameter.

Flowers 5 cm. in diameter or less.

1. *C. edulis*.

2. *C. chilensis*.

1. *Carpobrotus edulis* (L.) N. E. Brown; E. P. Phillips, Gen.

S. Afr. Pl. 249. 1926.

Mesembryanthemum edule L. Syst. Nat. ed. 10. 1060. 1759.

Stem somewhat shrubby, robust, angular; leaves connate, the blades curved, 6-10 cm. long, 6-12 mm. broad, 3-angled, serrate on the lower angle; peduncle without bracts, about 2.5 cm. long, shorter than the uppermost leaves; flowers solitary, 8-10 cm. in diameter; calyx turbinate, 5-cleft, the lobes unequal; fruit edible.

TYPE LOCALITY: South Africa.

DISTRIBUTION: Said to be an escape on the coast near Los Angeles, California; native of southern Africa.

ILLUSTRATIONS: Dill. Hort. Elth. *pl.* 272; Ann. Sci. Nat. III. 18; *pl.* 10, *f.* 25-28; Stand. Cycl. Hort. *f.* 2365; A. Berger, Mesemb. *f.* 40; Bot. Mag. *pl.* 8783; Garden 71: 600; Flora & Silva 3: 167.

2. *Carpobrotus chilensis* (Molina) N. E. Brown, Jour. Bot. 66:

324. 1928.

Mesembryanthemum chilense Molina, Sagg. Chili ed. 2. 133. 1810.

Mesembryanthemum dimidiatum Torr. Pacif. R. R. Rep. 4: 75. 1857.

Mesembryanthemum aequilaterale Brewer & Wats. Bot. Calif. 1: 251. 1876. Not *M. aequilaterale* Haw. 1803.

A fleshy herb, with stout, mostly prostrate stems, often forming large mats; leaves opposite, the blades oblong or oblong-linear, 2.5-6 cm. long, 0.6-1.3 cm. broad; flowers showy, 3 cm. or more in diameter, nearly sessile, or pedicellate; calyx-tube turbinate, 2-2.5 cm. long, the lobes unequal; petals crimson, spreading.

TYPE LOCALITY: Sandy shores of Chile.

DISTRIBUTION: Naturalized in California and Oregon; native of Chile.

Family 7. PORTULACACEAE

BY PER AXEL RYDBERG

Herbs or rarely shrubs, glabrous or rarely pilose at the nodes, more or less succulent. Leaves opposite or alternate or in basal rosettes, entire, often fleshy. Stipules scarious, lacerate or changed into hairs, or none. Flowers solitary, racemose, paniculate, or cymose, terminal or axillary, hermaphrodite, regular or nearly so. Sepals usually 2 (in *Lewisia* 4-8), persistent or deciduous, scarious or herbaceous. Petals usually 4 or 5, sometimes many, or slightly united at the base (in *Montia* more united, forming a gamopetalous corolla split on one side), often fugaceous or dehiscent (in *Calyptridium* often adherent to each other at the top and carried up on the fruit as a calyptra). Stamens inserted with the petals, sometimes adnate at the base, mostly of the same number as the petals, sometimes more, rarely fewer; filaments filiform; anthers 2-celled, dehiscent longitudinally. Ovary 1-celled, superior (or in *Portulaca* partly or wholly inferior); styles 2-7, more or less united; ovules 2 to many, on a central or basal placenta. Fruit a loculicidal or circumscissile capsule, the valves as many as the styles. Seeds 3 to many, or by abortion 1 or 2, mostly round-reniform, compressed, lenticular, the testa often crustaceous, sometimes strophiolate. Embryo mostly more or less horseshoe-shaped, enclosing the farinaceous endosperm.

The genera *Talinum*, *Talinaria*, *Talinopsis* and *Portulaca* by PERCY WILSON.

Ovary superior.

Capsule valvate, splitting from the top downward.

Capsule 3-8-valved; style-branches or stigmas 3-8; inflorescence not secund; flowers scattered.

Sepals deciduous.

Seeds wingless.

Seeds winged.

Sepals persistent.

Plants shrubby; exocarp of the capsule 3-valved, separating from the 6-valved endocarp; embryo merely hooked; endosperm scanty.

Plants herbaceous; exocarp and endocarp coherent, splitting into as many valves as the style-branches; embryo horseshoe-shaped, enclosing the endosperm.

Stem-leaves alternate.

Ovules and seeds numerous; annual herbs; petals 3-7; stamens 5-12, seldom of the same number as the petals.

Ovules 3; seeds 1-3; petals 5; stamens 3 or 5.

Plants perennial, with bulblets and creeping stems or stolons; leaves broad and fleshy.

Plants annual, without bulblets and stolons; leaves either narrow or thin.

Stamens 5; leaves broad and long-petioled; petals equal.

Stamens 3 (rarely 2 or 1), opposite the smaller petals; leaves linear or clavate.

Stem-leaves opposite.

Ovules 6; stem-leaves 2; perennials with corms or thick fusiform roots.

1. TALINUM.

2. TALINARIA.

3. TALINOPSIS.

4. CALANDRINIA.

5. NAIOCRENE.

6. LIMNALSINE.

7. MONTIASTRUM.

8. CLAYTONIA.

- Ovules 3; annuals or perennials with rootstocks or stolons.
 Stem-leaves 2; sepals distinct; stamens 5.
 Stem-leaves several pairs.
 Petals distinct; stamens 5.
 Petals united into a gamopetalous corolla, split on one side; stamens mostly 3.
- Capsule 2-valved; stigmas 2; inflorescence secund; flowers more or less imbricate.
 Style long-filiform; capsule subglobose; ovules 6; seeds 1-6.
 Style almost wanting; capsule oblong or oval; ovules more than 6; seeds 6-24.
- Capsule circumscissile near the base, then splitting from the base upward.
 Sepals 2; pedicels not jointed to the peduncle; bracts 1 or 2.
 Plants with a globular corm; basal leaves solitary, at flowering time wanting; stem-leaves 2 or 3, verticillate.
 Plants with a thick taproot; basal leaves numerous.
 Sepals 6-8, imbricate; pedicels distinctly jointed to the peduncle; bracts 3-7, verticillate.
- Ovary partly or wholly inferior; capsule circumscissile.
9. LIMNIA.
 10. CRUNOCALLIS.
 11. MONTIA.
 12. SPRAGUEA.
 13. CALYPTRIDUM.
 14. EROCALLIS.
 15. OREOBROMA.
 16. LEWISIA.
 17. PORTULACA.

1. TALINUM * Adans. Fam. Pl. 2: 245. 1763.

Helianthemoides Medic. Phil. Bot. 1: 95. 1789.
Phemeranthus Raf. Med. Repos. II. 5: 350. 1808.
Litanum Nieuwl. Am. Midl. Nat. 4: 90. 1915.

Herbs or shrubby plants, often with fleshy tuberous roots. Stems sometimes very short, or elongate. Leaves fleshy, alternate or nearly opposite, the blades flat or terete, entire. Flowers often showy, borne on long- or short-peduncled cymes, or sometimes solitary in the axils of the leaves. Sepals 2, deciduous. Petals 5 or more, early-withering. Stamens few or numerous; filaments filiform. Ovary superior; styles 3, more or less united; ovules numerous. Capsule 1-celled, 3-valved. Seeds flattened, round-reniform, with a smooth or rigid testa; embryo incompletely annular; albumen farinaceous.

Type species, *Portulaca triangularis* Jacq.

Leaves flat, 1-4.7 cm. broad.

Inflorescence paniculate.

Cymes congested, with the flowers sessile or nearly so, terminating long stout branches; bracts of the inflorescence ovate; sepals 8-9 mm. long; petals 10 mm. or more long.

Cymes diffuse, with the flowers slender-pedicelled, terminating slender branches; bracts of the inflorescence lanceolate; sepals 3-4 mm. long; petals 3.5-4.8 mm. long.

Inflorescence racemose or cymose; sepals 5-6 mm. long; petals 7-10 mm. long.

Leaves terete or flat, 1-6 mm. broad.

Leaves obovate to elliptic-oblong, half as wide as long (5-12 mm. long, 3-6 mm. wide, flat); flowers solitary at the apex of the branches.

Leaves linear, linear-lanceolate, oblong, or narrowly spatulate, several times longer than wide.

Flowers usually solitary in the axils of the leaves.

Mature seeds with several concentric subcircular ridges on the side.

Flowers clustered at the ends of the branches.

Flowers not clustered at the ends of the branches.

Plants usually decidedly more than 15 cm. high; pedicels bracteate below the middle, often near the base; leaves up to 6 cm. long; stem usually much branched.

Petals yellow; stem slender, suffrutescent at the base, stiff; capsule globose, 4-4.5 mm. in diameter.

Petals orange to reddish; stem rather stout; capsule ovoid, 5-7 mm. long, 4.5-5.2 mm. in diameter.

Plants low-growing, usually less than 15 cm. high; pedicels bracteate at the middle or above; leaves 1-3 cm. long; stem usually branched only at the base.

Pedicels 2.8-3.5 cm. long; petals 13-14 mm. long.

Pedicels 8-10 mm. long; petals 8-9 mm. long.

Mature seeds smooth (unknown in *T. brevicaulis*).
 Sepals oval to orbicular, 3-3.7 mm. long, obtuse or nearly so.
 Sepals lance-ovate to ovate or elliptic-ovate, 6-8 mm. long, acute.

Petals 11.5-15 mm. long, 4-5 mm. broad; stamens 25-38.
 Petals 9-10 mm. long, 3-5 mm. broad; stamens 12.

1. *T. guadalupense*.
 2. *T. paniculatum*.
 3. *T. triangulare*.
 4. *T. domingense*.
 5. *T. cymbosepalum*.
 6. *T. angustissimum*.
 7. *T. aurantiacum*.
 8. *T. tuberosum*.
 9. *T. lineare*.
 10. *T. brevifolium*.
 11. *T. pulchellum*.
 12. *T. brevicaulis*.

* By PERCY WILSON.

Flowers in a terminal cyme.

Seeds with several concentric subcircular ridges on the side.

Inflorescence equaling or shorter than the leaves, rarely slightly longer; stamens 5 (unknown in *T. marginatum*).

Leaf-blades sessile.

Leaf-blades with petiole-like bases.

Leaf-blades 0.4-0.9 cm. long, 1 mm. broad, half as long as the slender petiole-like base; seeds 0.5 mm. broad; plants 1-2.5 cm. high.

Leaf-blades 0.8-2 cm. long, 1-2 mm. broad, usually equaling or longer than the petiole-like base; seeds 0.9 mm. broad; plants 2-5 cm. high.

Inflorescence surpassing the leaves.

Crown of the plant not armed with the persistent midribs of old leaves.

Plants 5-15 cm. high, the leaves longer than or half as long as the peduncle; petals 4-7 mm. long, 1-2 mm. broad.

Capsule 3-3.9 mm. in diameter; sepals 3-4 mm. long, 2.5 mm. broad; "petals white veined with purple"; stamens 5; root ellipsoid or globose.

Capsule 2-2.3 mm. in diameter; sepals 2.5-3 mm. long, 1.3-2 mm. broad; petals yellow; stamens 5; root elongate.

Plant 2-4 dm. tall, the peduncle three to four times as long as the leaves; petals 8-10 mm. long, 3-3.5 mm. broad; stamens 5-8.

Crown of the plant armed with long-persistent indurated spine-like midribs of the leaves; "stamens 10."

Seeds smooth or slightly wrinkled, not concentrically ridged.

Stamens 4-8.

Root subglobose, tuberous, 2-3 cm. in diameter; peduncles shorter than the leafy branches; much-branched herb.

Root elongate, not tuberous.

Inflorescence congested, the flowers nearly sessile.

Inflorescence loose, the flowers pedicelled.

Sepals long-acuminate; capsule ovoid.

Capsule 5 mm. long; peduncle several times as long as the leafy branches.

Capsule 3-4 mm. long; peduncles shorter than the leafy branches.

Sepals obtuse to acuminate; capsule ellipsoid.

Capsule 3.5-4.5 mm. long, 2.8-3 mm. in diameter; seeds 0.8-0.9 mm. broad; petals 5.5-7 mm. long; sepals 2.7-4 mm. long.

Capsule 2.8-3 mm. long, 2-2.1 mm. in diameter; seeds 0.5-0.6 mm. broad; petals 3.5-4 mm. long; sepals 2-2.5 mm. long.

Stamens 12-100.

Stigmas capitate or subcapitate.

Branches armed with the persistent indurated spine-like midribs of the leaves; capsule globose-ovoid, 5 mm. long; stamens 20-30.

Branches not armed with persistent spine-like midribs.

Capsule globose-ovoid or ellipsoid-ovoid, 5-7 mm. long, 3.5-4.5 mm. in diameter; sepals often long-persistent.

Capsule 6-7 mm. long, 4.5 mm. in diameter; sepals 4.5-5.5 mm. long, 5-6 mm. broad; petals 10-15 mm. long, 5-9 mm. broad; stamens 30 or more; herb up to 2.5 dm. or more tall.

Capsule 5 mm. long, 3.5 mm. in diameter; sepals 3.5-4 mm. long, 3-3.5 mm. broad; petals 7-7.5 mm. long, 3-3.5 mm. broad; stamens 10-12; herb 2.5-6 cm. tall.

Capsule subglobose, 3-5 mm. long; sepals usually early-deciduous.

Stamens 40-100 (commonly 50-80); petals 9-13 mm. long, 5-6 mm. wide; capsule 3-4 mm. in diameter.

Stamens 12-20; petals 5-6 mm. long, 3-4 mm. wide; capsule 4-5 mm. in diameter.

Stigma-lobes about one third as long as the style; capsule subglobose, 4-4.2 mm. in diameter.

13. *T. humile*.
14. *T. parvulum*.
15. *T. marginatum*.
16. *T. napiforme*.
17. *T. multiflorum*.
18. *T. Palmeri*.
19. *T. longipes*.
20. *T. oligospermum*.
21. *T. confertiflorum*.
22. *T. Gooddingii*.
23. *T. Rosei*.
24. *T. parviflorum*.
25. *T. mexicanum*.
26. *T. spinescens*.
27. *T. calycinum*.
28. *T. validulum*.
29. *T. Mengesii*.
30. *T. teretifolium*.
31. *T. rugospermum*.

1. *Talinum guadalupense* Dudley, in D. S. Jordan, *Fur Seals N. Pacif.* 3: 282. 1899.

A stout fleshy herb, up to about 5.5 dm. high, with large tuber-like root; leaves all basal, the blades flat, obovate-spatulate or spatulate, 3.5–5.5 cm. long, 1–1.4 cm. broad, rounded or sometimes acutish at the apex, tapering at the base; inflorescence paniculate, the cymes congested, with the flowers sessile or nearly so, terminating long stout branches, the branches 4.5–6.5 cm. long; bracts ovate; sepals 8–9 mm. long, 8 mm. broad; petals obovate, 10 mm. or more long, rose-colored; stamens about 75; style-lobes 2 or 3; capsule broadly ovoid, 5 mm. long; seeds immature.

TYPE LOCALITY: Guadalupe Island, west of Lower California.
DISTRIBUTION: Type locality.

2. *Talinum paniculatum* (Jacq.) Gaertn. *Fruct.* 2: 219. 1791.

Portulaca paniculata Jacq. *Enum. Pl. Carib.* 22. 1760.
Portulaca patens L. *Mant.* 242. 1771.
Ruellia patens Ehrh. *Beitr.* 3: 135. 1788.
Talinum reflexum Cav. *IC.* 1: 1. 1791.
Talinum patens Willd. *Sp. Pl.* 2: 863. 1800.
Talinum fruticosum Macfad. *Fl. Jam.* 2: 169. 1850.
Talinum sarmentosum Engelm. *Bost. Journ. Nat. Hist.* 6: 153. 1850.
Talinum spathulatum Engelm.; A. Gray, *Pl. Wright.* 1: 14. 1852.
Talinum patens sarmentosum A. Gray, *Proc. Am. Acad.* 22: 275. 1887.
Claytonia Kuntze, *Rev. Gen.* 56. 1891.
Claytonia paniculata Kuntze, *Rev. Gen.* 57. 1891.
Claytonia sarmentosa Kuntze, *Rev. Gen.* 57. 1891.
Claytonia reflexa Kuntze, *Rev. Gen.* 57. 1891.
Talinum reflexum sarmentosum Small, *Fl. SE. U. S.* 415. 1903.
Talinum chrysanthum Rose & Standley, *Contr. U. S. Nat. Herb.* 13: 288. 1911.

An herb, with tuberous roots, the stems simple or branched, rather slender, sometimes woody at the base, 2.5–7.5 dm. tall; leaf-blades elliptic or obovate, 2.7–10 cm. long, 1.3–4.7 cm. broad, obtuse or sometimes acute at the apex, tapering at the base into the petiole; inflorescence a terminal panicle, 7–25 cm. long, the branches cymose; pedicels slender, 1–2 cm. long, terete; sepals oval to orbicular, 3–4 mm. long, deciduous; petals oval to orbicular, 3.5–4.8 mm. long, red, pink, or yellowish; stamens 15–20; capsule subglobose, 3–4.5 mm. in diameter; seeds black, 0.9–1.2 mm. wide, minutely striolate, and occasionally minutely tuberculate, shining.

TYPE LOCALITY: West Indies.
DISTRIBUTION: Southern United States; Mexico; Central America; West Indies; also in South America. Introduced in China.
ILLUSTRATIONS: Jacq. *Hort. Vind.* 2: *pl.* 151; Jacq. *Sel. Stirp. Pict. pl.* 136; Mart. *Fl. Bras.* 15²: *pl.* 67; Fawcett & Rendle, *Fl. Jam.* 3: *f.* 64; Gaertn. *Fruct. pl.* 128, *f.* 13; Cav. *IC.* *pl.* 1.

3. *Talinum triangulare* (Jacq.) Willd. *Sp. Pl.* 2: 862. 1800.

?*Portulaca fruticosa* L. *Syst. Nat.* ed. 10. 1045. 1759.
Portulaca triangularis Jacq. *Enum. Pl. Carib.* 22. 1760.
Portulaca racemosa L. *Sp. Pl.* ed. 2. 640. 1762.
Ruellia triangularis Ehrh. *Beitr.* 3: 134. 1788.
Talinum crassifolium Willd. *Sp. Pl.* 2: 862. 1800.
Talinum fruticosum Willd. *Sp. Pl.* 2: 864. 1800.
Talinum Andrewsii Sweet, *Hort. Brit.* 170. 1826.
Calandrinia Andrewsii Sweet, *Hort. Brit.* ed. 2. 219. 1830.
Talinum racemosum Rohrb. in Mart. *Fl. Bras.* 14²: 297. 1872.
Claytonia triangularis Kuntze, *Rev. Gen.* 56. 1891.
Talinum triangulare purpureum Goyena, *Fl. Nicar.* 303. 1909.
Talinum attenuatum Rose & Standley, *Contr. U. S. Nat. Herb.* 13: 286. 1911.
Talinum confusum Rose & Standley, *Contr. U. S. Nat. Herb.* 13: 287. 1911.
Talinum diffusum Rose & Standley, *Contr. U. S. Nat. Herb.* 13: 287. 1911. Not *T. diffusum* Colla. 1834.

An herb, sometimes 6 dm. tall, with often stout, fleshy, simple or branched stems; leaf-blades oblanceolate to obovate, 2–8 cm. long, 1–3.5 cm. broad, rounded or acute at the apex, tapering at the base into the petiole; inflorescence a few- to many-flowered raceme or cyme; pedicels 7–11 mm. long, 3-angled; sepals lanceolate-ovate to broadly ovate or nearly oval, 5–6 mm. long, 3–4.2 mm. broad, cuspidate, persistent; petals broadly elliptic to oval, 7–10 mm.

long, 5-6 mm. broad, purplish, pink, or yellow; stamens about 30; capsule subglobose, 4.5-6 mm. in diameter; seeds black, 0.8-0.9 mm. wide, minutely striolate, shining.

TYPE LOCALITY: West Indies.

DISTRIBUTION: Florida Keys; West Indies; Mexico; Central America; also in South America.

ILLUSTRATIONS: Jacq. Hort. Vind. 3: pl. 52; Plumier, Pl. Am. pl. 150, f. 2; Contr. U. S. Nat. Herb. 13: pl. 45; Andr. Bot. Repos. pl. 253 (as *T. patens*).

4. *Talinum domingense* Urban & Ekman; Urban, Ark. Bot. 22A^s:
22. 1928.

A perennial(?) herb, with fleshy roots; stems erect, 5-7 cm. long; leaves alternate, the petioles 1-1.5 mm. long, the blades obovate to elliptic-oblong, 5-12 mm. long, 3-6 mm. broad, rounded, obtuse, or acutish at the apex, narrowed at the base; flowers solitary at the apex of the branches, the peduncle 1- or 2-bracted, 4-6 mm. long, recurved in fruit; sepals ovate, 3 mm. long, 2 mm. broad, acute at the apex, deciduous; petals obovate, 6 mm. long, in estivation imbricate, long-persistent; stamens 10 or 12; young anthers rectangular; style trifid, the lobes linear; capsule globose, 3 mm. in diameter, pale-yellow; seeds rounded, 0.6 mm. in diameter, brown.

TYPE LOCALITY: Near Anses-à-Pitre, Haiti.

DISTRIBUTION: Known only from the type locality.

5. *Talinum cybosepalum* Rose & Standley, Contr. U. S. Nat.
Herb. 13: 286. 1911.

A low perennial, 15 cm. high or less, with a thick tuberous root, the fleshy stems branched near the base; leaves fleshy, the blades broadly linear, 2.5-4 cm. long, 1.5-4 mm. broad, flat, acute at the apex; flowers solitary in the axils of the leaves, and crowded at the ends of the stems, the pedicels rather stout, bracted at or below the middle; sepals ovate, 8-9 mm. long, acuminate at the apex, concave; petals 14-16 mm. long; capsule ovoid, 8 mm. long; seeds (immature) 1.2 mm. long.

TYPE LOCALITY: Los Naranjos, Oaxaca.

DISTRIBUTION: Known only from the type locality.

NOTE: Possibly a form of *T. aurantiacum* Engelm.

6. *Talinum angustissimum* (A. Gray) Wooton & Standley, Contr.
U. S. Nat. Herb. 16: 120. 1913.

Talinum aurantiacum angustissimum A. Gray, Pl. Wright. 1: 14. 1852.

A plant up to 4 dm. or more in height, often lower, suffrutescent at the base, the branches slender; leaf-blades linear or narrowly linear, 1-6 cm. long, 0.5-2.3 mm. broad, mostly acute at the apex, narrowed at the base; flowers usually solitary in the axils of the leaves, the pedicels slender, 1-1.8 cm. long, bracted mostly near the base; sepals ovate to broadly ovate, 6-9 mm. long, 5-6 mm. broad; petals obovate, 10-13 mm. long, 3.5-6 mm. broad, yellow; stamens 20 or more; style-lobes linear; capsule globose, 4-4.5 mm. in diameter; seeds black, 1.2-1.3 mm. wide, with several concentric subcircular ridges on the side.

TYPE LOCALITY: Bottoms of Live Oak Creek and on the San Felipe, Texas.

DISTRIBUTION: Western Texas to Arizona and northern Mexico.

7. *Talinum aurantiacum* Engelm. Bost. Jour. Nat.
Hist. 6: 153. 1850.

Claytonia aurantiaca Kuntze, Rev. Gen. 57. 1891.

An erect or ascending herbaceous plant, about 1.5-3.5 dm. or more tall, with rather stout stems and tuberous roots; leaf-blades linear or linear-lanceolate, 1.5-5.5 cm. long, 1.2-3.5

mm. broad, fleshy; flowers solitary in the axils of the leaves, the pedicels bracted below the middle, reflexed in fruit; sepals ovate, 6-9 mm. long, 3.2-4.5 mm. broad, cuspidate; petals obovate, 9-13 mm. long, 5-6 mm. broad, orange or reddish; stamens 20 or more; stigmas linear; capsule ovoid, 5-7 mm. long, about 4.5-5.2 mm. in diameter; seeds black, 1.3 mm. wide, with several concentric subcircular ridges on the side.

TYPE LOCALITY: Western Texas.

DISTRIBUTION: Western Texas to Arizona; Mexico.

8. *Talinum tuberosum* (Benth.) P. Wilson.

Calandrinia tuberosa Benth. Pl. Hartw. 9. 1839.

An erect or ascending perennial herb, 0.8-1.5 dm. tall, the branches rather stout, brownish; leaf-blades linear, 1.5-2.2 cm. long, 2-3 mm. broad, rounded or acutish at the apex, narrowed at the base; flowers in the axils of the leaves, solitary or 2 on long slender pedicels, the pedicels longer than the leaves, 2.8-3.5 cm. long, bracted at the middle or above; sepals elliptic-ovate or lanceolate-ovate, 8.5 mm. long, 2.5-3.1 mm. broad, deciduous in fruit; petals obovate, 13-14 mm. long, 5-7.5 mm. broad, rounded at the apex; capsule ovoid, 7 mm. long, 5 mm. in diameter; seeds immature, with several concentric subcircular ridges on the side.

TYPE LOCALITY: Lagos, Jalisco.

DISTRIBUTION: Jalisco and Michoacan.

9. *Talinum lineare* H.B.K. Nov. Gen. & Sp. 6: 77. 1823.

Claytonia Bonplandiana Kuntze, Rev. Gen. 57. 1891.

A rather low perennial herb, often less than 15 cm. high, with a thick fleshy root, branched from the base, the branches fleshy; leaf-blades linear, 1-3 cm. long, 1.5-2.6 mm. broad, acute, narrowed at the base; flowers usually solitary in the axils of the leaves, the pedicels 8-10 mm. long, bracteate at or above the middle, reflexed in fruit; sepals ovate, 4.8-5.3 mm. long, 3.5-4.5 mm. broad; petals obovate, 8-9 mm. long, 3.5-4 mm. broad, yellow; stamens 18-20; style-lobes 3, linear; capsule subglobose, 5-5.5 mm. in diameter; seeds black, about 1.2 mm. wide, with several concentric subcircular ridges on the side.

TYPE LOCALITY: Arid regions, between Mexico and Real de Pachuca, near Gasave, in the valley of Tenochtitlan.

DISTRIBUTION: Central Mexico.

10. *Talinum brevifolium* Torr. in Sitgreaves, Rep. Exp. 156. 1853.

Talinum brachypodium S. Wats. Proc. Am. Acad. 20: 355. 1885.

Claytonia brevifolia Kuntze, Rev. Gen. 57. 1891.

A fleshy herb, with spreading branches and deep root; leaves crowded, the blades subterete, narrowly spatulate, clavate, or linear, 4-9 mm. long, 1-1.8 mm. broad, obtuse at the apex; flowers solitary in the axils of the upper leaves, borne on pedicels about 3-3.5 mm. long; sepals oval to orbicular, 3-3.7 mm. long, 3.8-4.4 mm. broad; petals obovate, 8-10 mm. long, 4-5 mm. wide, rose; stamens about 18-20; style as long as the ovary, 3-cleft at the summit; capsule globose-ovoid or globose-ellipsoid, 3.5-3.7 mm. long, 3-3.2 mm. in diameter; seeds nearly smooth, 1-1.1 mm. broad, with grayish pellicle.

TYPE LOCALITY: On the Little Colorado, Arizona.

DISTRIBUTION: Northern Arizona, New Mexico, western Texas (?), and southern Utah.

11. *Talinum pulchellum* Wooton & Standley, Contr. U. S. Nat.

Herb. 16: 121. 1913.

An herb, with fleshy branches; leaves crowded, the blades subterete, linear, 12-18 mm. long, 1-2 mm. thick, acute at the apex; flowers solitary in the axils of the upper leaves, borne on pedicels 6-12 mm. long; sepals lance-ovate to elliptic-lanceolate, 6.5-8 mm. long, 2.2-3.5

mm. broad; petals obovate, about 11.5-15 mm. long, 4-5 mm. or more broad, purplish-red; stamens 25-38; capsule not seen; seeds 1.1-1.2 mm. in diameter, smooth.

TYPE LOCALITY: Queen, New Mexico.

DISTRIBUTION: Known only from the type locality.

12. *Talinum brevicaule* S. Wats. Proc. Am. Acad. 21: 446. 1886.

A low perennial, up to about 8 cm. high, with a large, thick, branched, woody root; stem stout and woody; leaf-blades terete, 6-12 mm. long, 2-2.5 mm. thick, acutish; peduncles axillary, slender, about equaling the leaves, each bearing 1-3 flowers; pedicels about 8 mm. long; sepals ovate, 6-7 mm. long, 3-3.5 mm. broad, acuminate; petals obovate, 9-10 mm. long, 3-5 mm. broad; stamens 12; capsule and seeds unknown.

TYPE LOCALITY: Santa Eulalia Mountains, Chihuahua.

DISTRIBUTION: Northern Mexico.

13. *Talinum humile* Greene, Bot. Gaz. 6: 183. 1881.

Talinum Greenmanii Harshb. Bull. Torrey Club 24: 183. 1897.

A small herb, 2.5-5 cm. high, with spindle-shaped taproot; leaf-blades terete, 1-5 cm. long, 1-3 mm. thick; inflorescence a cyme, shorter than the leaves, bracted at the forks; pedicels slender; sepals oval or oval-ovate, 3 mm. long, 2 mm. broad, obtuse; petals elliptic or obovate, 3.5-4 mm. long, 1.5-1.7 mm. broad, obtuse, yellow; stamens 5; stigma capitate; capsule ellipsoid or somewhat ellipsoid-ovoid, 4-5 mm. long, 2.8-3 mm. in diameter; seeds black, 0.9-1 mm. wide, with several concentric subcircular ridges on the side.

TYPE LOCALITY: On a rocky table-land near the southern base of the Pinos Altos Mountains, New Mexico.

DISTRIBUTION: New Mexico and Mexico.

ILLUSTRATION: Bull. Torrey Club 24: pl. 299, f. 4.

14. *Talinum parvulum* Rose & Standley, Contr. U. S. Nat. Herb. 13: 283. 1911.

A small, caespitose, acaulescent herb, 1-2.5 cm. high, with subglobose tuberous root 0.5-1 cm. in diameter; leaf-blades 4-9 mm. long, 1 mm. broad, the slender petioles as long as or longer than the leaf-blades; inflorescence a cyme, shorter than the leaves, bracted at the forks; pedicels slender; sepals elliptic to oval, 2.7-3 mm. long, 1.5-1.7 mm. broad, deciduous; petals obovate or elliptic, 3.2-3.9 mm. long, 1.2-1.4 mm. broad, yellow; stamens 5; stigma capitate; capsule ovoid, 3.5-4 mm. long, about 2 mm. in diameter, obtusely triquetrous; seeds 0.5 mm. wide, with several concentric subcircular ridges on the side.

TYPE LOCALITY: Otinapa, Durango.

DISTRIBUTION: North-central Mexico.

15. *Talinum marginatum* Greene, Leaflets 2: 270. 1912.

A low herb, 2-5 cm. high, with tuberous roots; leaf-blades much flattened, at least in dried specimens, oblong-spatulate, 0.8-2 cm. long, 1-2 mm. broad; petiole equaling or shorter than the blade; inflorescence a few-flowered cyme, shorter than the leaves, bracted at the forks; pedicels slender, 3-4 mm. long; flowers not seen; corolla "yellow"; capsule ellipsoid, 3 mm. long, 1.5 mm. in diameter; seeds round-subreniform, 0.9 mm. long, 0.9 mm. wide, blackish-brown, marked with several concentric subcircular lines.

TYPE LOCALITY: Sierra Madre, near Santa Teresa, Tepic.

DISTRIBUTION: Mexico.

16. *Talinum napiforme* DC. Prodr. 3: 357. 1828.

Claytonia tuberosa Moc. & Sessé; DC. Prodr. 3: 357, as synonym. 1828.

Claytonia napiformis Kuntze, Rev. Gen. 57. 1891.

A fleshy perennial herb, 5-15 cm. high, with tuberous root covered with dark-brown scales, the stem very short; leaf-blades terete, 3-8 cm. long, 2-4 mm. thick, flattened at the base, sessile and clustered near the top of the root; inflorescence a cyme, bracted at the forks, longer than the leaves; peduncles 2-3 cm. or more long; pedicels slender; sepals broadly ovate to nearly orbicular, 3-4 mm. long, 2.5 mm. broad, acutish; petals elliptic-obovate or obovate, 5-7 mm. long, about 2 mm. broad, "white veined with purple"; stamens 5; stigma capitate; capsule ellipsoid or somewhat ovoid, about 5 mm. long, 3-3.9 mm. in diameter, obtusely triquetrous; seeds 0.8 mm. wide with several concentric subcircular ridges on the side.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Mexico.

ILLUSTRATIONS: Moc. & Sessé, Calq. Dess. *pl.* 384; Bull. Torrey Club 24: *pl.* 299, *f.* 3.

17. **Talinum multiflorum** Rose & Standley, Contr. U. S. Nat. Herb.
13: 285. 1911.

A perennial herb, 10 cm. high or less, with tuberous roots 0.5-1 cm. in diameter, the stem 1 cm. long or less; leaf-blades 1.5-4 cm. long, 1-1.2 mm. broad, sessile and clustered near the top of the root; inflorescence a many-flowered cyme, bracted at the forks, longer than the leaves; peduncles 2.5-6 cm. long; pedicels slender; sepals ovate to oval, 2.5-3 mm. long, 1.3-2.1 mm. broad; petals obovate, 4-5 mm. long, 1-1.2 mm. broad, yellow; stamens 5, the anthers oblong; stigmas shortly 3-lobed; capsule 4 mm. long, 2-2.3 mm. in diameter, rather sharply 3-angled; seeds black, 0.8-1 mm. wide, with several concentric subcircular ridges on the side.

TYPE LOCALITY: Otinapa, Durango.

DISTRIBUTION: Mexico.

18. **Talinum Palmeri** Rose & Standley, Contr. U. S. Nat. Herb. 13:
284. 1911.

An acaulescent perennial herb, 2-4 dm. high, with fleshy tuberous roots covered with dark-brown scales; leaves terete, 3-9 cm. long, 1-3 mm. thick, acutish; inflorescence a cyme, bracted at the forks; peduncles slender; pedicels slender; flowers 15 mm. or more in diameter; sepals ovate-orbicular, 3 mm. long, 2.6 mm. broad, obtuse or acutish; petals obovate, 8-10 mm. long, 3-3.5 mm. broad, white; stamens 5-8; stigmas subcapitate; capsule ellipsoid, 3 mm. in diameter, triquetrous; seeds black, 1 cm. wide, with several concentric subcircular ridges on the side.

TYPE LOCALITY: Otinapa, Durango.

DISTRIBUTION: Northern Mexico.

ILLUSTRATION: Contr. U. S. Nat. Herb. 13: *pl.* 44.

19. **Talinum longipes** Wootton & Standley, Contr. U. S. Nat. Herb.
16: 120. 1913.

An herb, 0.8-1.5 dm. high, with long slender roots, the crown covered with the persistent midribs of dead leaves; leaves numerous, the blades terete, 12-25 mm. long; inflorescence a cyme, bracted at the forks; peduncles slender, 10-12 cm. high; pedicels slender, 3-6 mm. long; sepals nearly orbicular, 3 mm. long, thin; petals "pinkish," 4-5 mm. long; "stamens 10"; capsule nearly spheric, 3.5 mm. in diameter; seeds (immature) with several concentric subcircular ridges on the side.

TYPE LOCALITY: Tortugas Mountain, New Mexico.

DISTRIBUTION: Southern New Mexico.

20. **Talinum oligospermum** Brand. Zoe 5: 245. 1908.

A low, erect or somewhat spreading, much-branched herb, with a fleshy, subglobose or broadly ellipsoid, tuberous root 2-3 cm. long, 2-3 cm. in diameter; leaf-blades oblong, 0.4-2 cm. long, 1-2 mm. broad, obtuse; inflorescence a cyme, bracted at the forks; peduncles nearly

filiform, 1-2.5 cm. long; pedicels slender; sepals broadly ovate to oval, 2 mm. long, 1.5-1.8 mm. broad; petals obovate, 4-4.5 mm. long, 1.8-2.1 mm. broad, rose; stamens 5; stigmas subcapitate; capsule ellipsoid or ellipsoid-obovoid, 2-3.2 mm. long, 1.3-1.5 mm. in diameter; seeds smooth, 1.7 mm. wide, with grayish pellicle.

TYPE LOCALITY: Dry, rocky soil, Cerro de la Yerba, Puebla.
DISTRIBUTION: Southern Mexico.

21. *Talinum confertiflorum* Greene, Bull. Torrey Club 8: 121.
1881.

A fleshy herb, with a long, slender or branching, perennial root, the stems up to 3 cm. long; leaf-blades terete or nearly so, 1.3-3 cm. long, 1-1.5 mm. thick; inflorescence a cyme, bracted at the forks, the flowers often nearly sessile; peduncles slender, 4-12 cm. high; sepals ovate, 4.2-4.5 mm. long, 2.5-3 mm. broad, acuminate at the apex, often persistent in fruit; petals obovate or elliptic, 5 mm. long, 2-2.5 mm. broad, purplish; stamens 5; stigmas subcapitate; capsule ellipsoid, triquetrous, 4.9-5 mm. long, 3 mm. in diameter; seeds black, 0.9-1 mm. wide, smooth.

TYPE LOCALITY: Pinos Altos Mountains, New Mexico.
DISTRIBUTION: New Mexico.

22. *Talinum Goodingii* P. Wilson, sp. nov.

An erect herb, 1-2 cm. high, with rather slender stems 2-3 cm. long; leaf-blades terete, 1.8-3 cm. long, 1-1.5 mm. thick, acute at the apex; inflorescence a cyme, bracted at the forks; peduncles slender, 9-15 cm. long; pedicels slender; sepals ovate, 3 mm. long, 1.7 mm. broad, with a horn-like appendage on the back at the apex; petals obovate, 4.5-6 mm. long, 2-2.8 mm. broad; stamens 5 or 6, the filaments long and slender, the anthers oblong, 1.2-1.3 mm. long; stigma capitate; capsule ovoid, 5 mm. long, 3 mm. in diameter; seeds black, 1 mm. wide, smooth.

Caules herbacei erecti paullo tenues; folia tereta acuta; inflorescentia patenter cymosa; pedunculi caules foliosos plurimum superantes; sepala in appendiculam apicalem cornutam producta; stamina 5 vel 6; stigma capitatum; capsula ovoidea; semina nigra levia.

Type collected on rocky slopes, Boyle's, San Francisco River, Arizona (*L. N. Gooding 1282*).

23. *Talinum Rosei* P. Wilson.

Talinum gracile Rose & Standley, Contr. U. S. Nat. Herb. 13: 285. 1911. Not *T. gracile* Colla, 1833.

A perennial herb, 11-14 cm. high, the root sometimes rather thick and usually much branched; stems well developed, branched; leaves numerous, terete, 1.5-3 cm. long, 0.8-1 cm. thick; inflorescence a cyme, bracted at the forks; flowers few; peduncles slender, 4-5 cm. long; pedicels 1-2 mm. long; sepals ovate to lanceolate, 2.8-3 mm. long, 1.6-1.8 mm. broad, acuminate; petals (immature) obovate, 2.5 mm. long, 1.2-1.5 mm. broad; stamens 5; stigma capitate; capsule ovoid, 3-4 mm. long, obtusely triquetrous; seeds 1 mm. wide, black, smooth.

TYPE LOCALITY: Cañon de San Diego, Mexico.
DISTRIBUTION: Northern Mexico.

24. *Talinum parviflorum* Nutt.; T. & G. Fl. N. Am. 1: 197. 1838.

Claytonia Nuttalliana Kuntze, Rev. Gen. 57. 1891.
Lilium parviflorum Nieuwl. Am. Midl. Nat. 4: 90. 1915.

An herb, 5-19 cm. high, with fleshy roots, short-stemmed or subcaulescent; leaf-blades terete or nearly so, linear, 1.5-5 cm. long, 0.8-2.5 mm. thick, broadened at the base; inflorescence a cyme, bracted at the forks; peduncles slender, 3-15 cm. long; pedicels slender; sepals ovate or oval-ovate, 2.7-4 mm. long, 1.5-2 mm. broad, deciduous; petals obovate or

elliptic, 5.5-7 mm. long, 2.2-2.6 mm. broad; stamens 4-8, the anthers oblong, 0.9 mm. long; style longer than the stamens; stigmas subcapitate; capsule ellipsoid, 3.5-4.5 mm. long, 2.8-3 mm. in diameter; seeds 0.8-0.9 mm. wide, smooth.

TYPE LOCALITY: On rocks, Arkansas.

DISTRIBUTION: Minnesota and North Dakota to Arkansas, Texas, and Arizona.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1427; ed. 2. f. 1738.

25. **Talinum mexicanum** Hemsl. Diag. Pl. Nov. 23. 1879.

Claytonia mexicana Kuntze, Rev. Gen. 57. 1891.

An herb, 7-8 cm. or more high, the slender stems armed with few persistent spine-like midribs of the leaves; leaf-blades subterete, linear, 3-7 mm. long, 0.8-1 mm. thick; inflorescence a cyme, bracted at the forks; peduncles slender, 2-2.5 cm. long; pedicels slender, 4-7 mm. long; sepals broadly elliptic to oval, 2-2.5 mm. long, 1.5-1.9 mm. broad, obtuse; petals obovate or oblong-ovate, 3.5-4 mm. long, 1.2-1.4 mm. broad; stamens 4; stigmas subcapitate; capsule ellipsoid, 2.8-3 mm. long, 2-2.1 mm. in diameter; seeds smooth, 0.5-0.6 mm. wide.

TYPE LOCALITY: In the region of San Luis Potosí.

DISTRIBUTION: Mexico.

26. **Talinum spinescens** Torr. U. S. Expl. Exp. 17: 250. 1874.

Claytonia spinescens Kuntze, Rev. Gen. 57. 1891.

An erect herb, up to 3 dm. tall, with a somewhat woody caudex, its branches armed with the persistent, indurated, spine-like midribs of the leaves; leaf-blades subterete, linear, 1-3 cm. long, 1-2 mm. thick, obtuse at the apex, tapering at the base into the petiole; inflorescence a few-flowered cyme, bracted at the forks; peduncle slender, 7-19 cm. long; pedicels slender; sepals orbicular-ovate to orbicular, 2.5-4 mm. long, 2.5-4 mm. broad; petals oval or obovate, 6-8 mm. long, "bright-purple"; stamens 20-30; style filiform, nearly as long as the petals; stigma subcapitate; capsule ovoid-globose, about 5 mm. long, 4 mm. in diameter; seeds smooth or ridged down the back, 1 mm. wide.

TYPE LOCALITY: Bare rocks between Fort Okanagan and Grand Coulie, on the upper Columbia River.

DISTRIBUTION: Washington; British Columbia (?).

27. **Talinum calycinum** Engelm. in Wisliz. Tour Northern Mex.
88. 1848.

Claytonia calycina Kuntze, Rev. Gen. 57. 1891.

An erect herb, with a rather thick rootstock, the stems 3-10 cm. long; leaf-blades subterete, 2.5-7 cm. long, 1-2 mm. thick, acute; inflorescence a cyme, bracted at the forks; peduncle slender, 6-23 cm. long; pedicels slender; sepals ovate to ovate-orbicular, 4.5-5.5 mm. long, 5-6 mm. broad, often persistent in fruit; petals broadly obovate, 10-15 mm. long, 5-9 mm. broad, pink; stamens 30 or more; stigma capitate; capsule globose-ovoid, 6-7 mm. long, 4.5 mm. in diameter; seeds black, 1-1.1 mm. wide, smooth.

TYPE LOCALITY: In sandy soil on the Cimarron [Kansas or Oklahoma].

DISTRIBUTION: Missouri and Nebraska, and southward to Arkansas and Texas.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1428; ed. 2. f. 1739.

28. **Talinum validulum** Greene, Leaflets 2: 270. 1912.

An erect fleshy herb, 2.5-6 cm. high, with a slender fusiform or subcylindric root 10 cm. or more long; leaf-blades linear, 0.9-1.5 cm. long, 1-2 mm. broad, acute and apparently subterete; cymes few-flowered, 1.5-4 cm. long; corolla light-rose-red; sepals suborbicular, 3.5-4 mm. long, 3-3.5 mm. broad, acute; petals elliptic or obovate, 7-7.5 mm. long, 3-3.5 mm. broad; stamens 10-12, the filaments short, subulate; anthers yellow; stigmas subcapitate; capsule ellipsoid-ovoid, 5 mm. long, 3.5 mm. in diameter; seeds 1 mm. long, 1 mm. wide, smooth.

TYPE LOCALITY: Tusayan Forest Reservation, Arizona.
DISTRIBUTION: Arizona.

29. *Talinum Mengesii* W. Wolf, Am. Midl. Nat. 6: 153. 1920.

A glabrous, succulent, perennial herb, 2-4 dm. tall, with horizontal rootstock, the stems tufted; leaf-blades terete, 2-5.5 cm. long, 1.5-3 mm. thick; inflorescence a cyme, bracted at the forks; peduncles slender, 1-2 dm. long; pedicels slender, clavate, 5-10 mm. long; sepals ovate, 3.5-4 mm. long, obtusish; petals obovate, 9-13 mm. long, 5-6 mm. broad, mucronulate, rose-purple; stamens 40-100, commonly 50-80; stigma capitate; capsule subglobose, 3-4 mm. in diameter, angled at the sutures; seeds black, 0.9-1 mm. wide, nearly smooth.

TYPE LOCALITY: Cliff-banks of Little River, Alabama.
DISTRIBUTION: Alabama and Tennessee.

30. *Talinum teretifolium* Pursh, Fl. Am. Sept. 365. Ja 1814.

Talinum trichotomum Desf. Tabl. 166, hyponym. 1804.
Phemeranthus teretifolius Raf. Med. Repos. II. 5: 350, hyponym. 1808; Specchio 1: 86. Mr 1814.
Talinum ciliatum Lindl. Bot. Reg. 29: pl. 1. 1843.
Claytonia teretifolia Kuntze, Rev. Gen. 57. 1891.

An erect herb, up to about 3 dm. high, with a fleshy rootstock and short, more or less tufted stems; leaf-blades terete, 1.5-6 cm. long, 1-2.5 mm. thick, acute; inflorescence a cyme, bracted at the forks; peduncles very slender, 0.8-2.5 dm. long; pedicels slender; sepals elliptic or ovate, 3-3.5 mm. long, 2-3 mm. broad, deciduous; petals obovate, about 5-6 mm. long, 3-4 mm. broad, bright-rose-purple; stamens 12-20; stigma capitate; capsule subglobose, 4-5 mm. in diameter; seeds 0.8-0.9 mm. broad, smooth.

TYPE LOCALITY: On sunny rocks, Delaware and Virginia.
DISTRIBUTION: Pennsylvania to Georgia, Alabama, and Tennessee.
ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1426; ed. 2. f. 1736; A. Gray, Gen. III. pl. 98; Darl. Florida Cestr. pl. 3; Bull. Torrey Club 24: pl. 299, f. 1; Bot. Reg. 29: pl. 1; Meehan, Nat. Fl. 2: pl. 14; Lodd. Bot. Cab. pl. 819; Nichols. Dict. Gard. 7: f. 5; Rev. Hortic. 1860: f. 6.

31. *Talinum rugospermum* Holz. Asa Gray Bull. 7: 117. 1899.

A perennial herb, 1-2.3 dm. tall, the root deep, the stems short; leaf-blades terete, 1.5-6 cm. long, 1-1.6 mm. thick, acute; inflorescence a cyme, bracted at the forks; peduncles slender, 7-13 cm. long; pedicels slender; sepals ovate to broadly ovate, 3.8-4 mm. long, 3.6-4 mm. broad, obtuse or acutish at the apex, early-deciduous; petals ovate, elliptic, or sometimes obovate, 6.5-8 mm. long, 2.4-5 mm. broad, obtuse or acute at the apex; stamens 12-25, the filaments slender, pinkish, the anthers very short, nearly circular in outline; style split for one third its length into three slender stigmatic lobes; capsule subglobose, about 4-4.2 mm. in diameter; seeds 1 mm. long, 0.9-1 mm. wide, wrinkled.

TYPE LOCALITY: Trempeleau Prairie, Wisconsin.
DISTRIBUTION: Minnesota, Wisconsin, Illinois, and Indiana.
ILLUSTRATIONS: Asa Gray Bull. 7: f. a-c; Britt. & Brown, Ill. Fl. ed. 2. f. 1737.

DOUBTFUL SPECIES

TALINUM EXIMIUM A. Nelson, Am. Jour. Bot. 18: 431. 1931. A fleshy herb, with a semi-woody fusiform root, flowers large and showy; sepals ovate, about 7 mm. long, abruptly acute at the apex; petals narrowly obovate-oblong, about twice as long as the sepals, pink or lavender-purple; stamens 30 or more; seeds not described. TYPE LOCALITY: New Mexico. Plant unknown to me.

2. *TALINARIA* * Brand, Zoe 5: 231. 1906.

Low herbs, with fleshy, tuberous roots. Sepals 2, equal, fleshy, deciduous. Petals 5, free, in aestivation imbricate. Stamens about 25, opposite the petals; filaments filiform; anthers 2-celled. Ovary 1-celled; style columnar, 3-lobed at the apex, the lobes oblong, stigmatose within. Ovules numerous. Capsule 3-valved, the valves reticulate. Seeds

* By PERCY WILSON.

numerous, hooked, reniform, surrounded by a membranaceous wing; testa smooth; embryo linear, curved into a half circle about the endosperm; cotyledons oblong; radicle curved.

Type species, *Talinaria Palmeri* Brand.

Pedicels 1.5-3 cm. long; sepals 6-7 mm. long; petals 7-8 mm. long.
Pedicels 1.3 cm. long or less; sepals 4-5 mm. long; petals 6 mm. long.

1. *T. Palmeri*.

2. *T. coahuilensis*.

1. *Talinaria Palmeri* Brand. Zoe 5: 231. 1906.

An herb, 6-10 cm. high, the roots bearing many ovoid, ellipsoid, or oblong-ellipsoid tubers; leaf-blades spatulate, 0.8-2.5 cm. long, 0.5-1.2 cm. broad, acute or obtuse, the axils and lower parts bearing whitish hairs; pedicels 1.5-3 cm. long; bracts pilose within; sepals broadly ovate, 6-7 mm. long, 6-7 mm. broad; petals oblong-ovate, elliptic, or obovate, 7-8 mm. long, 3.5-6 mm. broad, rose-colored; stamens shorter than the petals; anthers yellow; capsule ellipsoid or ovoid, 7-9 mm. long; seeds, including the wing, 2-2.5 mm. in diameter.

TYPE LOCALITY: Saltillo, Coahuila.

DISTRIBUTION: Northern Mexico.

2. *Talinaria coahuilensis* (S. Wats.) P. Wilson.

Talinum coahuilense S. Wats. Proc. Am. Acad. 26: 132. 1891.

A perennial herb, with short leafy stems and branching rootstock bearing oblong or ovoid tubers; leaves rhombic-obovate or obovate, 8-14 mm. long, 4-8 mm. broad, cuneate at the base and nearly sessile; pedicels 1.3 cm. long or less; sepals round-ovate, 4-5 mm. long, acute; petals broadly obovate, 6 mm. long; stamens numerous; filaments slender; anthers short; capsule ovate. [The type material of this species is very poor. The species is probably a depauperate form of the preceding.]

TYPE LOCALITY: On limestone hills at Carneros Pass, Coahuila.

DISTRIBUTION: Northern Mexico.

3. TALINOPSIS * A. Gray, Pl. Wright. 1: 14. 1852.

Erect woody plants with branched stems. Leaves opposite or fascicled in the axils. Cymes few-flowered. Sepals 2, persistent in fruit. Petals 5, free, in estivation imbricate. Stamens 20-25; anthers 2-celled. Ovary 1-celled; style columnar; stigmas 3; ovules numerous. Fruit a capsule, 3-valved from the apex, the valves separating from a thin white papery 6-valved endocarp. Seeds uncinatate or arcuate; testa granulate; embryo curved; cotyledons incumbently incurved; radicle straight or a little curved.

Type species, *Talinopsis frutescens* A. Gray.

1. *Talinopsis frutescens* A. Gray, Pl. Wright. 1: 15. 1852.

A shrub-like plant, 1.8-6 dm. high, with slender stems and branches; leaves fleshy, linear, terete, 9-30 mm. long, 1-2 mm. thick; cymes few-flowered, the branches short, angled; flowers sessile; sepals ovate or elliptic-ovate, 7-8 mm. long, 4.5-5.2 mm. broad, obtuse, several-nerved; corolla purple; petals oval or somewhat obovate, 9-10 mm. long, 4-5 mm. broad; anthers oblong; style shorter than the ovary; stigmas dilated; capsule fusiform, 10-16 mm. long, 4-5.5 mm. in diameter; seeds uncinatate or arcuate, 2 mm. long, 1 mm. thick, brown, the surface granulate.

TYPE LOCALITY: Mountain valleys, 17 miles east of the Rio Grande, New Mexico.

DISTRIBUTION: Western Texas and New Mexico to Mexico.

ILLUSTRATION: Pl. Wright. 1: pl. 3.

4. CALANDRINIA H. B. K. Nov. Gen. & Sp. 6: 77. 1823.

Phacosperma Haw. Phil. Mag. II. 1: 123. 1827.

Geunisia Moc. & Sessé; DC. Prodr. 3: 358, as synonym. 1828. Not *Geunisia* Blume, 1823.

Cistanthe Spach. Hist. Vég. 5: 229. 1836.

Tegneria Lilja, Fl. Sv. Vext. 76. 1839.

Rhodopsis Lilja, Fl. Sv. Vext. Suppl. 42. 1840.

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Annual (all ours) or perennial herbs, sometimes suffrutescent at the base. Leaves alternate or basal, fleshy. Flowers hermaphrodite, pedicelled, axillary or in terminal leafy racemes. Sepals 2, herbaceous, ovate or lanceolate, usually persistent. Petals 3-7, mostly 5, hypogynous, ephemeral. Stamens 5-12; filaments free or united in a ring at the base, or there adherent to the petals. Ovary superior, many-ovuled; styles 3, united below. Capsule globose or ovoid, membranous or chartaceous, 3-valved. Seeds lenticular, round-reniform, concentrically lineate-grooved and cross-lineate or muricate, strophiolate or naked at the hilum. Embryo horseshoe-shaped.

Type species, *Calandrinia caulescens* H.B.K.

Flowers solitary in the axils of the leaves or forming a terminal racemiform inflorescence; seeds strophiolate.

Herbage green; stem-leaves more or less foliaceous; seeds with a minute strophiole; capsule acute.

Capsule nearly twice as long as the ovate-deltoid sepals.

Capsule slightly if at all longer than the sepals.

Corolla 1-1.5 cm. long, nearly twice as long as the calyx.

Corolla less than 1 cm. long, slightly if at all exceeding the calyx.

Capsule 6-8 mm. long; seeds shining, 1.5 mm. long.

Leaf-blades spatulate or oblanceolate, the lower often somewhat rhombic, usually more than 3 mm. wide; sepals ciliolate.

Sepals ovate-lanceolate, acuminate, longer than the capsule; pedicels longer than the calyx.

Leaf-blades abruptly contracted into the petioles, inclined to be subrhombic.

Leaf-blades gradually tapering into the petioles, oblanceolate.

Sepals rounded-ovate, about equaling the capsule; pedicels not longer than the calyx.

Leaf-blades linear or narrowly linear-oblanceolate, 1-2 mm. wide; sepals glabrous.

Capsule 4-5 mm. long; seeds about 1 mm. long.

Seeds shining, smooth or minutely striate.

Pedicels 8-15 mm. long; upper leaves linear-oblanceolate.

Pedicels 1-10 mm. long; all leaves narrowly linear.

Petals exceeding the sepals; plant 7-20 cm. high.

Petals shorter than the sepals; plant about 5 cm. high.

Seeds dull, minutely muricate.

Herbage glaucous; upper leaves bract-like, the lower ample; seeds muricate, with a large strophiole; capsule obtuse.

Flowers in bracteate axillary clusters; capsule obtuse; seeds shining, without strophiole.

1. *C. Breweri*.

2. *C. elegans*.

3. *C. Menziesii*.

3. *C. Menziesii*.

4. *C. arizonica*.

5. *C. micrantha*.

6. *C. stenophylla*.

7. *C. heterophylla*.

8. *C. filifolia*.

9. *C. tenella*.

10. *C. muricata*.

11. *C. maritima*.

12. *C. ambigua*.

1. *Calandrinia Breweri* S. Wats. Proc. Am. Acad. 11: 124. 1876.

Calandrinia Menziesii macrocarpa A. Gray, Proc. Calif. Acad. 3: 102. 1864.

Claytonia Breweri Kuntze, Rev. Gen. 57. 1891.

Annual, branched at the base; stems lax, decumbent or spreading, 2-6 dm. high, glabrous; leaves 2-6 cm. long, petioled, the blade spatulate or oblanceolate, or those of the inflorescence sessile and linear-lanceolate; pedicels 5-15 mm. long; sepals 5-7 mm. long, deltoid-ovate, glabrous; petals about 6 mm. long; capsule lance-ovoid, about 1 cm. long; seeds black, muricate, about 1 mm. long.

TYPE LOCALITY: Santa Inez Mountains, near Santa Barbara, California.

DISTRIBUTION: Central and southern California along the coast; Lower California.

2. *Calandrinia elegans* Spach, Hist. Vég. 5: 232. 1836.

Calandrinia speciosa Lindl. Bot. Reg. 19: pl. 1598. 1833. Not *C. speciosa* Lehm. 1831.

Tegneria speciosa Lilja, Fl. Sv. Vext. 76. 1839.

Calandrinia pulchella Lilja, Linnæa 17: 108. 1843.

Cistanthe speciosa Heynh. Nom. 2: 146. 1846.

Calandrinia caulescens Menziesii A. Gray, Proc. Am. Acad. 22: 277, in part. 1887.

Claytonia speciosa Kuntze, Rev. Gen. 57. 1891.

Calandrinia ciliolaris Gand. Bull. Soc. Bot. Fr. 59: 708, in part. 1913.

Annual; stem branched at the base, 1-3 dm. high, erect, ascending, or decumbent, glabrous; leaves 5-10 cm. long, the blades linear-oblanceolate, acute, 2-6 mm. wide, gradually tapering into the petioles; flowers axillary, the pedicels 1-4 cm. long, thickened upward; sepals 6-8 mm.,

in fruit 8–10 mm. long, glabrous or rarely slightly ciliate on the margins and midrib, the margins slightly hyaline; petals 5, obovate or oval, about 15 mm. long, red or rarely white; stamens 10–12; capsule lance-ovoid, about 1 cm. long, about equaling the sepals; seeds black, suborbicular, shining, fully 2 mm. in diameter.

TYPE LOCALITY: Northern California.

DISTRIBUTION: California.

ILLUSTRATIONS: Bot. Reg. 19: pl. 1598; Jepson, Fl. Calif. f. 92; Jepson, Man. Fl. Pl. Calif. f. 354 (as *C. caulescens Menziesii*); Floricult. Cab. 3: opp. 24; J. W. Loud. Ladies' Fl. Gard. Ann. pl. 18, f. 1; M. E. Parsons, Wild Fl. Calif. 219.

3. *Calandrinia Menziesii* (Hook.) T. & G. Fl. N. Am. 1: 197. 1838.

Talinum Menziesii Hook. Fl. Bor. Am. 1: 223. 1832.

Calandrinia caulescens Menziesii A. Gray, Proc. Am. Acad. 22: 277. 1887.

Calandrinia ciliolaris Gand. Bull. Soc. Bot. Fr. 59: 708. 1913.

Calandrinia caulescens Jepson, Man. Fl. Pl. Calif. 344. 1923. Not *C. caulescens* H. B. K. 1823.

Annual; stem branched at the base, decumbent or erect, 1–2 dm. high; leaves 3–6 cm. long; blades spatulate to linear-oblancoolate or the lower somewhat rhombic-oblancoolate, acute, more abruptly contracted into the petioles, usually ciliate on the margins and midrib; flowers axillary, the pedicels 5–10 mm. long; sepals ovate-lanceolate, 5–6 mm. or in fruit 6–8 mm. long, acuminate, ciliate on the margins; petals 5, red, obovate, 5–8 mm. long, only slightly exceeding the sepals; capsule ovoid, short-pointed, about equaling the sepals; stamens 5–8; seeds ovate-orbicular, black, shining, 1.5 mm. long.

TYPE LOCALITY: Northwest coast of America, south of the Columbia.

DISTRIBUTION: British Columbia to central California.

ILLUSTRATIONS: Hook. Fl. Bor. Am. pl. 70; Nichols. Dict. Gard. 1: 235; Rep. Calif. Exp. Sta. 1890: 256; Ic. Hort. Then. pl. 232.

4. *Calandrinia arizonica* Rydberg, sp. nov.

Annual, much branched at the base; stems decumbent, 5–15 cm. long; basal leaves 2–6 cm. long, the blades oblanceolate, gradually tapering into the petioles; upper stem-leaves sessile, oblanceolate, ciliate with flat crisp hairs; inflorescence leafy; pedicels 3–10 mm. long, usually not longer than the calyx; sepals ovate-lanceolate, acuminate, ciliolate on the margins and midrib, 6–8 mm. long; petals 5–7, rose-purple, slightly exceeding the sepals; capsule lance-ovoid, shorter than the sepals; seeds black, shining, 1.5 mm. long.

Caules annui decumbentes; folia radicalia petiolata; folia caulina superiora sessilia; foliorum laminae oblanceolatae; inflorescentia foliosa; sepala acuminata ciliolata; petala roseo-purpurea quam sepalis paullo longiora; capsula acuta sepalis breviora; semina nigra nitentia.

Type collected in wet sand of the Rillita, Arizona, April 13, 1881, Pringle (Gray herb.).

DISTRIBUTION: Arizona.

5. *Calandrinia micrantha* Schlecht. Ind. Sem. Hort. Hal. 1838:—.

1838.—Linnaea 13: Litt.-Ber. 97. 1839.

Annual, branched at the base; stems 2–3 dm. high, leafy; lower leaves petioled, 3–5 cm. long, the blades narrowly oblanceolate, acute; upper leaves sessile, 1.5–3 cm. long, lanceolate, acute, slightly ciliate with flat crisp hairs; inflorescence leafy; pedicels 2–5 mm. long, usually shorter than the calyx; sepals rounded-ovate, merely acute, about 6 mm. long, ciliolate on the margins and midrib; corolla equaling the calyx, rose-purple; petals 3–5; stamens 3–6; capsule oblong, attenuate, about equaling the calyx; seeds black, shining, 1.5 mm. long.

TYPE LOCALITY: Hacienda de Regla, [Hidalgo].

DISTRIBUTION: Hidalgo and San Luis Potosí.

ILLUSTRATION: Schlecht. Hort. Hal. pl. 5.

6. *Calandrinia stenophylla* Rydberg, sp. nov.

Annual, branched at the base; stems ascending or spreading, 1–2 dm. high; leaves linear-filiform to narrowly linear-oblancoolate, 3–6 cm. long, 1–2 mm. wide; flowers axillary, the

pedicels 1-2.5 cm. long; sepals ovate-lanceolate, 6 mm. long, acuminate; petals 5-6 mm. long, obovate, rose-red; stamens 5-8; capsule lance-ovoid, about 8 mm. long; seeds black, smooth and shining, minutely striate, nearly 1.5 mm. long.

Caules annui adscendentes vel patentes; folia linearia vel lineari-oblancoolata; flores axillares; sepala acuminata glabra; petala roseo-rubra quam sepalis paullo longiora; capsula acuta, sepala excedens; semina nigra nitentia minute striata.

Type collected at Alameda, California, June 17, 1891, *E. L. Greene* (herb. Columbia Univ.).

DISTRIBUTION: Around San Francisco Bay.

7. *Calandrinia heterophylla* Rydberg, sp. nov.

Calandrinia caulescens A. Gray, Proc. Am. Acad. 22: 277. 1887. Not *C. caulescens* H.B.K. 1823.

Annual, branched at the base; stems decumbent, 1-2 dm. high; leaves 4-6 cm. long, the lower leaf-blades linear or filiform, the upper narrowly linear-oblancoolata, 1-3 mm. wide; pedicels 8-15 mm. long; sepals 5-6 mm. long, lanceolate, acuminate; petals 5, pink, rounded-obovate, about equaling the sepals; stamens 5-8; capsule about 5 mm. long, lance-ovoid; seeds black, shining, orbicular, smooth, 1 mm. long.

Caules annui decumbentes; folia inferiora linearia vel filiformia, superiora anguste lineari-oblancoolata; sepala lanceolata acuminata; petala pallide rosea, sepala subaequantia; capsula lanceo-ovoidea; semina nigra nitentia levia.

Type collected at Old Mission Dam, San Diego County, California, April 10, 1904, *H. P. Chandler* 5152 (herb. N. Y. Bot. Gard.).

DISTRIBUTION: Southern California and Lower California.

8. *Calandrinia filifolia* Rydberg, sp. nov.

Annual, branched at the base; stems numerous, ascending or decumbent, 7-20 cm. high, slender; leaves narrowly linear, less than 2 mm. wide, 2-5 cm. long; pedicels 3-10 mm. long; sepals lanceolate, 4-5 mm. long; petals 5-6 mm. long, rose-colored; stamens 3-5; capsule 4 mm. long, shorter than the sepals; seeds black, shining, minutely striate, 1 mm. long or less.

Caules annui adscendentes vel decumbentes; folia anguste linearia; sepala lanceolata; petala rosea quam sepalis paullo longiora; capsula acuta sepalis breviora; semina nigra nitentia minute striata.

Type collected at San Quentin Bay, Lower California, January 1889, *E. Palmer* 733 (herb. Columbia Univ.).

DISTRIBUTION: Lower California and southern California.

9. *Calandrinia tenella* Rydberg, sp. nov.

Annual, branched at the base; stems numerous, spreading, about 5 cm. long, slender; leaves linear, 1 cm. long or less, about 1 mm. wide, glabrous or the upper slightly ciliolate; pedicels 1-3 mm. long; sepals ovate-lanceolate, 3-4 mm. long, acuminate; petals 5, shorter than the sepals; capsule about 4 mm. long; seeds black, orbicular, smooth and shining.

Caules annui patentes; folia linearia; sepala acuminata; petala sepalis breviora; capsula acuta, sepala aequans; semina nigra nitentia levia.

Type collected on Sauvie's Island, Oregon, April 20, 1885, *T. Howell* (herb. Columbia Univ. and N. Y. Bot. Gard.). Also collected there by *Henderson*.

DISTRIBUTION: Sauvie's Island.

10. *Calandrinia muricata* Rydberg, sp. nov.

Annual, branched at the base; stems numerous, about 1.5 dm. high, ascending or decumbent; leaves narrowly linear or narrowly linear-oblancoolata, less than 3 mm. wide; flowers axillary, solitary, the pedicels 5 mm. long or less; sepals ovate, acute, 4 mm. long; petals 5, obovate, scarcely exceeding the sepals; capsule lance-ovoid, 4 mm. long; seeds black, finely muricate, 1 mm. long.

Caules annui adscendentes vel decumbentes; folia anguste linearia vel lineari-oblancoolata; flores axillares solitarii; sepala acuta; petala sepala vix superantia; capsula acuta, sepala aequans; semina nigra nullo modo nitentia, minute muricata.

Type collected at San Diego, California, April, 1906, *T. S. Brandegee* (herb. N. Y. Bot. Gard.).

11. *Calandrinia maritima* Nutt.; T. & G. Fl. N. Am. 1: 197. 1838.

Claytonia maritima Kuntze, Rev. Gen. 57. 1891.

Annual, branched at the base; stems few, 1-2 dm. high; lower leaves obovate-spatulate, fleshy, glaucous, 2-6 cm. long, short-petioled; upper leaves sessile, lanceolate and bract-like; inflorescence raceme-like, terminal; pedicels 3-10 mm. long; sepals dark-veined, rounded-ovate, mucronate, 5 mm. long; petals red, longer than the sepals; capsule ovoid, slightly shorter than the sepals; seeds grayish, muricate, strophiolate, about 1 mm. long.

TYPE LOCALITY: San Diego, California.

DISTRIBUTION: Southern California, Sonora, and Lower California.

12. *Calandrinia ambigua* (S. Wats.) Howell, Erythea 1: 34. 1893.

Claytonia ambigua S. Wats. Proc. Am. Acad. 17: 365. 1882.

Calandrinia sessurionoides A. Gray, Proc. Am. Acad. 22: 278. 1887.

Annual, branched at the base; stems several, erect or ascending, 5-18 cm. high; leaves fleshy, linear-spatulate, 2-4 cm. high, rounded at the apex; flowers in axillary fascicles or short bracted racemes; pedicels 2-6 mm. long; sepals oval, about 4 mm. long, yellowish-green, obtuse; petals 5, obovate, unequal, shorter than the sepals; stamens 5-8; seeds ovate, shining, smooth, without strophioles, 1 mm. long.

TYPE LOCALITY: Plains at El Rio on Colorado River, southeastern California.

DISTRIBUTION: Colorado Desert, California, and Yuma County, Arizona.

5. *NAIOCRENE* Rydb. Bull. Torrey Club 33: 139. 1906.

Claytonia § *Naiocrene* T. & G. Fl. N. Am. 1: 201. 1838.

Perennial herbs, with sarmentose, spreading, or decumbent stems, bearing bulblets in the leaf-axils, also with basal stolons. Leaves more or less fleshy, alternate. Flowers hermaphrodite, racemose-cymose. Sepals very unlike, one much broader than the other and 2-lobed at the apex. Corolla regular, actinomorphic, the petals 5, distinct, oblanceolate or obovate, pink. Stamens 5, the filaments distinct. Capsule rounded-obovoid, 3-ovuled, 1-3-seeded; seeds minutely concentrically and transversely grooved, shining.

Type species, *Claytonia parvifolia* Moc.

Petals 7-8 mm. long; lower leaves thick, spatulate or oblanceolate, less than 2 cm. long.

Petals about 15 mm. long; lower leaves rather thin, obovate, 2-4 cm. long.

1. *N. parvifolia*.

2. *N. flagellaris*.

1. *Naiocrene parvifolia* (Moc.) Rydberg, Bull. Torrey Club 33: 139. 1906.

Claytonia parvifolia Moc.; DC. Prodr. 3: 361. 1828.

Claytonia filicaulis Dougl.; Hook. Fl. Bor. Am. 1: 224. 1832.

Montia parvifolia Greene, Fl. Fran. 181. 1891.

Montia obtusata A. Heller, Muhlenbergia 2: 32. 1905.

Naiocrene obtusata A. Heller, Muhlenbergia 3: 147. 1908.

Naiocrene filicaulis A. Heller, Muhlenbergia 3: 147. 1908.

Naiocrene parviflora Rydb. Fl. Rocky Mts. 265 (err.). 1917.

?*Claytonia rupicola* Suksd. Werdenda 1: 12. 1923.

?*Claytonia parvifolia rupicola* Poelln. Repert. Sp. Nov. 30: 312. 1932.

Perennial, with a rootstock; stem 1-6 cm. long, leaves clustered, petioled, more or less fleshy; petioles 0.5-2.5 cm. long, dilated and scarious at the base; leaf-blades spatulate or oblanceolate, 0.5-2 cm. long, acute or obtuse; branches 1-3 dm. long, most of them flower-bearing at the end, decumbent or ascending, often bearing bulb-like deciduous offshoots in the axils, others more slender and sarmentose and sterile; lower leaves similar to those of the rosettes, but usually smaller and narrower; upper leaves linear and sessile; flowers few, racemose-cymose at the ends of the branches; pedicels 5-15 mm. long; sepals unequal, 2-3 mm. long, striate, rounded-ovate; petals 7-8 mm. long, light-pink, oblanceolate, rounded or slightly retuse at the apex; capsule rounded-obovoid, scarcely equaling the calyx; seeds black, shining, minutely reticulately grooved, more than 1 mm. long.

TYPE LOCALITY: Nootka Sound, British Columbia.

DISTRIBUTION: Alaska to Montana, Idaho, and California.

ILLUSTRATIONS: Moc. & Sessé, Calq. Dess. *pl.* 383; Hook. Fl. Bor. Am. *pl.* 72; Brown & Schäffer, Alp. Fl. Can. *pl.* 17.

2. *Naiocrene flagellaris* (Bong.) A. Heller, *Muhlenbergia* 3: 147.
1908.

Claytonia flagellaris Bong. Mém. Acad. St.-Pétersb. VI. 2: 137. 1832.

Montia flagellaris B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 276. 1897.

Perennial, the short rootstock ending in a tuft of leaves and producing decumbent or sarmentose axillary branches 2-4 dm. long, some flower-bearing at the end, others flagelliform, developing into stolons; leaves of the rosettes petioled, the petioles 2-4 cm. long, the blades rounded-ovate or obovate, thin, obtuse, 1-2.5 cm. long; lower leaves of the flowering branches similar but smaller, the upper ones spatulate or oblong; inflorescence 5-10-flowered; pedicels 7-15 mm. long; sepals rounded-obovate, 4 mm. long, striate; petals rose-colored, about 1.5 cm. long, oblanceolate; capsule obovoid, shorter than the calyx; seeds 0.8 mm. broad.

TYPE LOCALITY: Sitka, Alaska.

DISTRIBUTION: Alaska to Oregon, along the coast.

6. *LIMNALSINE* Rydberg, gen. nov.

Diffusely branched, leafy-stemmed, slender annuals. Leaves many, alternate, petioled, with broad blades. Flowers hermaphrodite, fertile, in leafy panicles, the lowest pedicel of each branch subtended by a bract. Sepals 2, nearly equal, persistent, herbaceous. Petals 5, distinct, uniform and equal, emarginate. Stamens 5, opposite the petals. Ovary subglobose, 3-ovuled, the placenta basal, the styles 3, united below. Capsule 3-valved, the valves very concave after dehiscence. Seeds 1-3, broadly oval in outline, finely concentrically and transversely lineate-grooved, with a distinct strophiole.

Herbæ annuæ ramosæ foliosæ. Folia alternata petiolata. Flores folioso-paniculati. Sepala 2, subaequalia persistentia herbacea. Petala 5, aequalia discreta emarginata. Stamina 5, petalis opposita. Ovarium superum; styli 3, infra connati; ovula 3; placenta basilaris. Capsula loculicida 3-valvata. Semina 1-3, strophiolata.

Type species, *Claytonia diffusa* Nutt.

1. *Limnalsine diffusa* (Nutt.) Rydberg.

Claytonia diffusa Nutt.; T. & G. Fl. N. Am. 1: 202. 1838.

Montia diffusa Greene, Fl. Fran. 181. 1891.

Annual; stems decumbent at the base, diffuse, much-branched, 0.5-2 dm. high; leaves petioled, alternate, the petioles 1-3 cm. long, dilated at the base, the blades ovate or deltoid, 1-2.5 cm. long, acute, decurrent on the petioles; flowers in leafy panicles; pedicels 1-2 cm. long, recurved in flower, ascending when in fruit; sepals rounded-obovate, 2 mm. long; petals white or pale-rose, emarginate, 4 mm. long; capsule obovate, slightly exceeding the calyx; seeds black, broadly ellipsoid, 1.5 mm. long, finely reticulately grooved.

TYPE LOCALITY: Fort Vancouver, Washington.

DISTRIBUTION: Washington to central California.

7. *MONTIASTRUM* (A. Gray) Rydb. Fl. Rocky Mts. 265, 1061.
1917.

Claytonia † *Montiastrum* A. Gray, Proc. Am. Acad. 22: 283. 1887.

Slender, leafy-stemmed annuals. Leaves alternate, narrow, somewhat scarious at the base. Flowers in secund racemes, hermaphrodite. Sepals 2, persistent. Petals 5, distinctly unequal, clawed at the base, two of them larger than the rest or in one of the species some of them lacking. Stamens 3 (rarely 2 or 1), opposite the smaller petals, the filaments subulate. Ovary globose, 3-ovuled, the placenta basal. Styles 3. Capsule 3-valved, the valves with

margins incurved after dehiscence. Seeds 1 or 2, lenticular, round-reniform, shining, smooth throughout or muriculate along the margins.

Type species, *Claytonia linearis* Dougl.

Leaves linear; racemes terminating the stem or branches.

Petals 5 mm. long, much exceeding the sepals; seeds 2 mm. long.

Petals 2 mm. long, scarcely exceeding the sepals; seeds 1 mm. long.

Leaves spatulate or oblanceolate; racemes axillary; petals, if present, 2 mm. long; seeds 1 mm. long.

1. *M. lineare*.

2. *M. dichotomum*.

3. *M. Howellii*.

1. *Montiastrum lineare* (Dougl.) Rydb. Fl. Rocky Mts. 265, 1061. 1917.

Claytonia linearis Dougl.; Hook. Fl. Bor. Am. 1: 224. 1832.

Montia linearis Greene, Fl. Fran. 181. 1891.

Annual; stem branched, 0.5–3 dm. high, erect, glabrous; leaves alternate, linear-filiform, 2–4 cm. long; bractlet subtending the raceme usually present, short and oblong; racemes terminal at the ends of the branches, secund, lax, elongate, in age sometimes 1 dm. long; pedicels 1–2 cm. long; sepals reniform-orbicular, about 4 mm. long; petals unequal, about 5 mm. long, obovate, white; capsule ovoid, 4 mm. long, the valves scarcely involute; seeds lenticular, orbicular in outline, smooth, microscopically muricate on the rim, 2 mm. in diameter.

TYPE LOCALITY: Great and Little Falls of Columbia River [Washington].

DISTRIBUTION: British Columbia to western Montana, Nevada, and California.

ILLUSTRATION: Hook. Fl. Bor. Am. *pl.* 71.

2. *Montiastrum dichotomum* (Nutt.) Rydberg.

Claytonia dichotoma Nutt.; T. & G. Fl. N. Am. 1: 202. 1838.

Montia dichotoma Howell, Erythraea 1: 36. 1893.

Annual; stem 2–5 cm. high, sparingly branched; leaves alternate, filiform, sheathing at the base, 1–2 mm. long; bractlet at the base of the lowest pedicel usually present, 2 mm. long, lanceolate; racemes 1–2 cm. long, nodding, at the ends of the branches; pedicels 1–2 mm. long, recurved; sepals rounded-ovate, scarcely 2 mm. long; petals scarcely exceeding the sepals, emarginate; capsule 2 mm. long; seeds lenticular, orbicular, smooth, black, 1 mm. long.

TYPE LOCALITY: Rocks near junction of Willamette River, Oregon.

DISTRIBUTION: Washington to northern California.

3. *Montiastrum Howellii* (S. Wats.) Rydberg.

Montia Howellii S. Wats. Proc. Am. Acad. 18: 191. 1883.

Claytonia dichotoma A. Gray, Proc. Am. Acad. 22: 284, in part. 1887.

Claytonia Howellii Piper, Contr. U. S. Nat. Herb. 11: 251. 1906.

Annual; stems slender, diffuse, branched, 1–5 cm. high, decumbent and rooting; leaves alternate, spatulate or oblanceolate, 0.5–1 cm. long, scarious, dilated at the base; racemes axillary, subsessile, with a deltoid bractlet at the base, few-flowered; pedicels reflexed, 2 mm. long; sepals rounded-ovate, less than 2 mm. long; petals 2–5 or wanting, the 2 larger slightly exerted; stamens 1–3; seeds black, smooth and shining, 1 mm. long or less.

TYPE LOCALITY: Sauvies Island, in the Willamette River, Oregon.

DISTRIBUTION: British Columbia to northwestern California.

8. CLAYTONIA [Gron.] L. Sp. Pl. 204. 1753.

Belia Steller; Gmel. Fl. Sib. 4: 88, as synonym. 1769.

Perennial herbs, with corms or fleshy taproots. Leaves more or less fleshy, the basal ones 1 to many, the cauline ones a single pair, opposite; stipules wanting. Flowers hermaphrodite, regular, in terminal racemes, the lowest pedicel subtended by a small bract; bractlets none. Sepals 2, herbaceous, persistent. Petals 5, hypogynous, rose-colored to white. Stamens 5, opposite the petals and adnate to them at the base. Ovary 6-ovuled; styles 3, united to near the apex. Capsule globose or ovoid, membranous, 3-valved, the edges of the valves

elastically inrolling at dehiscence. Seeds 1-6, lenticular, round-reniform, shining, mostly smooth, the embryo horseshoe-shaped, enclosing the endosperm.

Type species, *Claytonia virginica* L.

Plant with a globose corm; basal leaves few or wanting.
Plant with a fusiform fleshy taproot; basal leaves numerous.

Subgenus 1. EU-CLAYTONIA.
Subgenus 2. BELIA.

Subgenus 1. EU-CLAYTONIA.

Leaves narrowly linear, 1-4 mm. wide; stem-leaves 5-10 cm. long.

Sepals lance-ovate, fully twice as long as the capsule.

Sepals ovate, slightly longer than the capsule.

Leaves linear-lanceolate to ovate or spatulate, or if linear, the stem-leaves less than 5 cm. long.

Stem-leaves distinctly petioled.

Leaf-blades at least 3 times as long as broad; inflorescence racemiform.

Leaf-blades lanceolate, elliptic, or spatulate.

Sepals 5-7 mm. long; petals 9-14 mm. long; leaves usually more than 5 mm. wide.

Sepals 4-5 mm. long; petals 7-9 mm. long; leaves less than 5 mm. wide.

Leaf-blades linear-oblancoolate, mostly less than 1 cm. wide.

Plant 2-3 dm. high; leaf-blades acuminate; sepals 8-10 mm. long; petals 14-15 mm. long.

Plant less than 2 dm. high; leaf-blades acute to rounded at the apex; sepals 6-7 mm. long; petals about 10 mm. long.

Leaf-blades less than twice as long as broad, orbicular, oval, or somewhat rhombic, rounded at the apex; inflorescence umbelliform.

Stem-leaves sessile.

Stem-leaves fleshy, rounded at the apex.

Stem-leaves thin, acute or acuminate.

Stem-leaves lanceolate, distinctly 3-ribbed; petals distinctly retuse or emarginate.

Stem-leaves linear or lance-linear, 1-ribbed or indistinctly 3-ribbed; petals rounded at the apex, or in *C. tuberosa* slightly retuse.

Petals white to rose-colored.

Petals 12 mm. long, slightly retuse at the apex.

Petals 7-10 mm. long, rounded at the apex.

Stems usually solitary from the corm; basal leaves solitary or wanting.

Stem-leaves long-acuminate, often spreading; raceme short.

Stem-leaves acute; raceme elongate, nearly twice as long as the stem-leaves.

Stems and basal leaves several from each corm

Petals golden-yellow.

1. *C. Bodini*.
2. *C. Simsii*.

3. *C. virginica*.
2. *C. Simsii*.

4. *C. robusta*.
5. *C. caroliniana*.

6. *C. umbellata*.
7. *C. obovata*.

8. *C. lanceolata*.
9. *C. tuberosa*.

10. *C. sessilifolia*.
11. *C. rosea*.
12. *C. multiscapa*.
13. *C. flava*.

Subgenus 2. BELIA.

Petals 5-10 mm. long; inflorescence not exceeding the basal leaves.

Basal leaf-blades suborbicular or broadly spatulate; stem-leaves oblong or obovate; perennial with a caespitose rootstock.

Basal leaf-blades spatulate; stem-leaves oblanceolate or linear; perennial with a fleshy taproot.

Basal leaves 4-10 cm. long, with 3-7 ribs running down into the petiole; stem-leaves oblanceolate.

Basal leaves 3-7 cm. long, 1-ribbed and pinnately veined; stem-leaves linear with scarious bases.

Petals about 10-17 mm. long; inflorescence exceeding the basal leaves.

Basal leaves spatulate or oblanceolate; stem-leaves suborbicular or ovate, rounded to acute at the apex.

Basal leaves linear to oblanceolate; stem-leaves lance-linear, attenuate.

Basal leaves oblanceolate or linear-oblanceolate, acute or obtuse; sepals obovate, rounded at the apex.

Basal leaves linear, attenuate; sepals ovate, acute or obtusish.

14. *C. nevadensis*.
15. *C. megarhiza*.
16. *C. bellidifolia*.
17. *C. arctica*.
18. *C. acutifolia*.
19. *C. Eschscholtzii*.

1. *Claytonia Bodini* Holz. Contr. U. S. Nat. Herb. 1: 286. 1893.

Claytonia virginica angustissima Shuttl. MS.

Corm about 1 mm. thick, globose; stems 1 or 2 from the corm, slender, 1-2 dm. high, erect; basal leaves linear, 5-10 cm. long, short-petioled, 1-2 mm. wide, attenuate; stem-leaves sessile, linear, 5-10 cm. long, 1-3 mm. wide; raceme 1-1.5 dm. long; pedicels 2-4 cm. long, recurved in fruit; sepals lance-ovate, acute or acuminate, 6-8 mm. long, in fruit 7-9 mm.

long, fully twice as long as the capsule; petals white, oval or elliptic, 8–11 mm. long; capsule 3 mm. long, ovoid; seeds black, ovoid, 2 mm. long.

TYPE LOCALITY: Hempstead, Texas.

DISTRIBUTION: Louisiana and Texas.

2. *Claytonia Simsii* Sweet, Brit. Fl. Gard. under *pl.* 216. 1827.

Claytonia virginica Sims, Bot. Mag. *pl.* 941. 1806. Not *C. virginica* L. 1753.

Claytonia virginica acutiflora DC. Prodr. 3: 361. 1828.

Claytonia acutiflora Sweet, Hort. Brit. ed. 2. 220. 1830.

?*Claytonia media* Link, Handb. 2: 44. 1831.

Claytonia virginica graminifolia Gatt. Fl. Tenn. 76. 1901.

Corm 1–1.5 cm. thick, globose; stems 1–3 from each corm, 1–2 dm. high, erect or ascending; basal leaves petioled, 5–10 cm. long, the blade about equaling the petiole, linear or nearly so, 2–4 mm. wide; stem-leaves linear or nearly so, 5–10 cm. long, almost without distinction between blade and petiole, 2–4 mm. wide; raceme 5–10-flowered, 5–10 cm. long, often with a single ovate bract; pedicels 1–4 cm. long; sepals ovate, acutish, 4–5 mm. long; petals white, oval, obtuse or acutish, 7–9 mm. long; capsule 3–4 mm. long; seeds shining, almost black, 1.5 mm. long. Perhaps a southern form of *C. virginica*.

TYPE LOCALITY: Cultivated specimens [based on *C. virginica* Sims, Bot. Mag. *pl.* 941].

DISTRIBUTION: Woods, Virginia to Illinois, Texas, and Georgia.

ILLUSTRATIONS: Bot. Mag. *pl.* 941; Spach, Hist. Vég. *pl.* 37, *f.* 3; Lam. Tab. Encyc. *pl.* 144; Schkuhr, Handb. *pl.* 50.

3. *Claytonia virginica* L. Sp. Pl. 204. 1753.

?*Claytonia grandiflora* Sweet, Brit. Fl. Gard. *pl.* 216. 1827.

Claytonia virginica media DC. Prodr. 3: 361. 1828.

Corm 1–3 cm. thick, globose; stems single or several from the corm, 1–3 dm. high, glabrous, succulent, erect or ascending; basal leaves petioled, 6–20 cm. long, the blade as long to twice as long as the petiole, succulent, linear-oblongate, 5–15 mm. wide, indistinctly 3-ribbed, acute at both ends; stem-leaves short-petioled, 9–15 cm. long; raceme 6–15-flowered, 4–16 cm. long, often with a single small oval bract below the lowest pedicel; pedicel 1.5–4 cm. long, in fruit recurved; sepals rounded-ovate or oval, usually obtuse or rounded at the apex, 5–7 mm. long; petals 9–14 mm. long, oval, rounded or obtuse, rarely retuse at the apex, white or rose-colored with purple veins; capsule about 4 mm. long, rounded-ovoid; seeds blackish-brown, orbicular, 2 mm. broad.

TYPE LOCALITY: Virginia.

DISTRIBUTION: Woods and copses, Nova Scotia to Minnesota, Kansas, and Virginia.

ILLUSTRATIONS: Dict. Sci. Nat. *pl.* 195; Bot. Cab. *pl.* 643; W. Barton, Fl. N. Am. *pl.* 51; Maund, Bot. Gard. *pl.* 138; Sweet, Brit. Fl. Gard. II. *pl.* 163; *pl.* 216; A. Gray, Gen. III. *pl.* 97; A. Gray, Bot. Text-book ed. 2. *f.* 452–457; ed. 3. *f.* 561–566; A. Gray, Struct. Bot. *f.* 730–736; Traill, Can. Wild. Fl. *pl.* 10; Britt. & Brown, Ill. Fl. *f.* 1429; ed. 2. *f.* 1740; DC. Pl. Grasses *pl.* 131; Tratt. Thes. Bot. *pl.* 17; Tratt. Ausw. Gartenpfl. *pl.* 196; J. W. Loud, Ladies Fl. Gard. Perenn. *pl.* 40; Meehan, Nat. Fl. 1: *pl.* 40; Am. Nat. 17: 1108; Blanchan, Nat. Gard. 170; Ottawa Nat. 22: *pl.* 8; Rep. N. J. Mus. 1910: *pl.* 84; Creevey, Fl. Field 313; Jour. N. Y. Bot. Gard. 13: *pl.* 95; House, Wild Fl. N. Y. *pl.* 51; Contr. U. S. Nat. Herb. 21: *pl.* 17.

4. *Claytonia robusta* (Somes) Rydb. Fl. Prairies 313. 1932.

Claytonia multicaulis robusta Somes, Iowa Nat. 2: 67. 1910.

Corm globose, 1–2.5 cm. in diameter, bearing 3–5 basal leaves and 2–7 stems; stems 2–5 dm. high; basal leaves petioled, 1–3 cm. long, the blade equaling the petiole, lanceolate, 1–2 cm. wide; stem-leaves petioled, 5–15 cm. long, the blade lanceolate, 1–2.5 cm. wide, acuminate; raceme 1–2 dm. long, with a single ovate bract; pedicels 2–3 cm. long, reflexed in fruit; sepals ovate, acute, 8–10 mm. long; petals white with pink or purple veins, oval, rounded at the apex, 14–15 mm. long; capsule 5 mm. long, ovoid; seeds black, 2 mm. broad.

TYPE LOCALITY: Johnson County, Iowa.

DISTRIBUTION: Indiana to Missouri and Iowa.

5. *Claytonia caroliniana* Michx. Fl. Bor. Am. 1: 160. 1803.

Claytonia virginica β Ait. Hort. Kew. 1: 284. 1789.
Claytonia spatulaefolia Salisb. Parad. Lond. pl. 71. 1807.
Claytonia spathulaefolia Pursh, Fl. Am. Sept. 174. 1814.
Claytonia spatulata Eat. Man. ed. 2. 207. 1818.
Claytonia virginica latifolia Torr. Fl. U. S. 259. 1824.
Claytonia spathulata Bigel. Fl. Bost. ed. 2. 98. 1824.
Claytonia virginica spathulaefolia DC. Prodr. 3: 361. 1828.
Claytonia latifolia Sheldon, Minn. Bot. Stad. 1: 15. 1894.

Corm globose, about 1 cm. thick; stems 1-3 from each corm, erect or ascending, 6-20 cm. high; basal leaves 4-15 cm. long, slender, petioled, the blade elliptic or spatulate, 3-5 cm. long, 1-2 cm. wide, acute to rounded at apex; stem-leaves petioled, 4-8 cm. long, the blade lanceolate to spatulate, acute to rounded at the apex; raceme 5-10-flowered, 4-10 cm. long, usually without bracts; pedicels 1.5-3 cm. long; sepals ovate, mostly acutish, 6-7 mm. long; petals about 1 cm. long, oval, rounded or obtuse at the apex; capsule 4 mm. long; seeds almost black, orbicular, 2 mm. broad.

TYPE LOCALITY: Higher mountains of Carolina.

DISTRIBUTION: Woods, especially in the mountains, Nova Scotia to Minnesota, Tennessee, and North Carolina.

ILLUSTRATIONS: Salisb. Parad. Lond. pl. 71; Britt. & Brown, Ill. Fl. f. 1430; ed. 2. f. 1741; J. W. Loud. Ladies' Fl. Gard. Perenn. 1: pl. 40, f. 1; Iles, Wild Fl. Am. pl. 63; House, Wild Fl. N. Y. pl. 69.

6. *Claytonia umbellata* S. Wats. Bot. King's Expl. 43. 1871.

Corm 1-2.5 cm. thick, globose; stem about 1 dm. high; basal leaves long-petioled, the petiole about 8 cm. long, the blade oval to orbicular or somewhat rhombic, 1-1.5 cm. long; stem-leaves petioled, the blade equaling the petiole, similar to that of the basal leaves; flowers 3-5, subumbellate; pedicels about 1.5 cm. long; sepals oval, obtuse, 5 mm. long; petals elliptic-ovate, obtuse, about 7 mm. long.

TYPE LOCALITY: Mount Davidson and Truckee Pass, Nevada.

DISTRIBUTION: Nevada, northern California, and southern Oregon.

ILLUSTRATIONS: S. Wats. Bot. King's Expl. pl. 6, f. 4, 5; Iles, Wild Fl. Am. pl. 220.

7. *Claytonia obovata* Rydberg, sp. nov.

Corm globose, 15-18 mm. in diameter; stems solitary, 4-8 cm. high; basal leaves apparently wanting; stem-leaves thick, fleshy, sessile, obovate, rounded or obtuse at the apex, 3-ribbed, 2-3 cm. long, 1-1.5 cm. wide; flowers subumbellate or corymbose; pedicels 5-10 mm. long; sepals broadly obovate, rounded at the apex, 4-5 mm. long; petals white or rose-colored, about 6 mm. long, oval; seeds unknown.

Cormus globosus; caules solitarii; folia carnosa sessilia tricostata apice rotunda vel obtusa; flores subumbellati vel corymbosi; sepala obovata apice rotundata; petala ovalia, alba vel rosea.

Type collected on Abbott Butte, Oregon (altitude 1600 meters), July 6, 1899, J. B. Leiberger 4262 (U. S. Nat. Herb. 621223).

DISTRIBUTION: Type locality and Mount Hull, California.

8. *Claytonia lanceolata* Pursh, Fl. Am. Sept. 175. 1814.

?*Claytonia caroliniana* Sweet, Brit. Fl. Gard. pl. 208. 1827. Not *C. caroliniana* Michx. 1803.

Claytonia caroliniana lanceolata S. Wats. Bot. King's Expl. 42. 1871.

Claytonia sessilifolia Henshaw, Mountain Fl. Am. 28 (as to description and plate). 1906.

Corm globose, sometimes slightly depressed, 1-2 cm. broad; stems 1-3 from each corm, 6-15 cm. high, fleshy; basal leaves often lacking, if present petioled, 5-8 cm. long, the blade shorter than the petiole, oblanceolate, acute, 8-15 mm. long; stem-leaves sessile, 3-6 cm. long, 1-2 cm. wide, 3-5-ribbed; raceme 5-15-flowered, usually peduncled, 4-8 cm. long, with a small ovate bract below the lowest pedicel; pedicels 1-3 cm. long; sepals elliptic or oval, obtuse, about 4-5 mm. long; petals usually rose-colored or pink, 10-12 mm. long, oval, retuse or emarginate at the apex; capsule broadly ovoid, 4 mm. long; seeds shining, dark-brown or black, orbicular, 2 mm. long.

TYPE LOCALITY: "Rocky Mountains."

DISTRIBUTION: British Columbia and Alberta to Wyoming, northern Utah, and northern California.

ILLUSTRATIONS: Sweet, Brit. Fl. Gard. *pl.* 208? (as *C. caroliniana*); Pursh, Fl. Am. Sept. *pl.* 3; Brown & Schäffer, Alp. Fl. Can. *pl.* 17; Rep. Bot. Br. Col. 1: *f.* 13; Jour. Agr. Res. 3: *pl.* 14; Armstrong, Field Book W. Wild Fl. 123; Jour. Ecol. 3: *pl.* 16; Henshaw, Mountain Fl. Am. *pl.* 8 (as *C. sessilifolia*).

9. *Claytonia tuberosa* Pall.; Schultes, in R. & S. Syst. Veg. 5: 436.
1819.

Corm 1–2.5 cm. in diameter, ovoid; stem 2 dm. high, erect; basal leaves unknown; stem-leaves linear, sessile, 2–5 cm. long, 2–5 mm. wide, acute; raceme 3–12-flowered, 5–10 cm. long, with a single round bract; pedicels about 3 cm. long, recurved in fruit; sepals ovate, 5–7 mm. long, obtuse or acute; petals white, 12 mm. long, obovate, slightly and broadly retuse; capsule 4 mm. long; seeds black, shining, orbicular, 2 mm. long.

TYPE LOCALITY: Eastern Siberia.

DISTRIBUTION: Alaska and eastern Siberia.

10. *Claytonia sessilifolia* (Torr.) Henshaw, Mountain Fl. Am. 28.
1906.

Claytonia caroliniana sessilifolia Torr. Pacif. R. R. Rep. 4: 70. 1857.

Claytonia lanceolata sessilifolia A. Nelson, Bull. Torrey Club 27: 259. 1900.

Corm globose, about 1 cm. broad; stems rarely more than 1 dm. high, solitary, or several from each corm; basal leaves usually lacking; stem-leaves sessile, often spreading, 2–5 cm. long, 2–4 mm. wide, lance-linear, with faint marginal secondary ribs, long-acuminate; raceme 5–10-flowered, subsessile, rarely surpassing the leaves; pedicels 1–2 cm. long; sepals elliptic, obtuse, 4 mm. long; petals light-pink, with darker veins, 8 mm. long, rounded at the apex; capsule ovoid, nearly equaling the sepals.

TYPE LOCALITY: Hills near Downieville, Sierra County, California.

DISTRIBUTION: Mountains of northern California and southwestern Oregon.

11. *Claytonia rosea* Rydb. Bull. Torrey Club 31: 404. 1904.

Claytonia lanceolata sessilifolia A. Nelson, Bull. Torrey Club 27: 259, in part. 1900.

Corm 1–1.5 cm. thick; stem usually single from the corm, 1–1.5 dm. high; basal leaves mostly lacking, if present long-petioled, 5–10 cm. long, the blade oblong, spatulate, or ovate, obtuse, 1–3 cm. long, 4–20 mm. wide; stem-leaves linear or linear-lanceolate, sessile, 2–5 cm. long, rather fleshy, faintly 3-ribbed; raceme 4–7 cm. long; pedicels 1–2 cm. long; sepals rounded-ovate, about 5 mm. long; petals pink, obovate, rounded at the apex, 8–10 mm. long; capsule ovoid, shorter than the sepals; seeds black, shining, orbicular, 2 mm. long.

TYPE LOCALITY: La Veta, Colorado.

DISTRIBUTION: Hillsides, Colorado, northern New Mexico, Utah, and Wyoming.

12. *Claytonia multiscapa* Rydb. Fl. Rocky Mts. 263, 1061. 1917.

Claytonia multicaulis A. Nelson, Bull. Torrey Club 27: 259. 1900. Not *C. multicaulis* Kuntze, 1891.

Corm globose, 1–2 cm. broad; stems several from each corm, ascending or spreading, 5–15 cm. long; basal leaves usually several, long-petioled, 5–10 cm. long, the blade about equaling the petiole, spatulate, 5–10 mm. wide; stem-leaves linear-lanceolate, obtuse or acute, 2–4 cm. long, 5–10 mm. wide, the veins very faint; raceme 5–9-flowered, 5–10 cm. long, peduncled, with a single ovate bract; pedicels 2–3 cm. long, recurved in fruit; sepals rounded-ovate, obtuse, 5–6 mm. long; petals broadly oval, 7–10 mm. long, white with pinkish veins; capsule ovoid, about equaling the sepals; seeds shining, suborbicular, 2 mm. long.

TYPE LOCALITY: Golden Gate, Yellowstone National Park, Wyoming.

DISTRIBUTION: Open places, Montana, Idaho, Wyoming, and northern Colorado.

13. *Claytonia flava* A. Nelson, Univ. Wyo. Publ. Bot. 1: 142.
1926.

Claytonia aurea A. Nelson, Bull. Torrey Club 27: 260. 1900. Not *C. aurea* Kuntze, 1891.

Corm globose, 1-1.5 cm. thick; stems 1-5 from each corm, 1-2 dm. high; basal leaves usually solitary, petioled, 8-10 cm. long, the blade elliptic or oblanceolate, 4-5 cm. long and 2-5 cm. wide; stem-leaves sessile, narrowly lanceolate, 2-4 cm. long; racemes 7-10-flowered, 7-10 cm. long, with a single ovate bract; pedicels about 2 cm. long, recurved in age; sepals broadly rhombic-ovate or oval, 6 mm. long; petals golden-yellow, 8-10 mm. long, oval or obovate, rounded at the apex; capsule 4 mm. long; seeds black, shining, 2 mm. long.

TYPE LOCALITY: Wet flats near Henry Lake, Idaho.

DISTRIBUTION: Idaho and western Montana.

14. *Claytonia nevadensis* S. Wats.; Brewer & Wats. Bot. Calif. 1:
77. 1876.

Claytonia chenopodiina Greene, Leaflets 2: 271. 1912.

Perennial, with a caespitose rootstock; stems above ground 4-6 cm. high; basal leaves many, long-petioled, the petioles 3-6 cm. long, the blades suborbicular or broadly spatulate, 1-2.5 cm. long, 1-2 cm. wide, fleshy, rounded at the apex; stem-leaves subopposite, oblong-obovate, 6-16 mm. long, sessile; inflorescence short-corymbiform or short-racemose, 2-5 flowered, sometimes with a small oblong bract below; sepals broadly ovate, 6-7 mm. long, acute; petals broadly spatulate, about 8 mm. long, with a narrow claw; seeds black, smooth and shining, 2 mm. long.

TYPE LOCALITY: Northern Sierra Nevada (side of Mount Dana), California.

DISTRIBUTION: Sierra Nevada, California.

15. *Claytonia megarhiza* Parry; (A. Gray, Am. Jour. Sci. II. 33:
406, as synonym. 1862) S. Wats. Bibl. Ind. 118. 1878.

Claytonia arctica megarhiza A. Gray, Am. Jour. Sci. II. 33: 406. 1862.

Perennial, with a taproot 5-20 mm. thick; stems numerous, less than 1 dm. high, fleshy; basal leaves numerous, 4-10 cm. long, very fleshy, the blades spatulate, obovate, or oblanceolate, 0.5-3 cm. wide, decurrent on the winged petioles; stem-leaves oblanceolate, 1-3 cm. long, oblanceolate or narrowly spatulate, opposite or rarely alternate, unequal; inflorescence corymbiform, not exceeding the leaves; pedicels 1-4 cm. long; sepals ovate, acute, unequal, 4-7 mm. long; petals white, obovate, slightly retuse, clawed, 5-10 mm. long; capsule 4-6 mm. long, ovoid; seeds 3-6, black, shining, rounded-oval, 2-2.5 mm. long.

TYPE LOCALITY: Rocky Mountains, Colorado.

DISTRIBUTION: Alpine, exposed situations, Colorado to Montana and Washington.

ILLUSTRATIONS: Ottawa Nat. 22: pl. 7; Clements, Rocky Mt. Fl. pl. 9.

16. *Claytonia bellidifolia* Rydberg, sp. nov.

Perennial, with a taproot 1-1.5 cm. thick; stems numerous, 2-5 cm. long, fleshy; basal leaves numerous, 3-7 cm. long, the petiole longer than the blade, scarious-dilated at the base, the blade broadly oblanceolate or spatulate, 1-1.5 cm. wide, 1-ribbed, pinnately veined with a faint or obsolete marginal vein; stem-leaves 2 or rarely 3, subopposite, 8-20 mm. long, unequal, linear, with a scarious dilated base; inflorescence corymbiform, bracteolate, 5-8 cm. long; sepals 4-5 mm. long, ovate, acute; petals white, spatulate, rounded at the apex, about 7 mm. long; capsule ovoid, about 5 mm. long; seeds black and shining, 2 mm. long.

Radix verticalis incrassata carnosae; caules numerosi carnosae; folia basilaria numerosa petiolata laminis uncostatis penninerviis; folia caulina 2 vel 3, subopposita linearia basibus scariosis; inflorescentia corymbiformis; folia basilaria subaequans; sepala ovata acuta; petala spatulata alba; capsula ovoidea; semina nigra.

Type collected in eastern Oregon, in disintegrated granite of the highest mountains, in 1897, Wm. C. Cusick 1777 (U. S. Nat. Herb. 326280).

17. *Claytonia arctica* Adams, Mém. Soc. Nat. Mosc. 5: 94. 1817.

Claytonia Joanniana Schultes, in R. & S. Syst. Veg. 5: 434. 1819.

Claytonia Chamissoi DC. Prodr. 3: 361. 1828. Not *C. Chamissoi* Ledeb. 1825.

Claytonia acutifolia Ledeb. Fl. Alt. 1: 253. 1829.

Claytonia arctica var. (vegetior) Cham. Linnaea 6: 559. 1831.

Claytonia sarmentosa Seem. Bot. Voy. Herald 27. 1852. Not *C. sarmentosa* C. Meyer, 1829.

Perennial, with a fleshy taproot 5–10 cm. thick; stems several, 7–15 cm. high; basal leaves vernal, 3–7 cm. long, the blade spatulate, 1–1.5 cm. wide, decurrent on the petiole; stem-leaves sessile, suborbicular to ovate, rounded to acute at the apex, 1–3 cm. long; racemes 5–8 cm. long, 3–7-flowered; pedicels 1–2 cm. long; sepals unequal, rounded-ovate, 5–6 mm. long; petals white, broadly obovate or obcordate, emarginate at the apex, veiny; capsule 5 mm. long; seeds rounded-oval 2 mm. long, black.

TYPE LOCALITY: Pribilof Islands.

DISTRIBUTION: Alaska; Aleutian and Pribilof islands; also in Siberia, west to the Altai.

ILLUSTRATIONS: Ledeb. Ic. pl. 272; Seem. Bot. Voy. Herald pl. 5.

18. *Claytonia acutifolia* Pall.; Schultes, in R. & S. Syst. Veg.

5: 436. 1819.

Perennial, with a fleshy taproot 1 cm. thick or more; stems several, less than 1 dm. high, fleshy; basal leaves oblanceolate, acute or obtusish, with winged petioles, 4–8 cm. long, 5–10 mm. wide; stem-leaves sessile, 1–2 cm. long, lance-linear; racemes 3–5-flowered 3–5 cm. long, often bracteate; sepals obovate, rounded at the apex, 8–10 mm. long; petals white, veined, broadly obovate, retuse or obcordate, about 15 mm. long; capsule 6 mm. long, ovoid; seeds shining, brownish-black, rounded-oval, 2.5 mm. long, 2 mm. wide.

TYPE LOCALITY: Eastern Siberia.

DISTRIBUTION: Bering Sea islands, Alaska; eastern Siberia.

19. *Claytonia Eschscholtzii* Cham. Linnaea 6: 561. 1831.

Perennial, with a fleshy taproot 5–15 mm. in diameter; stems several, about 1 dm. high, fleshy; basal leaves many, linear, attenuate, 5–10 cm. long, 1–5 mm. wide; stem-leaves lance-linear, rarely lanceolate, 1.5–3 cm. long; racemes 1–4-flowered, 3–5 cm. long, often with a single lanceolate bract; sepals ovate, acute or obtusish, 8–10 mm. long; petals white, veined, broadly obovate, broadly retuse, 15–17 mm. long; capsule 6 mm. long, ovoid.

TYPE LOCALITY: Not given, probably Kamtchatka.

DISTRIBUTION: Seward Peninsula; Alaska and eastern Siberia.

9. *LIMNIA* L. (Sv. Vet.-Akad. Handl. 6: 130. 1746); Haw. Syn.

Pl. Succ. 11. 1812.

Annual herbs, or rarely perennials, with a rootstock. Basal leaves several, fleshy; stem-leaves 2, opposite, distinct or more or less united along one or both margins. Flowers perfect, racemose at the end of the stem. Sepals 2, persistent, somewhat unequal. Petals 5, white or rose-colored, usually emarginate. Stamens 5, opposite the petals. Ovary subglobose, 3-ovuled. Styles 3. Capsule 3-valved, the valves elastically involute at dehiscence. Seeds 1–3, lenticular, mostly smooth and shining, obovate or round-reniform, with a minute strophiole.

Type species, *Claytonia sibirica* L.

Stem-leaves distinct or nearly so.

Bractlets present, several.

Leaves lanceolate, rhombic, ovate, or oblanceolate.

Stem-leaves sessile, lanceolate to rhombic; stems several.

Stem-leaves ovate or rhombic, abruptly short-acuminate or rounded at the apex; basal leaf-rossette not bulbiferous.

Petals 6–8 mm. long; stem-leaves wholly distinct.

Basal leaf-blades obovate, mostly rounded at the apex, mostly 5-ribbed.

Basal leaf-blades rhombic, mostly acute.

Leaves rather fleshy, strongly 3–5-ribbed; petals rose-colored.

Leaves thin, faintly nerved; petals white.

2. *L. asarifolia*.

1. *L. sibirica*.

3. *L. alsinoides*.

- Petals 4-5 mm. long; stem-leaves usually slightly united on one side.
- Stem-leaves lanceolate, acute. 4. *L. Washingtoniana*.
- Bracts conspicuous, the lower oval, 1-2 cm. long; corolla 10-12 mm. long; plant not bulbiferous. 5. *L. bracteosa*.
- Bracts smaller, oblong or oblanceolate, the lower rarely 1 cm. long; corolla 8-10 mm. long; plant often bulbiferous in the axils of the basal leaves. 6. *L. bulbifera*.
- Stem-leaves more or less petioled, oblanceolate; stems 1 or 2. 7. *L. heterophylla*.
- Leaves linear or narrowly linear-oblanceolate. 8. *L. arenicola*.
- Bractlets absent, or a single one present below the lowest pedicel.
- Plant perennial; basal leaves long-petioled; petals about 1 cm. long.
- Rootstock short and stout; stem 1-3 dm. high; basal leaf-blades 2-5 cm. long, cordate, reniform, or orbicular. 9. *L. cordifolia*.
- Rootstock slender, creeping; basal leaf-blades 1-3 cm. long, obovate or spatulate. 10. *L. sarmentosa*.
- Plant annual; basal leaves subsessile, 6-12 mm. long, obovate or spatulate. 11. *L. saxosa*.
- Stem-leaves more or less united, at least on one side; annuals.
- Stem-leaves rounded or reniform, usually connate on both sides, forming an amplexicaul disk.
- Basal leaf-blades (except the earlier ones) broad, broadest at or below the middle.
- Calyx-lobes 3-5 mm. long in fruit; seeds 1.5-2.5 mm. long.
- Inflorescence with a foliaceous bract; cups of stem-leaves 5-10 cm. in diameter; leaves somewhat fleshy. 12. *L. platyphylla*.
- Inflorescence bractless or with an inconspicuous bract; cups of stem-leaves 1.5-5 cm. in diameter.
- Leaves thin; sepals 3-4 mm. long; seeds 1.5-2 mm. long; racemes usually compound; flowers often verticillate on the rachis in luxuriant specimens. 13. *L. perfoliata*.
- Leaves fleshy; sepals about 5 mm. long; seeds fully 2 mm. long; raceme usually simple; flowers single or 2 at a node. 14. *L. carnosa*.
- Calyx-lobes 2-3 mm. long in fruit; seeds about 1 mm. long.
- Leaves acute or mucronate.
- Basal leaf-blades more or less rhombic or broadly elliptic.
- Inflorescence elongate, mostly peduncled, much exceeding the stem-leaves.
- Pedicels mostly single at the nodes; plant usually light-green. 15. *L. adsurgens*.
- Pedicels mostly verticillate at the nodes.
- Plant light-green; inflorescence interrupted, a part subsessile in the axils of the leaves, the rest on a distinct peduncle. 16. *L. interrupta*.
- Plant dark-green to copper-colored, fleshy; inflorescence scarcely interrupted. 17. *L. cuprea*.
- Inflorescence short, sessile, rarely exceeding the stem-leaves.
- Leaves very thin, the cauline disk 2-3 cm. broad; stem more than 1 dm. high. 18. *L. membranacea*.
- Leaves fleshy, the cauline disk 1-2 cm. broad; stem less than 1 dm. high. 19. *L. humifusa*.
- Basal leaf-blades deltoid or deltoid-reniform; inflorescence shorter than the stem-leaves. 20. *L. rubra*.
- Leaves cuspidate-acuminate. 21. *L. mexicana*.
- Basal leaf-blades linear to oblanceolate or spatulate, broadest above the middle.
- Disk of stem-leaves usually more than 1.5 cm. broad.
- Racemes elongate, much exceeding the disk.
- Basal leaves linear or linear-oblanceolate. 22. *L. parviflora*.
- Basal leaves linear-filiform, flaccid; calyx 2 mm. long. 25. *L. nubigena*.
- Racemes short, scarcely exceeding the disk.
- Basal leaf-blades linear or narrowly oblanceolate. 23. *L. angustifolia*.
- Basal leaf-blades spatulate. 24. *L. utahensis*.
- Disk of stem-leaves less than 1.5 cm. broad; plant less than 1 dm. high.
- Inflorescence elongate, lax.
- Basal leaves linear-filiform. 25. *L. nubigena*.
- Basal leaves with spatulate or oblanceolate blades. 26. *L. rupestris*.
- Inflorescence very short, slightly if at all surpassing the disk.
- Basal leaf-blades linear-filiform; plant not decidedly fleshy. 27. *L. Hassel*.
- Basal leaf-blades linear to rhombic, decidedly fleshy.
- Basal leaf-blades linear to narrowly oblanceolate. 28. *L. glauca*.
- Basal leaf-blades oblanceolate or lanceolate or slightly rhombic. 29. *L. guadalupensis*.

- Stem-leaves ovate, lanceolate, or linear, united on one side near the base.
- Inflorescence elongate, 3-10 cm. long; petals 4-7 mm. long.
- Basal leaf-blades rhombic or rounded-ovate. 4. *L. Washingtoniana*.
- Basal leaf-blades linear-filiform to linear-oblanccolate.
- Inflorescence with several linear bracts. 8. *L. arenicola*.
- Inflorescence bractless or with a single bract below the lowest flower.
- Sepals 2 mm. long or less; seeds 1 mm. long; stems mostly erect; leaves filiform, flaccid. 30. *L. gypsophiloides*.
- Sepals 3 mm. long; seeds 1.5 mm. long; stems decumbent; leaves linear, fleshy. 31. *L. Diaboli*.
- Inflorescence short, less than 3 cm. long, slightly if at all exceeding the stem-leaves. 32. *L. rosulata*.
- Basal leaves oblanceolate, sessile; plant very fleshy. 11. *L. saxosa*.
- Basal leaves linear, filiform, or if oblanceolate distinctly petioled, less fleshy.
- Stem-leaves rarely more than 2 cm. long; stem usually less than 5 cm. high.
- Petals 5-6 mm. long, twice as long as the calyx; seeds 1.5-2 mm. long. 33. *L. exigua*.
- Petals about 3 mm. long, slightly exceeding the calyx; seeds less than 1.5 mm. long. 34. *L. spathulata*.
- Stem-leaves 2-4 cm. long; stem usually more than 5 cm. high.
- Plant glaucous; leaf-blades linear or linear-filiform, the basal ones rarely slightly oblanceolate. 35. *L. tenuifolia*.
- Plant dark-green; leaf-blades narrowly oblanceolate or lanceolate. 36. *L. viridis*.

1. *Limnia sibirica* (L.) Haw. Syn. Pl. Succ. 11. 1812.

Claytonia sibirica L. Sp. Pl. 204. 1753.

?*Claytonia alsinoides rosea* DC. Prodr. 3: 361. 1828.

Annual or perennial; stem 1-2 dm. high, glabrous; basal leaves petioled, the petioles about 5 cm. long, the blades rather fleshy, rhombic-ovate, 3-5 cm. long, 2-2.5 cm. wide, strongly 3-5-ribbed, paler beneath; stem-leaves broadly ovate, short-acuminate, 2-2.5 cm. long, sessile; raceme 5-10 mm. long, mostly solitary; bracts present, the lower ovate, the rest lanceolate; sepals rounded-ovate; petals rose-colored, broadly obovate, about 7 mm. long, deeply notched.

TYPE LOCALITY: Siberia.

DISTRIBUTION: Siberia and Alaska; reported from Nootka Sound, Vancouver Island, British Columbia.

ILLUSTRATIONS: Bot. Mag. *pl.* 2243; Sweet, Brit. Fl. Gard. *pl.* 16; Sv. Vet.-Akad. Handl. 7: *pl.* 5 (1746); Nichols. Dict. Gard. 1: 336; Engl. Bot. ed. 3. Suppl. *pl.* 260a; Moc. & Sessé, Calq. Dess. *pl.* 382.

2. *Limnia asarifolia* (Bong.) Rydb. Bull. Torrey Club 33: 138. 1906.

Claytonia asarifolia Bong. Mém. Acad. St.-Pétersb. VI. 2: 137. 1832.

Montia asarifolia Howell, Erythra 1: 39. 1893.

Perennial, with a short rootstock; stem 3-5 dm. high, glabrous; basal leaves petioled, the petioles 5-15 cm. long, the blades rounded, obovate to subreniform, somewhat fleshy, 1.5-5 cm. (in the original description up to 10 cm.) long and about as wide, mostly rounded at the apex, faintly reticulate, with usually 5 principal ribs from the base; stem-leaves sessile, 2-4 cm. long, suborbicular or broadly obovate; raceme simple or branched, 1-2 dm. long, with a suborbicular bract at the base of each branch; bractlets linear or oblanceolate; pedicels 2-3 cm. long; sepals 4-5 mm. long, rounded-ovate; petals white or pink, 6-8 mm. long, deeply notched; seeds black, minutely punctate, broadly oval in outline, 2 mm. long.

TYPE LOCALITY: Island of Sitka, Alaska.

DISTRIBUTION: Coast and islands of Alaska; Queen Charlotte Islands and Vancouver Island, British Columbia.

3. *Limnia alsinoides* (Sims) Haw. Syn. Pl. Succ. 11. 1812.

Claytonia alsinoides Sims, Bot. Mag. pl. 1309. 1810.

Claytonia unalaschkensis Fisch. Cat. Jard. Gorenki ed. 2. 62, *nomen nudum*. 1812; R. & S. Syst. Veg. 5: 434. 1819.

Claytonia sibirica (Lusus 2) Ledeb. Fl. Ross. 2: 149. 1843.

Claytonia sibirica Brewer & Wats. Bot. Calif. 1: 76, mainly. 1876. Not *C. sibirica* L. 1753.

Montia sibirica Howell, Erythea 1: 39, in part. 1893.

Annual or perennial; root at first slender, with a short crown often becoming persistent and developing into a rootstock; stem glabrous, 1-3 dm. high; basal leaves long-petioled, the petioles 5-10 cm. long, dilated at the base, the blades rhombic-ovate, 2-5 cm. long, 1-3 cm. wide, thin, abruptly acute or short-acuminate; stem-leaves sessile, the blades similar; racemes 1-3, lax, 1-2 dm. long; bractlets present, the lowest (especially on the central raceme) often foliaceous, ovate, the rest oblong or linear; pedicels 2-4 cm. long, recurved or spreading; sepals rounded-reniform, 2.5 mm. long, 3 mm. wide; petals white, narrowly obovate, deeply notched, 6-8 mm. long; capsule 3 mm. long; seeds black, minutely pitted, oval, 2 mm. long.

TYPE LOCALITY: Cultivated from seed, probably from Nootka Sound, Vancouver Island, British Columbia.

DISTRIBUTION: Alaska to western Montana and southern California.

ILLUSTRATIONS: Bot. Mag. pl. 1309; Baxter, Br. Bot. pl. 253; Lindl. & Paxt. Fl. Gard. f. 296; Tratt. Ausw. Gartenfl. pl. 197; Moss, Cambr. Brit. Fl. 3: pl. 1.

4. *Limnia Washingtoniana* (Suksd.) Rydberg.

Claytonia Washingtoniana Suksd. Deuts. Bot. Monats. 16: 220. 1898.

Montia Washingtoniana Suksd. Deuts. Bot. Monats. 16: 220. 1898.

Annual; stem 1-2 dm. high, erect; basal leaves long-petioled, the petioles 4-7 cm. long, the blades rounded-ovate or rhombic-ovate, thin, acute, 1-2 cm. long; stem-leaves sessile, ovate or rounded-ovate, acute, distinct or slightly connate on one side; raceme simple, 2-5 cm. long; bracts several, linear; sepals 3 mm. long, rounded-ovate; petals 4-5 mm. long, white, emarginate; capsule 3 mm. long; seeds black.

TYPE LOCALITY: Lake Washington, King County, Washington.

DISTRIBUTION: Known only from the type locality, and from specimens cultivated at Bingen, Washington.

5. *Limnia bracteosa* Rydberg, sp. nov.

Apparently biennial, with a taproot; stems several, 3-8 dm. high; basal leaves long-petioled, the petioles 1-2 dm. long, the blades lanceolate or oblanceolate, rarely subrhombic, 3-12 cm. long, 1.5-3 cm. wide; stem-leaves lanceolate or oblanceolate, rarely ovate, acute, sessile or subsessile, 4-7 cm. long, 2-3 cm. wide, distinctly 3-5-ribbed; inflorescence 1-3 dm. long; bracts large, often quite foliaceous, the lower oval, 1-2 cm. long, the upper 5-10 mm. long; pedicels 3-4 cm. long; sepals broadly oval, unequal, acutish; petals white or pinkish, veined, obovate, 10-12 mm. long; capsule ovoid, 4 mm. long; seeds shining, minutely striate, 2.5 mm. long.

Caules ascendentes; folia lanceolata; folia caulina nunquam connata, sessilia, 3-5-costata; bracteae conspicuae saepe foliaceae, inferiores ovales; sepala ovalia subacuta; petala obovata, alba vel pallide rosea; capsula ovoidea; semina minute striata.

Type collected at Coast Guard station, three and one half miles north of Port Reyes Light, Marine County, California, *Bacigalupi* 1818 (herb. N. Y. Bot. Gard.).

DISTRIBUTION: Central California.

6. *Limnia bulbifera* (A. Gray) A. Heller, *Muhlenbergia* 6: 83.

1910.

Claytonia bulbifera A. Gray, Proc. Am. Acad. 12: 54. 1876.

Claytonia sibirica bulbifera A. Gray, Proc. Am. Acad. 22: 281. 1887.

Montia bulbifera Howell, Erythea 1: 39. 1893.

Montia sibirica bulbifera B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 273. 1897.

Perennial, with bulblets in the basal rosette of leaf-bases; stems several, 2-4 dm. high, glabrous; basal leaves long-petioled, the petioles 5-12 cm. long, the blades lanceolate or oblanceolate, acute, rarely subrhombic, 2-5 cm. long, 1-2 cm. wide; stem-leaves lanceolate,

sessile, 2-4 cm. long, acute; racemes 1-3, lax, 6-12 cm. long; bracts oblong to oblanceolate, the lower sometimes 1 cm. long; sepals rounded-ovate or cordate, 5 mm. long; petals white, broadly obovate, deeply notched; seeds black, finely pitted, oval in outline, 2 mm. long.

TYPE LOCALITY: Scott Mountain, Siskiyou County, California.

DISTRIBUTION: Northern California and southern Oregon; apparently also on Vancouver Island.

7. *Limnia heterophylla* (Nutt.) Rydberg.

Claytonia unalaschensis heterophylla Nutt.; T. & G. Fl. N. Am. 1: 199, as synonym. 1838.

Claytonia alsinoides heterophylla T. & G. Fl. N. Am. 1: 199. 1838.

Claytonia sibirica heterophylla A. Gray, Proc. Am. Acad. 22: 281. 1887.

Montia sibirica heterophylla B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 273. 1897.

Montia heterophylla Jepson, Man. Fl. Calif. 349. 1923.

Perennial, with tuberiferous rootstock or stolons; stems 1 or 2, 1.5-4 dm. high, glabrous; basal leaves long-petioled, the petioles 5-10 cm. long, the blades oval to narrowly lanceolate or oblanceolate, 2-6 cm. long, 5-20 mm. wide; stem-leaves oblanceolate, 4-7 cm. long, tapering below into a short petiole; racemes usually solitary, 1-2 dm. long; bractlets linear or oblong; sepals rounded-ovate, 4 mm. long; petals white, obovate, deeply notched, 7 mm. long; seeds black, minutely punctate.

TYPE LOCALITY: Oregon ["Columbia Woods"].

DISTRIBUTION: Oregon and California.

8. *Limnia arenicola* (Henderson) Rydb. Bull. Torrey Club 33:

138. 1906.

Claytonia spatulata tenuifolia A. Gray, Proc. Am. Acad. 22: 282, in part. 1887.

Claytonia arenicola Henderson, Bull. Torrey Club 22: 49. 1895.

Montia arenicola Howell, Fl. NW. Am. 1: 96. 1897.

Annual, with fibrous roots; stems several from the base, 8-15 cm. high, glabrous; basal leaves petioled, narrowly linear-oblanceolate, 2-5 mm. long; stem-leaves opposite, sessile, similar but smaller; raceme lax, 4-8 mm. long; bracts linear-filiform, minute; pedicels 1-2 cm. long; sepals ovate, acute, nearly 2 mm. long; petals white, 6-7 mm. long, emarginate; seeds black, smooth and shining, broadly ellipsoid, nearly 1.5 mm. long, 1 mm. wide.

TYPE LOCALITY: "Idaho and eastern Washington."

DISTRIBUTION: Washington, Idaho, and northeastern Oregon.

9. *Limnia cordifolia* (S. Wats.) Rydberg.

Claytonia cordifolia S. Wats. Proc. Am. Acad. 17: 365. 1882.

Claytonia asarifolia A. Gray, Proc. Am. Acad. 22: 280. 1887. Not *C. asarifolia* Bong. 1832.

Montia asarifolia Howell, Erythra 1: 39, in part. 1893.

Limnia asarifolia Rydb. Bull. Torrey Club 33: 138, in part. 1906.

Perennial, with a horizontal rootstock; stem 1-3 dm. high, glabrous; basal leaves petioled, the petioles 2-15 cm. long, the blades rounded-reniform, suborbicular, or cordate, 2-5 cm. long and fully as broad, glabrous, thin, faintly veined; stem-leaves sessile, rounded-ovate or suborbicular, 1.5-3 cm. long, obtuse or acute; raceme naked, simple, 10-15 cm. long; flowers 4-8; pedicels 2-3 cm. long; sepals round-reniform, 4 mm. long; petals fully 1 cm. long, obovate, white; seeds black, nearly orbicular, 2 mm. long.

TYPE LOCALITY: Pend d'Oreille River, northern Idaho.

DISTRIBUTION: Montana to northern Utah, Oregon, and British Columbia.

10. *Limnia sarmentosa* (C. Meyer) Rydberg.

Claytonia sarmentosa C. Meyer, Nouv. Mém. Soc. Nat. Mosc. 1: 137. 1829.

Claytonia lanceolata H. & A. Bot. Beech. Voy. 123. 1832; 344. 1838.

Montia sarmentosa B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 272. 1897.

Perennial, with a slender creeping rootstock; stem slender, 5-20 cm. high, glabrous; basal leaves petioled, the petioles 1-3 cm. long, the blades obovate or spatulate, 1-2 cm. long, obtuse; stem-leaves ovate or orbicular, sessile, less than 1 cm. long; raceme naked, 1-5-flowered;

sepals suborbicular or round-reniform, 3-4 mm. long; petals obovate, emarginate, white or pink, purple-veined, 10-12 mm. long; seeds black, rounded, shining, minutely punctate, 2 mm. in diameter.

TYPE LOCALITY: St. Lawrence Island.

DISTRIBUTION: Islands of Bering Sea and coast of Alaska; apparently also in Yukon and northern British Columbia.

ILLUSTRATIONS: Nouv. Mém. Soc. Nat. Mosc. 1: pl. 3; Seem. Bot. Voy. Herald pl. 5.

11. *Limnia saxosa* (Brand.) A. Heller, *Muhlenbergia* 6: 84. 1910.

Claytonia saxosa Brand. Zoe 4: 150. 1893.

Montia saxosa Brand.; B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 274. 1897.

Succulent annual; stems many, clustered, ascending, 1-2 cm. high; basal leaves broadly spatulate, obovate, or oblanceolate, subsessile, 6-12 mm. long, 4-6 mm. wide, rounded at the apex; stem-leaves ovate, obtuse, 8-12 mm. long, sessile; flowers subumbellate, the pedicels longer than the stem; sepals suborbicular, 2-3 mm. long; petals roseate, about 4-6 mm. long; capsule 3-4 mm. long; seeds black, foveolate-striate.

TYPE LOCALITY: Snow Mountain, Lake County, California.

DISTRIBUTION: Lake and Humboldt counties, California.

12. *Limnia platyphylla* Rydberg, sp. nov.

Annual; stem 2.5-4 dm. high, glabrous; basal leaves somewhat fleshy, the petioles 2-3 dm. long, the blades rhombic-reniform, 3-5 cm. long, 3-6 cm. wide, acute; stem-leaves connate, forming an oblique suborbicular cup sometimes cleft on one side; raceme rather short, often not exceeding the disk, simple or somewhat compound, the lowest flowers subtended by a rounded or oval bract 1-1.5 cm. long; pedicels about 1 cm. long; sepals unequal, about 5 mm. long; petals white, 6-7 mm. long; capsule 5 mm. long; seeds black, smooth and shining, 2 mm. long.

Caulis ascendentes; foliorum basilarium laminae rhombo-reniformes; folia caulina connata cupulam obliquam suborbicularem formantia; inflorescentia quam cupula saepe brevior, unibracteata, bractea foliacea; sepala inaequalia; petala alba; semina nigra nitentia.

Type collected at Dos Pueblos, near Gaviota Pass, April, 1861, *Brewer 384* (U. S. Nat. Herb. 320211).

DISTRIBUTION: Central and southern California.

13. *Limnia perfoliata* (Donn) Haw. Syn. Pl. Succ. 11. 1812.

Claytonia perfoliata Donn, Hort. Cantab. 25. 1796.—Willd. Sp. Pl. 1: 1186. 1798.

Claytonia cubensis Bonpl. Ann. Mus. Paris 7: 82. 1806.

Montia perfoliata Howell, Erythraea 1: 38. 1893.

Annual; stem 1-3 dm. high, glabrous; basal leaves rather thin, the petioles 3-15 cm. long, the blades from broadly rhombic-ovate or deltoid to elliptic-obovate, 1-5 cm. long; stem-leaves usually connate on both sides, forming an oblique suborbicular disk with the two acute or mucronate apices on one side; racemes usually elongate, sessile or peduncled, 5-20 cm. long, sometimes with a small oblong or oval bract, the flowers usually more or less verticillate; sepals somewhat unequal, rounded-ovate or suborbicular, about 3 mm. long; petals white, clawed, obovate, retuse, 4-5 mm. long; seeds black, minutely punctate, 1.5 mm. long.

TYPE LOCALITY: [West coast of] North-America.

DISTRIBUTION: British Columbia to Montana, Arizona, and Lower California.

ILLUSTRATIONS: Ann. Mus. Paris 7: pl. 6; Humb. & Bonpl. Pl. Aequin. pl. 26; Jacq. Fragm. pl. 51; Bot. Mag. pl. 1336; Belg. Hort. 1: pl. 58; Benth. Handb. Brit. Fl. ed. 2. f. 171; Engl. Bot. pl. 260; W. Robinson, Engl. Fl. Gard. pl. 71; Rattan, Pop. Calif. Fl. ed. 3. 9; Garcke, Fl. Deuts. ed. 17. f. 823; Coste, Fl. Fr. 2: f. 132; Hegi, Ill. Fl. Mittel-Eur. 3: 268; Perrin & Boulger, Brit. Fl. Pl. pl. 59; pl. 66A, f. 1-5; Moss, Cambr. Brit. Fl. 3: pl. 2.

14. *Limnia carnosa* (Greene) A. Heller, MS.

Claytonia perfoliata carnosa Greene, Fl. Fran. 179. 1891.

Claytonia rhomboidea Greene, MS.

Annual; stem 1-2 dm. high, glabrous; basal leaves fleshy, the petioles 3-7 cm. long, the blades 1-3 cm. long and nearly as wide, deltoid, more or less decurrent on the petiole,

acute at the apex; stem-leaves usually connate on both sides into a suborbicular disk 1.5–5 cm. wide, oblique with 2 apices, blunt to short-acuminate; raceme usually rather lax, 3–10 cm. long, sessile or short-stalked, the flowers mostly single or two at each node; sepals somewhat unequal, rounded-ovate, in fruit 5 mm. long; petals white, clawed, oblique, emarginate; ovary globose; style columnar; stigma 3-cleft; ovules 3; capsule ovoid, 3-valved, the valves involute; seeds black, shining, minutely punctate, suborbicular, 2–2.5 mm. in diameter.

TYPE LOCALITY: Mount Diablo, California.

DISTRIBUTION: Southern Washington to western Nevada and southern California.

15. *Limnia adsurgens* (Suksd.) Rydberg.

Claytonia parviflora adsurgens Suksd. Deuts. Bot. Monats. 16: 221. 1898.

Montia parviflora adsurgens Suksd. Deuts. Bot. Monats. 16: 221. 1898.

Claytonia parviflora sparsiflora Suksd. Werdenda 1: 11. 1923.

Annual; stem 8–15 cm. high, ascending or decumbent; basal leaves petioled, thin, pale or brownish, the petioles 1–5 cm. long, the blades rhombic, 0.5–2 cm. long and often as wide; stem-leaves connate, forming a suborbicular disk 1–2 cm. wide, oblique, the apices acute; inflorescence short-peduncled or sessile, 3–5 cm. long, sometimes with a single bract, the pedicels mostly single at the nodes; sepals orbicular or rounded-oval, in fruit 3 mm. long; petals white, retuse; seeds black, finely punctate, 1.5 mm. long.

TYPE LOCALITY: Skamania County, Washington.

DISTRIBUTION: Washington to mountains of central California.

16. *Limnia interrupta* (Suksd.) Rydberg.

Claytonia depressa interrupta Suksd. Deuts. Bot. Monats. 16: 222. 1898.

Montia interrupta Suksd. Deuts. Bot. Monats. 16: 222. 1898.

Claytonia interrupta Suksd. Werdenda 1: 11. 1923.

Annual; stems erect, light-green, 1–1.5 dm. high; basal leaves petioled, the petioles 2–5 cm. long, the blades spatulate or rhombic-spatulate, obtuse or acute, 1–3 cm. long, 5–15 mm. wide; stem-leaves thin, connate-perfoliate, forming a suborbicular disk 1–2 cm. broad; raceme 2–4 cm. long, sessile with several verticils of flowers, the lowest many-flowered, inserted in the axil of the disk, and separated from the rest by a distinct peduncle; sepals 2 mm. long, rounded-ovate; petals white, slightly exceeding the sepals; capsule globose; seeds black and shining, 1 mm. long.

TYPE LOCALITY: Bingen, Washington.

DISTRIBUTION: Sandy soil, Washington and British Columbia.

17. *Limnia cuprea* A. Heller, *Muhlenbergia* 2: 279. 1907.

Annual; stems diffuse, ascending, or decumbent, 1–2 dm. high, glabrous; basal leaves fleshy, often more or less copper-colored, petioled, the petioles 3–6 cm. long, the blades rhombic-ovate, 1–2 cm. long, about as wide or wider, acute or apiculate, indistinctly veined; stem-leaves connate-perfoliate, forming a suborbicular disk 2–3 cm. wide; raceme often peduncled, 4–7 cm. long, often with a single bract, the flowers verticillate at the nodes; sepals 2 mm. long, rounded-ovate, unequal; petals white, 3–4 mm. long, emarginate; capsule globose; seeds black and shining, minutely punctate, 1 mm. long or less.

TYPE LOCALITY: Pacific Grove, California.

DISTRIBUTION: Washington to Utah and southern California.

18. *Limnia membranacea* Rydberg, sp. nov.

Annual; stems several, erect or ascending, about 1 dm. high; basal leaves long-petioled, the petioles 4–10 cm. long, the blades rhomboidal, 1–2.5 cm. long and often fully as wide, very thin, acute; stem-leaves connate, forming an obliquely subtriangular disk 2–3 cm. wide; inflorescence short, subsessile, corymbiform; pedicels 5–7 mm. long; sepals rounded-obovate, nearly 2 mm. long; petals white, 3 mm. long; capsule ovoid, 2 mm. long; seeds black, shining, 1.5 mm. long.

Caules erecti vel adscendentes; foliorum basilarium laminae rhomboideae acutae tenues; folia caulina connata discum obliquum subtriangularem formantia; inflorescentia brevis subsessilis corymbiformis; sepala rotundato-obovata; petala alba; semina nigra nitentia.

Type collected in Wellsville Canyon, Cache County, Utah, May 8, 1910, *George Zundel 176* (herb. N. Y. Bot. Gard. and Dudley herb.).

DISTRIBUTION: Utah and Nevada to Montana.

19. *Limnia humifusa* (Howell) Rydb. Fl. Prairies 313. 1932.

Claytonia parviflora depressa A. Gray, Proc. Am. Acad. 22: 281. 1887.

Claytonia perfoliata amplexens Greene, Fl. Fran. 178. 1891. [Leaves connate on one side only.]

Montia parvifolia depressa B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 274. 1897.

Montia humifusa Howell, Fl. NW. Am. 1: 96. 1897.

Claytonia depressa Suksd. Deuts. Bot. Monats. 16: 221. 1898.

Claytonia depressa Suksd. Deuts. Bot. Monats. 16: 221. 1898.

Claytonia depressa arenaria Suksd. Deuts. Bot. Monats. 16: 222. 1898. (Depauperate.)

Limnia depressa Rydb. Bull. Torrey Club 33: 139. 1906.

Montia perfoliata depressa Jepson, Fl. Calif. 1: 471. 1914.

Limnia amplexens A. Heller, MS.

Claytonia perfoliata depressa Poelln. Repert. Sp. Nov. 30: 301. 1932.

Annual; stems diffuse, 1 dm. high or less, glabrous, ascending or decumbent; basal leaves petioled, green or brownish, the petioles 2-5 cm. long, the blades rhombic-ovate or rhombic, 4-10 mm. long and as broad; stem-leaves connate on one side or both, forming a disk 1-2 cm. wide; inflorescence very short, sessile, scarcely exceeding the stem-leaves; sepals suborbicular, 2 mm. long, unequal; petals white, 3 mm. long, retuse; seeds rounded-oval, 1 mm. long.

TYPE LOCALITY: Milton, Oregon.

DISTRIBUTION: British Columbia to the Black Hills of South Dakota, Utah, and Lower California.

20. *Limnia rubra* (Howell) A. Heller, Muhlenbergia 6: 84. 1910.

Montia rubra Howell, Erythra 1: 38. 1893.

Claytonia depressa latifolia Suksd. Deuts. Bot. Monats. 16: 222. 1898.

Montia latifolia Suksd. Deuts. Bot. Monats. 16: 222. 1898.

?*Claytonia depressa sylvatica* Suksd. Deuts. Bot. Monats. 16: 222, as synonym. 1898.

Claytonia latifolia Suksd. Werdenda 1: 11. 1923. Not *C. latifolia* Sheldon, 1894.

Claytonia deltoidea Greene, MS. in herb.

Claytonia rubra Tidestrom, Contr. U. S. Nat. Herb. 25: 187. 1925.

Claytonia perfoliata rubra Poelln. Repert. Sp. Nov. 30: 301. 1932.

Annual, often red; stem 1-2.5 dm. high, glabrous; basal leaves petioled, thin, the petioles 3-6 cm. long, the blades deltoid or broadly ovate, 1-3 cm. long and fully as wide; stem-leaves wholly adnate, forming a suborbicular disk 2-3 cm. wide, or only partly or not at all adnate on one side; raceme mostly sessile, 1-3 cm. long, some of the pedicels verticillate; sepals orbicular, about 2 mm. long; petals white, obovate, retuse, 3 mm. long; capsule 3 mm. long; seeds black, minutely punctate, 1.5 mm. long.

TYPE LOCALITY: "Oregon & Washington."

DISTRIBUTION: Washington to western Montana and central California.

21. *Limnia mexicana* Rydberg, sp. nov.

Annual; stems several, 8-20 cm. high, ascending; basal leaves thin, long-petioled, the petioles 4-10 cm. long, the blades rhombic or deltoid, rarely subreniform, 1-3.5 cm. wide, abruptly acuminate into a distinct cusp; stem-leaves connate on both sides, forming a cup or disk 1.5-5 cm. wide, also cuspidate-acuminate; inflorescence usually subsessile, many-flowered, shorter than the stem-leaves, the rachis sometimes produced and also bearing an additional peduncled cluster; pedicels about 1 cm. long; sepals rounded-obovate, about 2 mm. long; petals white, spatulate, 3 mm. long; seeds black, smooth and shining, 1.5 mm. long.

Caules adscendentes; foliorum basilarium laminae plerumque rhomboideae vel deltoideae cuspidato-acuminatae tenues; folia caulina connata cuspidato-acuminata; inflorescentia brevis subsessilis; sepala rotundato-obovata; petala spatulata alba; semina nigra nitentia.

Type collected on Nevada de Toluca, Mexico (state), October 15, 1903, *Rose & Painter 7924* (U. S. Nat. Herb. 451542).

DISTRIBUTION: Mexico (state) and Oaxaca.

22. *Limnia parviflora* (Dougl.) Rydb. Bull. Torrey Club 33: 139.
1906.

Claytonia parviflora Dougl.; Hook. Fl. Bor. Am. 1: 225. 1832.
Claytonia perfoliata parviflora Torr. Pacif. R. R. Rep. 4: 71. 1857.
Montia parviflora Howell, Erythraea 1: 38. 1893.
Claytonia parviflora hydrophila Suksd. Deuts. Bot. Monats. 16: 221. 1898.
Montia parviflora hydrophila Suksd. Deuts. Bot. Monats. 16: 221. 1898.
Montia Viae A. Nelson, Bot. Gaz. 42: 48. 1906. (A broad-based form.)
Limnia Viae A. Heller, Muhlenbergia 6: 84. 1910.
Montia perfoliata parviflora Jepson, Fl. Calif. 1: 471. 1914.

Annual; stem erect, 1-3 dm. high, glabrous; basal leaves petioled, thin, often yellowish-green, the petioles 3-5 cm. long; blades, at least of the earlier leaves, usually linear, those of the later oblanceolate, 3-5 cm. long, rarely (var. *hydrophila*) lance-elliptic, 1-2 cm. long, 5-6 mm. wide; stem-leaves usually connate on both sides, forming a suborbicular disk 1-3 cm. wide; raceme sessile or peduncled, lax, 5-11 cm. long, the flowers single, in pairs, or verticillate at the nodes; sepals rounded-ovate, 2-3 cm. long, unequal; petals about 5 mm. long, white or pinkish, retuse; seeds black, minutely punctate, 1-1.5 mm. long.

TYPE LOCALITY: California.

DISTRIBUTION: British Columbia to Idaho and Lower California.

ILLUSTRATIONS: Hook. Fl. Bor. Am. pl. 73; G. Don, Gen. Hist. 3: f. 19; Jepson, Fl. Calif. f. 93; Jepson, Man. Fl. Pl. Calif. f. 355 (both as *Montia perfoliata*).

23. *Limnia angustifolia* (Greene) Rydberg, sp. nov.

Claytonia perfoliata angustifolia Greene, Fl. Fran. 179. 1891.

Annual; stem erect, 1-2 dm. high, glabrous; basal leaves petioled, thin, the petioles 5-10 cm. long, the blades linear, sometimes not much broader than the petioles, 5-10 cm. long, or those of the innermost oblanceolate and shorter; stem-leaves connate-perfoliate, forming a suborbicular oblique disk 2-4 cm. broad; inflorescence subsessile, short, usually not equaling the stem-leaves; sepals suborbicular, unequal, 3 mm. long; petals white, about 5 mm. long, retuse; seeds black, 1.3-1.5 mm. long, 1 mm. broad.

TYPE LOCALITY: [Not given; but by inference] near San Francisco, California.

DISTRIBUTION: California.

24. *Limnia utahensis* Rydb. Bull. Torrey Club 39: 314. 1912.

Claytonia utahensis Tidestrom, Contr. U. S. Nat. Herb. 25: 188. 1925.
Claytonia perfoliata utahensis Poelln. Repert. Sp. Nov. 30: 302. 1932.

Annual; stem ascending, 4-15 cm. long; basal leaves petioled, rather fleshy, the petioles 2-5 cm. long, the blades spatulate to linear, 1-4 cm. long, 3-25 mm. wide; stem-leaves usually connate on both sides, forming an oblique 2-lobed disk 1-3 cm. wide; raceme sessile, corymbiform, often shorter than the disk; sepals ovate, acute, unequal, 2-3 mm. long; petals white, 4 mm. long; seeds black, minutely punctate, 1-1.5 mm. long.

TYPE LOCALITY: St. George, Utah.

DISTRIBUTION: Southern Utah, Arizona, and southeastern California.

25. *Limnia nubigena* (Greene) A. Heller, Muhlenbergia 2: 279.
1907.

Claytonia nubigena Greene, Pittonia 2: 294. 1892.
Montia perfoliata nubigena Jepson, Fl. W. Middle Calif. 186. 1901.

Annual; stems ascending, less than 1 dm. high, slender; basal leaves petioled, glaucous-green, the blades filiform or rarely narrowly linear-oblanceolate, often without distinction between petiole and blade; stem-leaves connate, forming a rounded disk 5-15 mm. wide; inflorescence 2-5 cm. long, often peduncled and with a single minute bract, rather lax; sepals orbicular, in fruit scarcely 2 mm. long; petals pale-pink or whitish, 4-6 mm. long.

TYPE LOCALITY: Mt. Tamalpais, California.

DISTRIBUTION: Mountains of central California.

26. *Limnia rupestris* (Suksd.) Rydberg, sp. nov.

Claytonia parviflora T. & G. Fl. N. Am. 1: 200, in part. 1838.
Claytonia parviflora rupestris Suksd. Deuts. Bot. Monats. 16: 221. 1898.
Montia parviflora rupestris Suksd. Deuts. Bot. Monats. 16: 221. 1898.

Annual; stem 5-10 cm. high, decumbent to erect, glabrous; basal leaves long-petioled, thin, the petioles 2-5 cm. long, the blades oblanceolate or spatulate, 1-2.5 cm. long, 2-9 mm. wide, acute at each end or tapering below; stem-leaves connate on both sides, forming a disk usually about 1 cm. wide or less (rarely 1.5-2 cm. wide), with acute tips; raceme 1.5-2.5 cm. long, lax, rather few-flowered; sepals 2 mm. long, rounded-ovate in fruit; petals white or rose, 4 mm. long, retuse; seeds black, 1 mm. long.

TYPE LOCALITY: Skamania County, Washington.
 DISTRIBUTION: Washington to central California.

27. *Limnia Hassei* Rydberg, sp. nov.

Annual; stems several, mostly erect, slender, 4-8 cm. high; basal leaves filiform, 2-5 cm. long, about 1 mm., rarely 1.5 mm. wide; stem-leaves connate, forming a disk 5-8 mm. wide; inflorescence sessile, corymbose, rarely exceeding the disk; pedicels 1-2 mm. long; sepals rounded, 1.5-2 mm. long; petals white, spatulate, 3 mm. long; capsule nearly 2 mm. long; seeds black, smooth and shining, barely 1 mm. long.

Caules plerumque erecti; folia basilaria filiformia; folia caulina connata; inflorescentia brevis sessilis corymbosa; sepala rotunda; petala spatulata alba; semina nigra nitentia.

Type collected on shady moist hillsides, Los Angeles County, California, April 25, 1888, *Hasse* 4120 (herb. N. Y. Bot. Gard.).

DISTRIBUTION: Southern California and Lower California.

28. *Limnia glauca* (Nutt.) Rydberg, sp. nov.

Claytonia parviflora glauca Nutt.; T. & G. Fl. N. Am. 1: 200. 1838.
Claytonia spathulata disciformis Suksd. Deuts. Bot. Monats. 16: 222. 1898.
Montia spathulata disciformis Suksd. Deuts. Bot. Monats. 16: 222. 1898.

Annual; stems numerous, clustered, ascending or spreading, less than 5 cm. high; basal leaves glaucous, fleshy, 3-4 cm. long, narrowly oblanceolate to linear, the blade tapering into the petiole, the petiole 1-2 mm. long; stem-leaves connate into a rounded, oblique, 2-cornered disk 5-10 mm. wide; inflorescence sessile, short, 1-2 cm. long, rather dense; sepals rounded-ovate, unequal, in fruit 2 mm. long; petals obovate, 2.5-3 mm. long, 1-1.5 mm. broad; capsule 3 mm. long; seeds black, minutely muricate, 1 mm. long.

TYPE LOCALITY: Exposed rocks, along the Oregon [Columbia] River.
 DISTRIBUTION: British Columbia to northern California.

29. *Limnia guadalupensis* Rydberg, sp. nov.

Annual; stems several, 3-5 cm. high, ascending; basal leaves somewhat fleshy, long-petioled, the petioles 2-4 cm. long, the blades of the earlier ones linear, of the rest oblanceolate or lanceolate, or rarely subrhombic, 8-25 mm. long; stem-leaves broadly ovate, unequally connate, forming a disk 8-15 mm. broad; inflorescence sessile or short-peduncled, subumbellate or corymbiform; pedicels about 2 mm. long; sepals ovate, 1.5 mm. long; capsule ovoid, about 1.5 mm. high; seeds smooth and shining, less than 1 mm. long.

Caules adscendentes; foliorum basilarium laminae lineares vel subrhomboideae nonnihil carnosae; folia caulina late ovata inaequaliter connata; inflorescentia sessilis vel breviter pedunculata, subumbellata vel corymbiformis; sepala ovata; semina nitentia.

Type collected on Guadalupe Island, Lower California, in 1875, *E. Palmer* 15 in part (herb. Columbia Univ.).

DISTRIBUTION: Guadalupe Island.

30. *Limnia gypsophiloides* (Fisch. & Mey.) A. Heller, *Muhlenbergia* 2: 278. 1907.

Claytonia gypsophiloides Fisch. & Mey. Ind. Sem. Hort. Petrop. 2: 33. 1836.
Claytonia spathulata A. Gray, Proc. Am. Acad. 22: 282, in part. 1887.
Montia gypsophiloides Howell, Erythra 1: 38. 1893.

Annual; stems several or many, erect or ascending, 5–20 cm. high, glabrous; basal leaves filiform to narrowly linear, light-green or glaucous, slender, 3–8 cm. long, 1–2 mm. wide, usually without distinction between petiole and blade; stem-leaves varying from ovate to linear, connate only on one side at the base up to half their length, 1–3 cm. long, 1–8 mm. wide; racemes elongate, usually peduncled, with a single bract, 3–10 cm. long, the pedicels single or in pairs, slender, recurved in fruit; sepals suborbicular, about 2 mm. long; petals pink or white, oval, 5–6 mm. long, deeply notched; capsule 2–2.5 mm. long; seeds black, shining, minutely punctate, 1 mm. long.

TYPE LOCALITY: [Fort] Ross, California.

DISTRIBUTION: Oregon and California.

ILLUSTRATIONS: Fisch. & Mey. Sert. Petrop. 3/4: pl. 14; Sweet, Brit. Fl. Gard. II. pl. 375.

31. *Limnia Diaboli* Rydberg, sp. nov.

Annual; stems several, decumbent, 1–1.5 dm. long; basal leaves linear, fleshy, 2–5 cm. long, 1–2 mm. wide; stem-leaves linear or lance-linear, fleshy, 1–2 cm. long, 2–4 mm. wide, blunt, connate on one side; racemes elongate, usually peduncled, with a minute bract, 3–6 cm. long, the pedicels mostly single, 1–1.5 cm. long, in age recurved; sepals suborbicular, about 3 mm. long; petals pink or white, 6–7 mm. long, notched at the apex; capsule 2.5–3 mm. long; seeds black and shining, about 1.5 mm. long.

Caulis decumbentes; folia basilaria linearia carnosa; folia caulina linearia vel lanceolato-linearia, obtusa, ad latus unum connata; racemi elongati bractea minuta ornati; pedicelli maturi recurvi; sepala suborbicularia; petala apice retusa, roseata vel alba; semina nigra nitentia.

Type collected on Mount Diablo, California, April 28, 1868, Kellogg & Harford 100 (herb. N. Y. Bot. Gard.).

DISTRIBUTION: Inner coast range of central California.

ILLUSTRATIONS: Jepson, Fl. Calif. f. 94; Jepson, Man. Fl. Pl. Calif. f. 356 (both as *Montia gypsophiloides*).

32. *Limnia rosulata* (Eastw.) A. Heller, *Muhlenbergia* 6: 84. 1910.

Montia rosulata Eastw. Proc. Calif. Acad. III. 1: 79. 1897.

Annual; stems numerous, with the basal leaves forming a dense rosette; basal leaves succulent, spatulate or oblanceolate, 1–2 cm. long, 2–5 mm. wide; stem-leaves lanceolate, connate, 1–2 cm. long, 4–6 mm. wide; inflorescence umbelliform or cymose, short-peduncled, with a single bract; sepals rounded-ovate, 2 mm. long; petals white, unguiculate, the blade oblong-obcordate; capsule about 2 mm. long; seeds black, glossy, minutely papillose, nearly 2 mm. long.

TYPE LOCALITY: Mount Tamalpais, California.

DISTRIBUTION: Known only from the type locality.

33. *Limnia exigua* (T. & G.) A. Heller, *Muhlenbergia* 2: 194. 1906.

Claytonia exigua T. & G. Fl. N. Am. 1: 200. 1838.

Claytonia spathulata H. & A. Bot. Beech. Voy. 344. 1838.

Montia spathulata exigua B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 275. 1897.

Claytonia spathulata exigua Piper, Contr. U. S. Nat. Herb. 11: 250. 1906.

Montia exigua Jepson, Fl. Calif. 1: 473, in part, as to synonyms. 1914.

Annual; stems fleshy, many, clustered, 3–7 cm. high; basal leaves fleshy, linear or linear-oblanceolate, 3–5 cm. long; stem-leaves lanceolate or linear, 1–2 cm. (rarely 3 cm.) long, 1–2 mm. wide; inflorescence short, 1–1.5 cm. long, usually shorter than the stem-leaves, few-flowered; sepals rounded-ovate, 2.5–3 mm. long; petals obcordate, 5–6 mm. long; seeds black, 1.5–2 cm. long.

TYPE LOCALITY: California.

DISTRIBUTION: California and eastern Nevada to Washington.

ILLUSTRATIONS: Proc. Calif. Acad. III. 1: pl. 7, f. 3; Rattan, Pop. Calif. Fl. ed. 3, 9.

34. *Limnia spathulata* (Dougl.) A. Heller, *Muhlenbergia* 6: 84. 1910.

Claytonia spathulata Dougl.; Hook. Fl. Bor. Am. 1: 226. 1832.

Claytonia perfoliata spathulata Torr.; Brewer & Wats. Bot. Calif. 1: 75. 1876.

Montia spathulata Howell, Erythra 1: 38. 1893.

Annual; stems several, 2-6 cm. high, ascending; basal leaves linear-filiform to narrowly oblanceolate, 1-4 cm. long, the blade scarcely distinguished from the petiole; stem-leaves linear or lanceolate, 1.5 cm. long or less, slightly connate at the base on one side; racemes few-flowered, often with a single bract about 1 cm. long or less; sepals rounded-ovate, 2 mm. long; petals obovate, 3 mm. long or less, rounded or slightly retuse; capsule 2.5 mm. long; seeds black, minutely muricate, fully 1 mm. long.

TYPE LOCALITY: Rocky Mountains [Canada].

DISTRIBUTION: British Columbia to central California.

ILLUSTRATION: Hook. Fl. Bor. Am. pl. 74.

35. *Limnia tenuifolia* (T. & G.) Rydberg.

Claytonia tenuifolia T. & G. Fl. N. Am. 1: 201. 1838.

Montia tenuifolia Howell, Erythra 1: 38. 1893.

Claytonia spathulata tenuifolia A. Gray, Proc. Am. Acad. 22: 282. 1887.

Montia spathulata exigua B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 279, in part. 1897.

Montia exigua Jepson, Fl. Calif. 473, in part, as to description and specimens. 1914.

Annual; stems several, slender, 5-10 cm. high; basal leaves glaucous, linear-filiform or narrowly linear-oblanccolate, without distinction between blade and petiole, 5-10 cm. long, about 1 mm. wide; stem-leaves linear or linear-oblanccolate, 2-4 cm. long, distinct or slightly connate on one side; inflorescence short, about 1 cm. long or less, corymbiform, the pedicels short and recurved; sepals suborbicular, 1.5 mm. long; petals 3-4 mm. long, retuse; capsule about 2 mm. long; seeds black, minutely punctate, about 1 mm. long.

TYPE LOCALITY: California.

DISTRIBUTION: California and Lower California; apparently also in Washington.

36. *Limnia viridis* (Davidson) Rydberg.

Montia spathulata viridis Davidson, Bull. So. Calif. Acad. 5: 61. 1907.

Montia exigua viridis Jepson, Fl. Calif. 473. 1914.

Claytonia exigua viridis Poelln. Repert. Sp. Nov. 30: 306. 1932.

Annual; stems many, glabrous, ascending or spreading, 5-12 cm. high; basal leaves petioled, dark-green, somewhat fleshy, the petioles 2-4 cm. long, the blades linear-oblanccolate, 2-5 cm. long, 2-7 mm. wide, attenuate at the apex, tapering into the petiole at the base; stem-leaves narrowly lanceolate, 2-4 cm. long, sessile, usually connate one fourth to one third their length on one side; inflorescence mostly sessile, racemose, the pedicels mostly paired, elongate, straight and ascending in fruit; sepals rounded-ovate, unequal, 2-3 mm. long; petals white, short-clawed, ellipsoid, emarginate; capsule nearly 3 mm. long; seeds black, shining, 1.5 mm. long.

TYPE LOCALITY: Rock Creek, desert side of Mount San Antonio.

DISTRIBUTION: Mountains of southeastern California.

10. CRUNOCALLIS Rydb. Bull. Torrey Club 33: 139. 1906.

Perennial, procumbent or decumbent water or mud plants, rooting at the nodes, producing long filiform runners, these developing small globose cormlets at the apex. Leaves opposite, several pairs, rather thin, entire, mostly oblanceolate. Flowers perfect, in axillary or subterminal racemes. Sepals 2, unequal, orbicular or obovate. Corolla regular; petals 5, obovate, pink. Stamens 5. Ovary 3-carpellary; style slender; ovules 3. Fruit a 3-valved capsule, 1-3-seeded. Seeds suborbicular, granular-muricate.

Type species, *Claytonia Chamissoi* Ledeb.

1. *Crunocallis Chamissonis* (Ledeb.) Rydb. Bull. Torrey Club 33:

139. 1906.

Claytonia Chamissoi Ledeb.; Spreng. Syst. 1: 790. 1825.

Claytonia stolonifera C. Meyer, Nouv. Mém. Soc. Nat. Mosc. 1: 139. 1829.

Claytonia Chamissonis Eischsch.; Cham. Linnaea 6: 562. 1831.

Claytonia aquatica Nutt.; T. & G. Fl. N. Am. 1: 201. 1838.

Montia Chamissonis Greene, Pl. Fran. 180. 1891.

Montia Chamissoi Durand & Jacks. (Ind. Kew. Suppl. 1: 282, as synonym. 1903); Rob. & Fern. Man. 388. 1908.

Perennials, creeping or floating, rooting, producing axillary filiform branches bearing globose cormlets at the apex; stems slender, 1-3 dm. long; leaves opposite, oblanceolate, 2-5 cm. long, 5-15 mm. wide; flowers in axillary or subterminal 1-9-flowered bractless racemes; pedicels slender, recurved in fruit, 1-2.5 cm. long; sepals unequal, orbicular or obovate, 2-3 mm. long; petals pink, 7-8 mm. long, obovate, entire; capsule obovoid, much shorter than the sepals; seeds mostly solitary, suborbicular, black, finely reticulate-grooved, 1.5 mm. long.

TYPE LOCALITY: Aleutian Islands.

DISTRIBUTION: Springs and mossy banks, Alaska to Manitoba, Iowa, New Mexico, and southern California.

ILLUSTRATIONS: Nouv. Mém. Soc. Nat. Mosc. 1: pl. 3; Britt. & Brown, III. Fl. ed. 2. f. 1742; Pl. World 4: 42; Clements, Rocky Mt. Fl. pl. 9.

11. MONTIA [Micheli] L. Sp. Pl. 87. 1753.

Cameraria [Dill.] Moench, Meth. 520. 1794.

Leptirina Raf. Am. Mo. Mag. 4: 192. 1819.

Leptirina Schultes, in R. & S. Syst. Veg. Mant. 2: 38. 1824.

Laterifissum Dulac, Fl. Hautes-Pyr. 366. 1867.

Slender leafy water plants, annuals or rarely perennials by means of leaf rosettes at the ends of the branches. Leaves fleshy, narrow, opposite. Flowers perfect, minute, nodding, solitary or in short racemes, axillary or in terminal clusters. Sepals 2 (very rarely 3), persistent. Corolla gamopetalous, cleft on one side, formed of 5 (rarely 2) united petals. Stamens 3, inserted on the tube of the corolla. Ovary 3-ovuled; styles 3, short, united below. Capsule 3-valved. Seeds 1-3, compressed, suborbicular, lineate-grooved or muriculate. Embryo horseshoe-shaped, enclosing the endosperm.

Type species, *Montia fontana* L.

Seeds distinctly muricate-tuberculate under a lens, the tubercles acute; annuals.

Sepals 1.5 mm. long; seeds 1.3 mm. long; leaves spatulate; stem not rooting. 1. *M. minor*.

Sepals 1 mm. long or less; seeds less than 1 mm. long.

Leaves spatulate or oblanceolate.

Corolla-lobes 5; stem decumbent or floating, often rooting at the nodes.

Corolla-lobes 2; stem erect, 3 cm. high, not rooting at the nodes.

Leaves linear or nearly so; stems not rooting.

Leaves 1-1.5 cm. long, narrowly linear.

Leaves 3-4 mm. long, linear-oblanceolate.

Seeds reticulately grooved, not muricate, if slightly tubercled, the tubercles flat.

Plant annual, yellowish-green in drying; racemes terminal as well as axillary; stem not rooting at the nodes.

Stem elongate, 2-25 cm. long; leaf-blades spatulate, the lower distinctly petioled.

Seeds 1.5 mm. long, shining, merely reticulate-furrowed; sepals 1.5 mm. long.

Seeds barely 1 mm. long, dull, densely covered with long flat tubercles; sepals 1 mm. long.

Stem 1-2 cm. high; leaves elliptic.

Plant perennial, remaining green; racemes axillary; stem rooting at the nodes, the branches ending in a cluster of leaves.

2. *M. Hallii*.

3. *M. dipetala*.

4. *M. stenophylla*.

5. *M. minima*.

6. *M. fontana*.

7. *M. Funstonii*.

8. *M. andina*.

9. *M. rivularis*.

1. *Montia minor* C. C. Gmel. Fl. Bad. 1: 301. 1805.*

Montia fontana minor Schrad. Fl. Germ. 1: 414. 1806.

Montia fontana Cham. Linnaea 6: 565. 1831. Scarcely *M. fontana* L. 1753.

Annual, in age yellowish-green; stem 2.5-10 cm. high, glabrous, spreading, branched, decumbent at the base; leaves opposite, the lower spatulate, 5-15 mm. long, the petioles dilated at the base, the upper oblanceolate or linear; flowers axillary and terminal; terminal racemes 3-8-flowered; pedicels 3-15 mm. long, recurved; sepals reniform, 1.5 mm. long; capsule rounded-obovoid, equaling the sepals; seeds 1.3 mm. long, nearly orbicular, black, dull, under a lens strongly and densely muricate with mostly acute tubercles.

TYPE LOCALITY: Baden, Germany.

DISTRIBUTION: Oregon and California; also in central and southern Europe and central Asia.

ILLUSTRATIONS: Linnaea 6: pl. 7, f. 1; Rhodora 12: pl. 84, f. a; E. & P. Nat. Ph. 3¹⁰: f. 21 (all as *M. fontana*).

NOTE: The American plant is somewhat stouter than the European.

* For additional synonyms see Ascherson & Graebner (Syn. Mitteleur. Fl. 5¹: 433. 1915).

2. *Montia Hallii* (A. Gray) Greene, Fl. Fran. 180. 1891.

Claytonia Chamissonis tenerrima A. Gray, Proc. Am. Acad. 8: 378. 1872.

Claytonia Hallii A. Gray, Proc. Am. Acad. 22: 283. 1887.

Montia fontana tenerrima Fernald & Wieg. Rhodora 12: 138. 1910.

Slender annual, in age yellowish-green; stem branched, 5-15 cm. long, often rooting at the nodes; lower leaves petioled, spatulate, 5-10 mm. long, the petioles dilated at the base, the middle ones similar but sessile, the uppermost oblong; racemes axillary and terminal, 3-10-flowered; pedicels 4-10 mm. long; sepals reniform, 1 mm. long; capsule obovoid, slightly exceeding the sepals; seeds black, under a lens strongly and finely muricate, 1 mm. long.

TYPE LOCALITY: Oregon.

DISTRIBUTION: British Columbia to northern California and northwestern Nevada.

3. *Montia dipetala* Suksd. Werdenda 1: 9. 1923.

Slender annual; stem erect, branched from the base, 1-3 cm. high; leaves oblanceolate or lanceolate, subsessile, acute; racemes 2-4-flowered, axillary and terminal; pedicels 5-8 mm. long; sepals about 1 mm. long; corolla lobes 2, oblong or spatulate, the 3 lobes opposite the stamens wanting; seeds about 0.6 mm. long, dull, strongly muricate.

TYPE LOCALITY: Wet mossy places near Bingen, Washington.

DISTRIBUTION: Columbia Valley, Washington and Oregon.

4. *Montia stenophylla* Rydberg, sp. nov.

Slender annual, yellowish-green in drying; stem 1-1.5 dm. long, decumbent, filiform; leaves narrowly linear, 1-1.5 cm. long, about 1 mm. wide; racemes 1-4-flowered, axillary and terminal; pedicels 5-10 mm. long; sepals reniform, about 1 mm. long; capsule obovoid, slightly longer; seeds black, muricate, less than 1 mm. long.

Herba annua; caules filiformes decumbentes eradicantes; folia anguste linearia, 1-1.5 cm. longa; sepala reniformia; capsula obovoidea; semina nigra muricata.

Type collected in the Valley of Palms, Lower California, April 15, 1882, *Marcus E. Jones* (herb. N. Y. Bot. Gard.).

DISTRIBUTION: Lower California and Tulare County, California.

5. *Montia minima* Rydberg, sp. nov.

Annual; stems 1-3 cm. high, delicate, ascending; leaves narrowly linear-oblanceolate, 3-4 mm. long; racemes 1-3-flowered, axillary and terminal, 3-8 mm. long; sepals about 0.75 mm. long, rounded-reniform; capsule ovoid, about 1 mm. long; seeds black, muricate, about 0.5 mm. long.

Herba annua; caules delicati adscendentes; folia lineari-oblanceolata, 3-4 mm. longa; sepala rotundato-reniformia; capsula obovoidea; semina nigra muricata.

Type collected at San Pedro Martir, Lower California, May 18 and 22, 1893, *T. S. Brandegee* (herb. Univ. Calif.).

6. *Montia fontana* L. Sp. Pl. 87. 1753.*

Montia lamprosperma Cham. Linnaea 6: 565. 1831.

Montia fontana lamprosperma Fenzl; Ledeb. Fl. Ross. 2: 152. 1843.

Annual, yellowish-green in drying; stem 8-25 cm. long, decumbent, ascending, or erect, branched; leaves 1-2 cm. long, the lower spatulate, petioled, the petioles dilated at the base, the upper ones sessile and more oblong; flowers axillary and terminal, the terminal racemes 1-5-flowered, the axillary flowers often solitary or in pairs; pedicels 5-15 mm. long; sepals reniform, 1.5 mm. long; capsule obovoid, about as long as the sepals; seeds about 1.5 mm. long, shining, merely reticulate-furrowed.

TYPE LOCALITY: Northern Europe.

DISTRIBUTION: Greenland to Maine; British Columbia to Alaska; also in arctic and boreal Europe and Asia.

ILLUSTRATIONS: Linnaea 6: pl. 7, f. 2; Rhodora 12: pl. 84, f. c.

* For additional synonyms see Ascherson & Graebner (Syn. Mitteleur. Fl. 5: 434. 1915).

7. *Montia Funstonii* Rydberg, sp. nov.

Annual; stems slender, decumbent or floating, 2-5 cm. long; leaves short-petioled, spatulate, 3-5 mm. long, 1.5-2 mm. wide; racemes 1-3-flowered, axillary and terminal; pedicels 2-5 mm. long; sepals rounded-reniform, 1 mm. long; capsule about 1 mm. long, obovoid; seeds barely 1 mm. long, black, dull, densely muricate, but the tubercles low and flat. *

Herba annua; caules tenuis, decumbentes vel natantes, eradicantes; folia spathulata, 3-5 mm. longa; capsula rotundato-reniformia; capsula obovoidea; semina nigra nullo modo nitentia tuberculata tuberculis plano-depressis.

Type collected in the Whitney Meadows, Tulare County, California, August 19, 1891, *Coville & Funston 1619* (U. S. Nat. Herb. 10821).

8. *Montia andina* Rydberg, sp. nov.

Annual; stems 1-2 cm. high, tufted; leaves oblong or elliptic, sessile; flowers mostly 2-5 in short terminal clusters, the pedicels 1-2 mm. long; sepals round-reniform, about 1.5 mm. long; capsule round-obovoid, about as long as the sepals; seeds less than 1 mm. long, black, minutely tuberculate, but the tubercles low and merely convex.

Herba annua; caules caespitiosi eradicantes; folia oblonga vel elliptica, sessilia; sepala rotundato-reniformia; capsula rotundato-obovoidea; semina nigra minute tuberculata tuberculis depressis.

Type collected at Ixtacchuatl, Mexico, above timberline, October, 1905, *C. A. Purpus 1785* (herb. N. Y. Bot. Gard.).

DISTRIBUTION: High peaks of Mexico; apparently also in alpine Chile and Bolivia.

9. *Montia rivularis* C. C. Gmel. Fl. Bad. 1: 301. 1805.*

Montia fontana repens Pers. Syn. Pl. 1: 111. 1805.

Montia fontana rivularis Bönningh. Prod. Fl. Monast. 121. 1824.

Perennial, remaining green; stems branched, usually floating, 1-3 dm. long, the branches terminated by a tuft of leaves; leaves 1-2 cm. long, spatulate or oblanceolate, short-petioled; flowers mostly in 3-8-flowered axillary cymes; pedicels 5-15 mm. long; sepals reniform, scarcely 1.5 mm. long; capsule obovoid, about equaling the calyx; seeds black, shining, under a lens reticulately grooved, somewhat tubercled, but the tubercles low and merely convex.

TYPE LOCALITY: Baden, Germany.

DISTRIBUTION: Greenland to Newfoundland and New Brunswick; also in western Europe.

ILLUSTRATION: *Rhodora* 12: pl. 84, f. b.

12. *SPRAGUEA* Torr. Pl. Frém. 4. 1853.

Annual or perennial herbs, with a taproot. Basal leaves numerous, in a rosette, fleshy, the stem-leaves reduced and mostly scale-like. Stipules and bracts small, scarious. Flowers hermaphrodite, in imbricate spikes, the spikes arranged in an umbel, head, or corymb. Sepals 2, orbicular-cordate, membranous-hyaline, persistent. Petals 4, hypogynous, white. Ovary orbicular, compressed; styles 2, elongate, united to the apex; stigmas 2. Capsule 1-6-seeded, orbicular, membranous, the margins of the valves not inrolling at dehiscence. Seeds compressed, round-reniform, smooth and shining; strophiole wanting.

Type species, *Spraguea umbellata* Torr.

Inflorescence rather regular, the spikes borne in umbels or heads.

Plant annual or biennial; basal rosette solitary.

Sepals about 1 cm. broad, decidedly longer than the petals; stamens exerted; spikelets peduncled.

Sepals 5-7 mm. broad, scarcely exceeding the petals.

Inflorescence umbelliform, *i.e.*, the spikelets peduncled; stamens included; bracts 3-4 mm. long.

Inflorescence head-like, *i.e.*, the spikelets sessile; stamens exerted; bracts 6-10 mm. long, nearly equaling the sepals.

Plant perennial; basal rosettes often several; inflorescence head-like; sepals 4-5 cm. broad.

Blades longer than the short petioles, thick.

Blades much shorter than the long petioles, rather thin.

1. *S. umbellata*.

2. *S. eximia*.

3. *S. nuda*.

4. *S. multiceps*.

5. *S. caespitosa*.

* For additional synonyms, see Ascherson & Graebner (Syn. Mitteleur. Fl. 5¹: 435. 1915).

Inflorescence rather irregular, neither strictly umbellate nor capitate.

Stem 1-2 cm. high, bearing below the terminal umbel 1 or 2 divaricate branches ending in smaller umbels.

Stem less than 1 dm. high; inflorescence corymbiform.

Sepals 5-6 mm. long; capsule 4-6-seeded.

Sepals 3-4 mm. long.

Plant perennial, with a branched caudex; sepals 4 mm. long; capsule mostly 4-seeded; leaves narrowly oblanceolate.

Plant biennial or annual; sepals 3 mm. long; capsule mostly 1-2-seeded; leaves spatulate.

6. *S. irregularis*.

7. *S. paniculata*.

8. *S. Hallii*.

9. *S. monosperma*.

1. *Spraguea umbellata* Torr. Pl. Frém. 4. 1853.

Calyptridium umbellatum Greene, Bull. Torrey Club 13: 144. 1886.

Annual or biennial, with a basal rosette of fleshy leaves; leaves 3-10 cm. long, the blades obovate-spatulate to oblanceolate, entire, tapering rather gradually at the base into the winged petiole; scapes 1-5, 1-3 cm. high, with some alternate small leaves; inflorescence consisting of 10-15 short spikes in an umbel-like cluster at the end of the scape; bracts at the base of the umbel ovate-deltoid, scarious, crisp, 5-6 mm. long; spikes short-peduncled; sepals scarious, orbicular-reniform, retuse, about 1 cm. long, white or rose-colored, with a green midrib; petals 4, obovate, rose-colored, 7-8 mm. long; stamens 3, opposite 3 of the petals, longer than the petals; pod ovoid, compressed, 8-10-ovuled, but usually only few-seeded; seeds lenticular, black and shining.

TYPE LOCALITY: Forks of the Nozah River, northern California.

DISTRIBUTION: Mountains of northern California, south to Placer County; apparently also in Yosemite Valley.

ILLUSTRATIONS: Torr. Pl. Frém. pl. 1; Bot. Mag. pl. 5143.

2. *Spraguea eximia* Eastw. Bull. Torrey Club 30: 486. 1903.

Biennial, with a taproot and a basal rosette of leaves; basal leaves 1-6 cm. long, fleshy, the blades spatulate or oblanceolate, rounded at the apex, tapering to a margined petiole; stem or scape 1-2 cm. long; stem-leaves spatulate, often minute; inflorescence of umbellate, scorpioid, short-peduncled spikes; bracts scarious, ovate, 3-4 mm. long; peduncles usually less than 1 cm. long; bractlets lanceolate, minute; flowers imbricate; sepals scarious, broadly orbicular, 4-5 mm. long, rose-colored to white, with a greenish or reddish median line; petals 4, white or pink, membranous, elliptic, acute, 4 mm. long, 2 mm. wide; stamens 3, not as long as the petals; style longer than the corolla; capsule ovate, membranous, usually 2-6-seeded; seeds orbicular, black, 5 mm. long.

TYPE LOCALITY: Sulphur Banks, Lake County, California.

DISTRIBUTION: Mountains, from southwestern Oregon to eastern Nevada and Tulare County, California.

3. *Spraguea nuda* (Greene) Howell, Erythra 1: 39. 1893.

Spraguea umbellata montana M. E. Jones, Bull. Torrey Club 9: 31. 1882.

Calyptridium nudum Greene, Pittonia 1: 64. 1887.

Spraguea montana A. Heller, Muhlenbergia 1: 132. 1906.

Biennial or perhaps perennial, with a taproot and basal rosette of leaves; basal leaves 2-5 cm. long, the blades spatulate or oblanceolate, tapering into the winged petiole; scape 5-10 cm. high, usually naked or with one or two minute scale-like leaves; flowers in a dense head-like inflorescence, the short scorpioid spikes sessile; bracts 6-10 mm. long, ovate, almost equaling the sepals; sepals orbicular-reniform, retuse, 4-5 mm. long and somewhat broader; petals elliptic, 4 mm. long, white or pinkish; stamens and style exserted; seeds few, black, shining, 0.5 mm. long.

TYPE LOCALITY: Summit of Sierra Nevada, California, above Donner Lake.

DISTRIBUTION: High mountains of the northern Sierra Nevada of California and Nevada.

4. *Spraguea multiceps* Howell, Erythra 1: 39. 1893.

Spraguea umbellata caudicifera A. Gray; H. Patters, Check-list N. Am. Pl. ed. 2. 14. 1892. -A. Gray,

Syn. Fl. N. Am. 1: 278. 1897.

Calyptridium umbellatum caudiciferum Jepson, Fl. Calif. 1: 465. 1914.

Perennial, with a taproot and branching caudex; basal leaves thick, firm, 1-3 cm. long, the blades spatulate, rather abruptly contracted into the short winged petiole; scapes several, 2-6 cm. high, rarely up to 1 dm. high, naked or with one or two minute scale-like leaves; flowers in dense heads, the short, imbricate, scorpioid spikes sessile or nearly so; bracts ovate, 3-4 mm. long; sepals reniform, 4 mm. long, 5 mm. broad, emarginate, crisp; petals oblong, 4 mm. long; stamens shorter than the petals; capsule orbicular, about 4-seeded; seeds black, orbicular, nearly 1 mm. long.

TYPE LOCALITY: Mount Hood, Oregon.

DISTRIBUTION: Cascade Mountains of Washington and Oregon, and the Rockies southward to Wyoming, northern Utah, and northeastern Nevada.

5. *Spraguea caespitosa* Rydberg, sp. nov.

Perennial, often with a caespitose caudex; basal leaves 1-2 cm. long, the blade spatulate, obtuse or rounded at the apex, much shorter than the petiole; scape 2-4 cm. long, naked; inflorescence head-like, the short scorpioid branches sessile; bracts scarious, ovate, about 2 mm. long; sepals round-reniform, 3 mm. or in fruit 4 mm. long; petals 4, spatulate, nearly equaling the sepals; stamens scarcely exerted; capsule nearly orbicular, 3-4-seeded; seeds black, shining, about 1 mm. long.

Planta perennis; caudex caespitosus; folia omnia basilaria spathulata obtusa; scapus nudus; inflorescentia capitiformis ramis sessilibus scorpioidis; bracteae scariosae ovatae; sepala rotundato-reniformia; petala spathulata; stamina vix exserta; semina nigra nitentia.

Type collected in the San Gabriel Mountains, Los Angeles County, California, July 3, 1908, *Abrams & McGregor 607* (herb. N. Y. Bot. Gard.).

DISTRIBUTION: Higher mountains of southern California.

6. *Spraguea irregularis* Rydberg, sp. nov.

Biennial, with a leafy sette; basal leaves 3-6 cm. long, the blades oblanceolate, 4-10 mm. wide, acute or obtuse, often with a callous cusp; stems several, 1-3 dm. high, often more or less leafy, the leaves 3-8 cm. long, usually cuspidate, the blade oblanceolate, gradually tapering into the petiole; inflorescence irregular, often umbellate at the top and bearing below 1 or 2 divaricate branches ending in smaller umbels; bracts 3-5 mm. long, often partly green; sepals round-reniform, emarginate, 4-5 mm. long; petals oblong or spatulate, clawed, acute, nearly equaling the sepals; stamens included; capsule orbicular, about 8-ovuled, mostly 3-4-seeded; seeds shining, orbicular, about 1 mm. long.

Planta biennis; folia rosulata oblanceolata; scapus saepe carnosus; inflorescentia subumbellata irregularis saepe ramosa; sepala rotundato-reniformia emarginata; petala spathulata unguiculata; stamina inclusa; semina nitentia.

Type collected in Bear Valley, San Bernardino Mountains, California, June 3, 1892, *S. B. Parish 2339* (herb. Columbia Univ.).

DISTRIBUTION: Mountains of southern California; apparently also in Butte County.

7. *Spraguea paniculata* Kellogg, Proc. Calif. Acad. 2: 187. 1862.

Calyptidium paniculatum Greene, Bull. Torrey Club 13: 144. 1886.

Biennial, with a basal rosette of leaves; leaves 2-5 cm. long, the blades spatulate, rounded at the apex, decurrent on the petioles; stems several, 5-7 cm. high; inflorescence irregular, the short peduncled spikes arranged corymbosely; bracts scarious, 3 mm. long, ovate; sepals round-reniform, retuse, 5-6 mm. long; petals oblong, about 5 mm. long; stamens usually exerted; capsule orbicular, 3 mm. long, 4-6-seeded; seeds black, shining, fully 1 mm. long.

TYPE LOCALITY: Virginia City, Nevada.

DISTRIBUTION: Western Nevada and adjacent California.

ILLUSTRATION: Proc. Calif. Acad. 2: f. 56.

8. *Spraguea Hallii* Rydberg, sp. nov.

Perennial, with a branched caudex; basal leaves 2-3 cm. long, the blades narrowly oblanceolate, mostly acutish, 2-3 mm. wide, gradually tapering into the petioles; stem-leaves very small, if any; scape 5-8 cm. high, slender; spikes more or less terminal, peduncled, rather

irregularly arranged, the main inflorescence corymbiform or subumbellate, sometimes with some spikes on branches below; bracts small, obovate; sepals broadly reniform, white-scarious with a green center, about 4 mm. long; petals obovate-spatulate, 4 mm. long; stamens about equaling the petals; valves of the capsule orbicular, 2-2.5 mm. long; seeds mostly 4, black, shining, 1 mm. long.

Planta perennis; caudex ramosus; folia basilaria anguste oblanceolata; inflorescentia pedunculata spicata nonnihil irregularis; bracteae obovatae; sepala late reniformia albido-scariosa centro viride; petala obovato-spathulata; stamina vix exserta; semina nigra nitentia.

Type collected in the San Jacinto Mountains, July 22, 1897, *H. M. Hall 714* (herb. Univ. Calif. 7765).

9. *Spraguea monosperma* (Greene) Rydberg.

Calyptidium monospermum Greene, *Erythea* 3: 63. 1895.
Spraguea pulchella Eastw. Bull. Torrey Club 29: 79. 1902.

Annual, with a basal rosette of leaves; basal leaves and lower stem-leaves 5-10 mm. long, purplish, petioled, the blades spatulate or obovate-spatulate, obtuse; upper stem-leaves bract-like; stems slender, decumbent, 2-4 cm. long; inflorescence irregular, the short scorpioid spikes peduncled; bracts small, scarious; sepals somewhat unequal, round-reniform, emarginate, rose-colored, 3 mm. broad; petals 4, oblong or linear, acute or obtuse, 3 mm. long; stamens about equaling the petals; style exserted; ovary 1-2-ovuled; capsule orbicular, 1-2-seeded; seeds brown, round-reniform, shining, 1 mm. long.

TYPE LOCALITY: Big Cottonwood Meadows, Inyo County, California.

DISTRIBUTION: Known only from the type locality and from Mariposa County, California.

NOTE: Dr. Greene originally described the petals as 2. Mrs. Brandegee in a letter to H. M. Hall called attention to the fact that in the type they are 4.

13. *CALYPTRIDIMUM* Nutt.; T. & G. Fl. N. Am. 1: 198. 1838.

Annual herbs, with a taproot. Basal leaves in a rosette, several or many; stem-leaves few, alternate, fleshy. Flowers hermaphrodite, small, numerous, borne in spikes, the spikes arranged in cymes or panicles. Sepals 2, broad, unequal, more or less accrescent, persistent. Petals 2-4, small, in fading more or less coherent above and carried up on top of the elongating capsule. Stamens 1-3. Ovary 6-24-ovuled; styles short and united or obsolete; stigmas 2. Capsule hyaline, flat, oval to linear-oblong, several- or many-seeded. Seeds compressed, orbicular, smooth and shining or muriculate. Embryo horseshoe-shaped, enclosing the endosperm.

Type species, *Calyptidium monandrum* Nutt.

Petals 2 or 3; stamen 1; sepals only slightly accrescent; inflorescence rather loose, the flowers not imbricate.

Petals 2; capsule shorter than the lower sepal.

Petals 3 (rarely 2); capsule 3-4 times as long as the sepals.

Petals 4; stamens 1-3; inflorescence dense, scorpioid, the flowers often imbricate.

Sepals slightly accrescent, in fruit orbicular or ovate and 3-4 mm. long, two thirds as long as the capsule.

Stem usually more than 1 dm. long; sepals distinctly scarious-margined.

Stem 1-2 cm. high; sepals scarcely scarious-margined.

Sepals exceedingly accrescent, in fruit reniform and 6-8 mm. long, about equaling the capsule.

1. *C. roseum*.

2. *C. monandrum*.

3. *C. Parryi*.

4. *C. pygmaeum*.

5. *C. quadripetalum*.

1. *Calyptidium roseum* S. Wats. Bot. King's Expl. 44. 1871.

Annual, diffusely branched at the base; stems several, decumbent, 5-10 cm. long; leaves alternate, oblong-spatulate, obtuse, tapering at the base, 1-4 cm. long, the basal ones few; flowers in many axillary and terminal scorpioid racemes; sepals unequal, orbicular, scarious-margined, the lower 2-3 mm. long, the upper 1.5-2 mm. long; petals 2, obovate, less than 1 mm. long; stamen 1, opposite the lower sepal; capsule 6-12-seeded, oblong-obovate, flat, not exceeding the lower sepal; seeds black, shining, 0.4 mm. long.

TYPE LOCALITY: Truckee and Monitor Valley, Nevada.

DISTRIBUTION: Mountains, Western Nevada to Oregon and Wyoming.

ILLUSTRATION: S. Wats. Bot. King's Expl. pl. 6, f. 6-8.

2. *Calyptridium monandrum* Nutt.; T. & G. Fl. N. Am. 1: 198.
1838.

Annual, branched at the base; stems several, 5–20 cm. long, spreading or prostrate; leaves mostly in a basal rosette, a few scattered along the stem, 1–6 cm. long, fleshy, the blades spatulate, mostly rounded at the apex, more or less decurrent on the petiole; flowers in terminal panicles, the branches spike-like, more or less scorpioid at the apex; sepals 2, unequal, reniform-ovate or deltoid, 1–2 mm. long, narrowly margined, scarcely accrescent; petals usually 3, white, 1 mm. long, distinct but slightly coherent and carried as a calyptra on the fruit; stamen 1, the filament subulate; capsule linear, striate, slightly falcate, 4–8 mm. long, about 1 mm. wide, acute; seeds 5–10, black, shining, 0.5–0.6 mm. long.

TYPE LOCALITY: San Diego, California.

DISTRIBUTION: Southern California, from Monterey southward; Lower California and southwestern Arizona.

3. *Calyptridium Parryi* A. Gray, Proc. Am. Acad. 22: 285. 1887.

Annual, branched at the base, decumbent or spreading, 1–1.5 dm. long; basal leaves numerous, fleshy, 2–3 cm. long, the blade spatulate, decurrent on the petiole; stem-leaves similar but smaller; racemes axillary and terminal, 1–3 cm. long, scorpioid at the apex; sepals orbicular, with white-scarious margins, in fruit 3–4 mm. long; petals slightly exceeding the sepals, white; capsule 4–5 mm. long, 2 mm. wide, notched at the apex; seeds many, rather dull, muriculate, 0.6–0.7 mm. long.

TYPE LOCALITY: Bear Valley, San Bernardino Mountains.

DISTRIBUTION: Mountains of southern California and southwestern Arizona.

4. *Calyptridium pygmaeum* Parish, MS.

An annual, branched at the base; stems 1–2 cm. high; leaves mostly basal, spatulate, 2–5 mm. long; flowers in one-sided racemes; bracts ovate, scarious, early deciduous; sepals ovate, obtuse, 2 mm. long, scarcely scarious-margined; petals 4, oval, 3–3.5 mm. long; capsule elliptic, 4–4.5 mm. long, nearly 2 mm. wide; seeds black, minutely muriculate with rounded tubercles, 0.75 mm. long.

Caules tantum 1–2 cm. alti; folia spatulata; inflorescentia densa scorpioidea; bractae scariosae mox deciduae; sepala scarioso-marginata ovata modice accrescentia; petala 4 ovalia; capsula elliptica quam sepalis longior; semina nigra muriculata.

Type collected on dry hills, Bear Valley, San Bernardino Mountains, June 1885, at 1950 meters altitude, S. B. Parish 1803 (herb. Stanford Univ. 92635).

DISTRIBUTION: Known only from the type locality.

5. *Calyptridium quadripetalum* S. Wats. Proc. Am. Acad. 20:
356. 1885.

Calyptridium tetrapetalum Greene, Fl. Fran. 182. 1891.

Annual, branched at the base; stems many, erect to spreading, 5–20 cm. high; leaves spatulate, 3–7 cm. long, short-petioled, 6–15 mm. broad; racemes axillary and terminal, scorpioid, 3–5 cm. long; flowers imbricate, sessile; sepals unequal, round-reniform, scarious-margined, with green center and white or rose margins, 4–5 mm., in fruit 6–8 mm. broad; petals 4, oblong or ovate, nearly equal, shorter than the sepals; stamens 1–3; capsule oblong, 6 mm. long, 10–20-seeded, about equaling the fruiting calyx; seeds black, shining, suborbicular, 0.5 mm. long.

TYPE LOCALITY: Headwaters of Eel River, Lake County, California.

DISTRIBUTION: Lake County, California.

14. *EROCALLIS* Rydb. Bull. Torrey Club 33: 139. 1906.

Perennial herbs, with a globose corm. Basal leaves solitary or usually wanting on flowering specimens; stem-leaves 2 or 3, verticillate, linear, somewhat fleshy. Flowers hermaphrodite, corymbose-paniculate. Sepals 2, herbaceous, persistent. Petals 3–10, usually 5–7, oblong,

unequal. Stamens 4-5. Capsule circumscissile near the base. Seeds compressed, obliquely ovate in outline, smooth and shining.

Type species, *Claytonia triphylla* S. Wats.

1. *Erocallis triphylla* (S. Wats.) Rydb. Bull. Torrey Club 33: 140. 1906.

Claytonia triphylla S. Wats. Proc. Am. Acad. 10: 345. 1875.

Oreobroma triphyllum Howell, Erythea 1: 33. 1893.

Lewisia triphylla B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 269. 1897.

Perennial, with a globose corm 3-6 mm. thick; stem slender, 3-10 cm. high; basal leaves none at flowering time; cauline leaves 2-5, verticillate, linear, 2-4.5 cm. long, 1.5-2.5 mm. wide; inflorescence corymbose-paniculate, 1-15-flowered; sepals oval, 3-4 mm. long; petals elliptic, elliptic-obovate or oval, usually 5-7, 4-5.5 mm. long, 2-2.5 mm. broad; stamens 4-5; styles 3-5; capsule ovoid, 3-4 mm. long, 2.1-2.3 mm. broad; seeds black and shining, obliquely ovate, about 1 mm. long.

TYPE LOCALITY: Cisco, California.

DISTRIBUTION: Washington to Montana, Colorado, and California.

ILLUSTRATIONS: Jepson, Fl. Calif. f. 95, a; Jepson, Man. Fl. Pl. Calif. f. 357.

15. *OREOBROMA* Howell, Erythea 1: 31. 1893.

Perennial herbs, with a fleshy taproot and short caespitose caudex. Basal leaves numerous, clustered at the ends of the branches of the caudex; stem-leaves alternate or opposite, the lower in some species like the basal ones, or all bract-like. Stem or scape jointed at the base. Flowers hermaphrodite and regular, racemose, cymose or paniculate, the inflorescence in some species reduced to a single flower. Sepals 2, persistent, often toothed. Petals 5-10, white to rose-colored. Stamens 5-20; filaments filiform. Ovary ovoid; ovules many; placenta central; styles 3-7, united at the base. Pod ovoid, circumscissile near the base, thence splitting upwards, several-seeded. Seeds ovate to suborbicular, smooth and shining, without a strophiole.

Type species, *Calandrinia Leana* Porter.

Scape or scapiform stem elongate, much exceeding the basal leaves, 1-3 dm. high; caudex more or less well developed.

Inflorescence paniculate or cymose, many-flowered; veins of the bracts and sepals excurrent and gland-tipped.

Basal leaves linear, terete or nearly so.

Basal leaves spatulate or obovate, decidedly flat.

Petals 6-10 mm. long; peduncles and pedicels slender.

Leaves 3-6 cm. long, with short, winged petioles.

Leaves 5-10 cm. long, the petioles as long as the blades.

Petals 10-17 mm. long; peduncles and pedicels stout, the latter short.

Leaves oblong-oblancoolate, with crisp-scarious or fleshy-toothed margins; filaments nearly free.

Petals oblanceolate; leaf-blades rounded at the apex.

Petals linear-oblong; leaf-blades acutish or obtuse at the apex.

Leaves obovate-spatulate, mostly entire, not scarious-margined; filaments monadelphous below.

Inflorescence racemiform, 5-flowered; bracts and sepals not glandular (except in *O. longipetalum*).

Basal leaves broadly spatulate; corolla more than 2 cm. long; seeds granulate, with a large scale-like aril.

Basal leaves narrowly oblanceolate to linear; corolla about 1.5 cm. long; seeds smooth, without an aril.

Basal leaves linear-oblancoolate; sepals dentate but not glandular.

Basal leaves linear; sepals with gland-tipped teeth.

Scape 1-3-flowered, less than 1 dm. high, rarely exceeding the basal leaves.

Bracts not closely investing the calyx.

Sepals distinctly glandular-toothed.

Petals 12-18 mm. long.

Petals 6-10 mm. long.

Bracts oblong-oblancoolate.

Bracts narrowly lanceolate.

Glands terminating the teeth of the sepals mostly sessile; pedicels usually elongate.

1. *O. Leanum*.

2. *O. columbianum*.

3. *O. Congdoni*.

4. *O. Howellii*.

5. *O. Heckneri*.

6. *O. Colyledon*.

7. *O. Tweedyi*.

8. *O. oppositifolium*.

9. *O. longipetalum*.

9. *O. longipetalum*.

10. *O. exaristulatum*.

11. *O. pygmaeum*.

- Glands terminating the teeth of the sepals and bracts distinctly stalked, blackish.
 Petals not gland-bearing.
 Petals glandular-dentate.
- Sepals entire, or if slightly toothed, the teeth not gland-tipped.
 Bracts lance-linear, less than 1.5 cm. long; leaves many times longer, usually broadest above the middle, mostly acute.
 Petals 12-20 mm. long; leaves usually more than 2 mm. wide.
 Stamens 12-15; petals about 20 mm. long.
 Stamens 6-12; petals 12-15 mm. long.
 Petals less than 10 mm. long; leaves 1-2 mm. wide.
- Bracts narrowly linear, 1.5-3 cm. long; leaves similar but longer, generally broadest at the base, blunt at the apex.
 Bracts closely investing the calyx, similar to the sepals and usually mistaken for a second external set of such.
- Sepals not glandular-dentate, broader than the bracts.
 Sepals glandular-dentate, scarcely broader than the bracts.
 Petals obovate-oblancoolate, acutish; petioles conspicuously dilated at the base.
 Petals oblanceolate, rounded or obtuse at the apex; petioles not conspicuously dilated at the base.
12. *O. glandulosum*.
 13. *O. avidorum*.
 14. *O. bernardinum*.
 15. *O. nevadense*.
 16. *O. minimum*.
 17. *O. mexicanum*.
 18. *O. brachycalyx*.
 19. *O. Kelloggii*.
 20. *O. yosemitanum*.

1. *Oreobroma Leana* (Porter) Howell, *Erythea* 1: 31. 1893.

Calandrinia Leana Porter, Bot. Bull. [Bot. Gaz.] 1: 49. 1876.

Lewisia Leana B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 267. 1897.

Perennial, with a fleshy root and short caudex; basal leaves numerous, linear, terete or nearly so, acute, 2-5 cm. long, glaucous; stems solitary or several, 8-20 cm. high, scapiform; stem-leaves alternate, bract-like, lance-subulate, dentate, with stalked glands about 5 mm. long; branches divaricate; bracts subulate, 2-3 mm. long; pedicels slender, 3-8 mm. long; sepals rounded, 2 mm. long, 3 mm. wide, glandular-dentate; petals 6-8, obovate, rounded or retuse, red or white, with darker red veins, 6-7 mm. long; stamens 4-8; styles 2; capsule ovoid, 5 mm. long; seeds 9 or 10, black, shining.

TYPE LOCALITY: Siskiyou Mountains, near the southern boundary of Oregon.

DISTRIBUTION: Mountains of Oregon and California.

2. *Oreobroma columbianum* Howell, *Erythea* 1: 32. 1893.

Calandrinia columbiana Howell; A. Gray, Proc. Am. Acad. 22: 277. 1887.

Lewisia columbiana B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 269. 1897.

Perennial, with a thick root and short caudex; basal leaves narrowly spatulate or oblanceolate, 3-6 cm. long, not glaucous, rounded to acutish at the apex, flat; scapiform stem 1.5-3 dm. high; stem-leaves alternate, bract-like, 5-10 mm. long, glandular-dentate; inflorescence corymbiform-cymose, the branches ascending; bracts glandular-dentate, the glands stalked; pedicels less than 1 cm. long; sepals orbicular or round-reniform, rounded or somewhat truncate and glandular-toothed, 2-3 mm. long; petals 4-7, oblong, truncate or emarginate at the apex, 6-10 mm. long, white or pink with red veins; capsule cylindro-ovoid, 4 mm. long; seeds black, shining, ovate, 2 mm. long.

TYPE LOCALITY: "Oregon and Washington territories," but Lyall's specimens were collected on East Cascades, lat. 49° N. [Washington].

DISTRIBUTION: Mountains of Vancouver Island, Washington, and Oregon.

3. *Oreobroma Congdoni* Rydberg, sp. nov.

Perennial, with a thick fleshy root and short caudex; leaves many, mostly basal, oblanceolate, acute, 5-10 cm. long, the petiole as long as the blade; stem 2-4 dm. high; lower stem-leaves oblanceolate, 2-5 cm. long, the upper bract-like, glandular-laciniate-dentate; inflorescence 4-12 cm. long, the branches ascending; bracts lanceolate, glandular-dentate; sepals suborbicular, 2 mm. long; corolla rose-colored, about 8 mm. long; fruit ovoid, 4 mm. long; seeds black, shining, 2 mm. long, 1.5 mm. broad.

Folia oblanceolata, caulina superiora reducta bracteiformia; inflorescentia corymbiformi-paniculata; bracteae et sepala glanduloso-dentata; petala rosea; semina nigra.

Type collected on the Hennesey Ranch, Mariposa County, California May 31, 1883, *Congdon* (Dudley herb. Stanford Univ. 45334).

4. *Oreobroma Howellii* (S. Wats.) Howell, *Erythra* 1: 32. 1893.*Calandrinia Howellii* S. Wats. Proc. Am. Acad. 23: 262. 1888.*Lewisia Howellii* B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 268. 1897.

Perennial, with a thick root and short caudex; basal leaves numerous, oblong-oblancoelate, attenuate into a margined petiole, 10-14 mm. wide, with narrow, hyaline, crisp margins; stems several, 1-2 dm. high; stem-leaves bract-like; inflorescence short, corymbiform-paniculate; bracts obovate, dentate, with stalked glands; flowers short-pedicelled; sepals orbicular or broadly ovate, glandular-dentate, 5 mm. long; petals 7-10, oblong-lanceolate, emarginate or entire, 12-15 mm. long, deep-rose-colored; stamens about 7, free to the base; seeds 4-10, ovate, black, shining.

TYPE LOCALITY: Deer Creek Mountains, Josephine County, Oregon.

DISTRIBUTION: Southwestern Oregon.

5. *Oreobroma Heckneri* Morton, Proc. Biol. Soc. Wash. 44: 9. 1931.

Perennial, with a thick fleshy rootstock; basal leaves numerous, horizontal, oblanceolate, 5-7.5 cm. long, 2 cm. wide, thick, fleshy, conspicuously fleshy-toothed above the middle, acute or obtuse at the apex, the petioles keeled; stem scape-like, 1 dm. long or more; stem-leaves oval, obtuse, about 1 cm. long, conspicuously serrate, the teeth of the upper gland-tipped; pedicels very short; sepals 5 mm. long, 7 mm. wide, truncate at the apex, conspicuously nerved, and with gland-tipped teeth; petals about 7, rose-red, oblong, about 17 mm. long, 3.5 mm. wide; stamens about 9. Perhaps not specifically distinct from *O. Howellii*.

TYPE LOCALITY: Northern California.

DISTRIBUTION: Known only from the type locality.

6. *Oreobroma Cotyledon* (S. Wats.) Howell, *Erythra* 1: 32. 1893.*Calandrinia Cotyledon* S. Wats. Proc. Am. Acad. 20: 355. 1885.*Lewisia Cotyledon* B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 268. 1897.

Perennial, with a thick taproot and short caudex; basal leaves numerous and fleshy, spatulate, oblanceolate, or obovate, 3-5 cm. long, 1-2 cm. wide, entire or denticulate; scape-like stems several, 2-3 dm. high; stem-leaves bract-like, oblong to ovate, glandular-dentate; inflorescence a corymbiform cyme; bracts lanceolate, glandular-dentate with stalked glands; pedicels short; sepals orbicular, 4 mm. long, many-nerved, the nerves excurrent and gland-tipped; petals 10, rose-colored, oblanceolate, 10-12 mm. long; stamens 5-8, the filaments dilated; stigmas 2 or 3; capsule oblong-ovoid, 5 mm. long; seeds 10-20, black, shining, ovoid, 1.5 mm. long.

TYPE LOCALITY: Siskiyou Mountains, California, near head of Illinois River.

DISTRIBUTION: Southwestern Oregon and northern California.

ILLUSTRATIONS: Jepson, Fl. Calif. f. 96; Jepson, Man. Fl. Pl. Calif. f. 359.

7. *Oreobroma Tweedyi* (A. Gray) Howell, *Erythra* 1: 33. 1893.*Calandrinia Tweedyi* A. Gray, Proc. Am. Acad. 22: 277. 1887.*Lewisia Tweedyi* B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 268. 1897.*Lewisia aurantiaca* A. Nelson, Univ. Wyo. Publ. Bot. 1: 63. 1924.

A perennial, with a deep fleshy taproot often 2 cm. thick, and a short caudex; basal leaves petioled, the petioles winged, 2-5 cm. long, the blades fleshy, obovate, 4-8 cm. long, 3-4 cm. wide; scape 1.5-2 dm. high, 1-3-flowered; bracts alternate, lanceolate, scarious, about 1 cm. long; pedicels 3-6 cm. long; sepals oval or ovate, scarious or colored, about 1 cm. long; sepals membranous, entire, rounded-oval, 1 cm. long; petals 7-9, oval, about 2.5 cm. long; stamens 10 or 11; capsule ovoid, 6-8 mm. long, 20-30-seeded; seeds black, granulate, with a large, scale-like, round-reniform aril, 2 mm. long.

TYPE LOCALITY: Wenatchee Mountains, Washington.

DISTRIBUTION: Mountains of Washington.

8. *Oreobroma oppositifolium* (S. Wats.) Howell, *Erythea* 1: 32. 1893.

Calandrinia oppositifolia S. Wats. Proc. Am. Acad. 20: 355. 1885.
Lewisia oppositifolia B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 268. 1897.

Perennial, with a thick taproot and short caudex; basal leaves linear-oblancoelate, 4-10 cm. long, 5-10 mm. wide, the blade decurrent on the short scarious-winged petiole; scape or stem 1-2 dm. high, 1-4-flowered; lower stem-leaves opposite, similar to the basal leaves but smaller, the upper alternate, bract-like, lanceolate, about 5 mm. long; inflorescence racemiform or corymbiform; pedicels 2-4 cm. long; sepals orbicular, 6-8 mm. long, dentate along the rounded apex; petals 10, oblanceolate, denticulate at the apex, white or pinkish, 10-12 mm. long; stamens 8-12; stigmas 3; capsule oblong-ovoid, 6 mm. long, 5-10-seeded; seeds smooth, shining.

TYPE LOCALITY: Waldo, Oregon.

DISTRIBUTION: Coast mountains of southern Oregon and northern California.

ILLUSTRATIONS: Gard. Chron. III. 4: f. 83; Garden 40: 485; Bot. Mag. pl. 7051.

9. *Oreobroma longipetalum* Piper, Contr. U. S. Nat. Herb. 16: 207. 1913.

Perennial, with a thick root about 6 cm. long; basal leaves linear, 2-3 cm. long, 2 mm. wide; scape 1-3-flowered, erect, 3-6 cm. long, exceeding the leaves; bracts opposite or the upper alternate, sessile, ovate, glandular-dentate; pedicels 1-2 cm. long; sepals 4-5 mm. long, truncate or rounded at the apex, glandular-dentate; petals 5-7, rose-colored, 12-18 mm. long; capsule broadly ellipsoid, 8 mm. long; seeds numerous.

TYPE LOCALITY: Sierra Nevada, California.

DISTRIBUTION: Known only from the type locality.

10. *Oreobroma exarticulatum* (St. John) Rydberg.

Lewisia exarticulata St. John, Res. Stud. State Coll. Wash. 1: 59. 1929.

Perennial, with a thick fleshy root 1-2 cm. long; basal leaves fleshy, petioled, the petioles winged, 1-2 cm. long, the blade fleshy, linear-oblancoelate, obtuse, 2-3 cm. long, 1.5 cm. wide; scapes several, usually 1-flowered; bracts 2, opposite, 2-3 mm. below the flower, oblong-oblancoelate, prominently veined, glandular-dentate, 2-4 mm. long; sepals orbicular, veiny, glandular-dentate; petals 8, greenish-white, 6-7 mm. long, oblanceolate; stamens 4; filaments hyaline, narrowly deltoid; stigmas 4; capsule ovoid, transparent; seeds about 24, chestnut-brown, about 1-3 mm. long.

TYPE LOCALITY: Panorama Point, Mount Rainier, Washington.

DISTRIBUTION: Mount Rainier.

11. *Oreobroma pygmaeum* (A. Gray) Howell, *Erythea* 1: 32. 1893.

Talinum pygmaeum A. Gray, Am. Jour. Sci. II. 33: 407. 1862.
Calandrinia pygmaea A. Gray, Proc. Am. Acad. 8: 623. 1873. Not *C. pygmaea* F. Muell. 1859.
Calandrinia Grayi Britton, Bull. Torrey Club 17: 312. 1890.
Lewisia pygmaea B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 268. 1897.
Oreobroma Grayi Rydb. Mem. N. Y. Bot. Gard. 1: 137. 1900.

Subcaulescent perennial, with a fusiform root up to 1 cm. thick; basal leaves numerous, linear or linear-oblancoelate, 3-7 cm. long, 1-3 mm. wide; scape 1-3-flowered, 2-6 cm. high; bracteate at or below the middle; bracts lance-linear, connate at the base, 5-10 mm. long; sepals suborbicular, rounded or truncate and glandular-dentate at the apex, 4-5 mm. long, strongly veined; petals 6-8, pink or white, 8-10 mm. long, unequal; stamens 5-8, stigmas 3-5; capsule ovoid, 4-5 mm. long; seeds 15-20, black, ovate, shining, muriculate, 1 mm. long.

TYPE LOCALITY: Bridger's Pass, Wyoming.

DISTRIBUTION: Rocky crests, Montana to Colorado, California, and Washington.

12. *Oreobroma glandulosum* Rydberg, sp. nov.

Subcaulescent perennial, with a deep, thick, fleshy taproot 5-10 mm. thick; basal leaves numerous, 3-4 cm. long, 1-2 mm. wide, linear; scapes 2-3 cm. long, 1-3-flowered; bracts lanceolate, 3-5 mm. long, glandular-dentate; pedicels 2-5 mm. long; sepals obovate, 3 mm. long, dentate with stipitate black glands; petals 5-7, white, elliptic, 6-7 mm. long; stamens 5-7; capsule about 4 mm. long, ovoid; seeds black, obovate, scarcely 1 mm. long.

Folia linearia; inflorescentia 1-3-flora; bracteae et sepala glanduloso-dentata glandulis stipitatis; petala elliptica albidia eglandulosa; semina obovata nigra.

Type collected on Mount Dana, California, at an altitude of 3650 meters, July 1902, Hall & Babcock 3611 (herb. N. Y. Bot. Gard.).

DISTRIBUTION: Mount Dana and Mount Whitney, Sierra Nevada, California.

13. *Oreobroma aridorum* (Bartlett) A. Heller, *Muhlenbergia* 6: 83. 1910.

Lewisia pygmaea aridorum Bartlett, Bot. Gaz. 44: 303. 1907.

Subcaulescent perennial, with a fusiform root; basal leaves linear-oblancoolate, 3-6 cm. long, 2-4 mm. wide, acute; scape 1-5-flowered, 3-5 cm. high; bracteate above them iddle; bracts linear or oblong, connate at the base, about 5 mm. long, glandular-dentate; sepals 5 mm. long, suborbicular, rounded at the apex, strongly reticulate-veined, glandular-dentate at the apex, the glands black or dark-brown, distinctly stipitate; petals white, narrowly oblong, glandular-dentate at the apex; capsule ovoid, dark-brown, 4.5 mm. long; seeds nearly black, shining, fully 1 mm. long.

TYPE LOCALITY: Bare places in the meadows, Mount Paddo (Mount Adams), Washington.

DISTRIBUTION: Known only from the type locality.

14. *Oreobroma bernardinum* (Davidson) Rydberg.

Lewisia bernardina Davidson, Bull. So. Calif. Acad. 20: 51. 1921.

Acaulescent perennial, with a fleshy subglobose to conic root; leaves numerous, 5 cm. long, linear-oblancoolate, blunt; scapes numerous, 7-8 cm. high, not recurved in fruit; bracts lance-linear, entire, about 1.5 cm. from the base; sepals entire, ovate, acute; petals 8 or 9, rounded or apiculate at the apex, 2 cm. long, 4 mm. wide; stamens 12-15; stigmas 5.

TYPE LOCALITY: Bear Valley, San Bernardino Mountains, California.

DISTRIBUTION: San Bernardino Mountains.

15. *Oreobroma nevadense* (A. Gray) Howell, *Erythea* 1: 33. 1893.

Talinum pygmaeum S. Wats. Bot. King's Expl. 42, in part. 1871.

Calandrinia nevadensis A. Gray, Proc. Am. Acad. 8: 623. 1873.

Claytonia Grayana Kuntze, Rev. Gen. 57. 1891.

Lewisia nevadensis B. L. Robinson, in A. Gray, Syn. Fl. N. Am. 1: 268. 1897.

Acaulescent perennial, with a short fleshy taproot about 1 cm. thick; basal leaves numerous, linear or linear-spatulate, 5-10 cm. long, 2-4 mm. wide; scapes several, 5-10 cm. high, 1-3- (usually 1-) flowered, often recurved in fruit; pedicels bracted below the middle; bracts lance-linear, connate, scarious, 1-1.5 cm. long; sepals ovate, acute, 7-10 mm. long, entire or minutely denticulate; petals 5-8, white, elliptic, 12-15 mm. long; stamens 6-12; stigmas 3-6; capsule ovoid, 7 mm. long; seeds many, obliquely suborbicular, black, shining, muriculate, especially along the margins, 1.3 mm. long.

TYPE LOCALITY: Sandy places, East Humboldt Mountains, Nevada.

DISTRIBUTION: Sandy places, Washington to western Colorado and northern California.

ILLUSTRATIONS: Jepson, Fl. Calif. f. 95, b; Jepson, Man. Fl. Pl. Calif. f. 358.

16. *Oreobroma minimum* A. Nelson, Bull. Torrey Club 27: 260. 1900.

Lewisia minima A. Nelson; Coult. & Nels. Man. 179. 1909.

Subcaulescent perennial, with a fleshy conic or fusiform root 8-10 mm. thick; basal leaves many, narrowly linear, 4-7 cm. long, 1-2 mm. wide; scape 1-flowered, usually shorter

than the leaves; bracts lance-linear, less than 1 cm. long, connate at the base, inserted on the scape one third up from the base; sepals ovate, mucronate, nearly entire, 5 mm. long; petals white, 7-9 mm. long; capsule ovoid, 5-6 mm. long; seeds black and shining, obliquely ovate, 1 mm. long.

TYPE LOCALITY: Obsidian Creek, Yellowstone Park, Wyoming.

DISTRIBUTION: Grassy banks, Montana and Wyoming to northeastern Nevada.

17. *Oreobroma mexicanum* Rydberg, sp. nov.

Perennial, with thick fleshy taproot often 1 dm. long, 5-15 mm. thick; leaves numerous, all basal, linear, 2-7 cm. long, 2-3 mm. wide, fleshy; flowers numerous, mostly solitary on basal peduncles; peduncles 5-20 mm. long; bracts linear, 1.5-2.5 cm. long; sepals elliptic-lanceolate, 6-7 mm. long; petals 5 or 6, spatulate, clawless, white, about 1 cm. long; stamens of about the same number, the anthers oblong, 2 mm. long; style about 3.5 mm. long; stigmas 3; fruit rounded-ellipsoid, 7 mm. long, the pericarp very thin, circumscissile at the base, and slightly splitting from the base; seeds numerous, black, nearly 1.5 mm. long and 1 mm. wide.

Folia linearia succulentia; inflorescentia plerumque uniflora pedunculis basilaribus numerosis; bracteae et sepala non glanduloso-dentata; petala spatulata alba; semina nigra.

Type collected on Mount Orizaba, July 25-26, 1901, *Rose & Hay 5769* (U. S. Nat. Herb. 395556).

DISTRIBUTION: High mountains above 10,000 meters, Orizaba, Popocatepetl, Ixtaccihuatl, and Nevada Toluca.

NOTE: This species has been mistaken for the related Bolivian *Oreobroma acaule* (H. B. K.) Rydb. (*Calandrinia acaulis* H. B. K. Nov. Gen. & Sp. 6: 78). Another closely related species is *O. affine* (Gill. & Arn.) Rydb. (*Calandrinia affinis* Gill. & Arn.; Arn. Edinb. Jour. Nat. Geogr. Sci. 3: 355. 1831).

18. *Oreobroma brachycalyx* (Engelm.) Howell, *Erythea* 1: 31.

1893.

Lewisia brachycalyx Engelm.; A. Gray, Proc. Am. Acad. 7: 400. 1868.

Lewisia brachycarpa S. Wats. Bot. Calif. 1: 79. 1880.

Subacaulescent perennial, with a thick taproot and short caudex; basal leaves numerous, spreading, narrowly spatulate or oblanceolate, 3-7 cm. long, 2-7 mm. wide, fleshy, rounded at the apex; scape usually 1-flowered, 3-6 cm. long; bracts 2, close under the calyx, herbaceous, scarious-margined, lanceolate, 5-7 mm. long; sepals 2, ovate, entire, acute, 4-5 mm. long; petals 5-9, cuneate, obovate, white, 12-18 mm. long, stamens 10-15; stigmas 5-7; capsule 8 mm. long, ovoid; seeds numerous, black, shining, obovate, 1.5 mm. long; cotyledons incumbent.

TYPE LOCALITY: Western New Mexico [probably now Arizona].

DISTRIBUTION: Southern Utah, Arizona, and southern California.

19. *Oreobroma Kelloggii* (K. Brand.) Rydberg.

Lewisia brachycalyx Greene, Fl. Fran. 176. 1891. Not *L. brachycalyx* Engelm. 1868.

Lewisia Kelloggii K. Brand. Proc. Calif. Acad. II. 4: 88. 1894.

Subacaulescent perennial with a short caudex and thick fleshy taproot 4-5 cm. long; basal leaves numerous, spatulate or obovate, obtuse or retuse, 1-2.5 cm. long, fleshy; peduncles 1-1.5 cm. long, articulate at the base; bracts close under the calyx, similar to the sepals, ovate-lanceolate, acute, glandular-toothed, 8-10 mm. long; petals 5-9, white, obovate-oblanceolate, acute, 10-15 mm. long; stamens 12-15; stigmas 4-5; capsule thin-walled, ovoid; seeds black, tuberculate-muricate, obliquely ovate, 2 mm. long; cotyledons oblique.

TYPE LOCALITY: Camp Yuba (Cisco), Sierra Nevada, California.

DISTRIBUTION: Northern Sierra Nevada, California.

ILLUSTRATION: Proc. Calif. Acad. II. 4: pl. 4.

20. *Oreobroma yosemitanum* (Jepson) Rydberg.

Lewisia rediviva yosemitana H. M. Hall, Yosemite Fl. 84. 1912. Not *L. rediviva yosemitana* K. Brand. 1894.

Lewisia yosemitana Jepson, Man. Fl. Pl. Calif. 352. 1923.

Acaulescent perennial, with a short caudex and a thick fleshy taproot 5-10 mm. in diameter; basal leaves numerous, thick, fleshy, spatulate, 1-2 cm. long, obtuse, narrowed into a short petiole; scape 1-2 cm. long; bracts 2 or 4, close under the calyx, oblong or lance-oblong, acute, glandular-margined; sepals 2, similar to the bracts, about 5 mm. long, pinkish; petals 5-12, white, oblanceolate, obtuse, 8-10 mm. long; stamens 15-26; stigmas 45. Scarcely distinct from *O. Kelloggii*.

TYPE LOCALITY: El Capitán, Yosemite Valley, California.

DISTRIBUTION: Yosemite, California.

ILLUSTRATION: H. M. Hall, Yosemite Fl. 85.

16. LEWISIA Pursh, Fl. Am. Sept. 368. 1814.

Perennial herbs, with a fleshy taproot and short caudex. Leaves all basal, numerous, linear or clavate, fleshy. Scape short, bearing at the apex 3-7 verticillate scarios bracts and a single pedicel. Flowers hermaphrodite, regular. Sepals 6-8, petaloid, imbricate, broad, persistent. Petals 7-18, rose-colored or white, imbricate. Stamens many; filaments filiform. Ovary globose, many-ovuled; styles 6-8, united at the base. Capsule globose, membranous-coriaceous, circumscissile at the base and thence splitting upward into 6-8 lobes. Seeds numerous, round-reniform, smooth and shining, without strophiole.

Type species, *Lewisia rediviva* Pursh.

- | | |
|--|-------------------------|
| Leaf-blades linear; sepals 15-25 mm. long; pedicels 1-1.5 cm. long. | 1. <i>L. rediviva</i> . |
| Leaf-blades clavate; sepals less than 15 mm. long; pedicels 1-5 mm. long, much shorter than the scape. | |
| Sepals 6-8, shorter than the petals; bracts 3-6, linear-lanceolate. | 2. <i>L. minor</i> . |
| Sepals 2, equaling or longer than the petals; bracts 2 or 3, ovate or one of them lanceolate. | 3. <i>L. disepala</i> . |

1. *Lewisia rediviva* Pursh, Fl. Am. Sept. 368. 1814.

Lewisia alba Kellogg, Proc. Calif. Acad. 2: 115. 1861.

Perennial, with a fleshy root and short, simple caudex, densely covered with numerous leaves; leaves fleshy, linear, subterete, 2-5 cm. long, about 2 mm. thick; scapes numerous, 1-3 cm. long, bearing at the end 4-7 scarios lance-subulate bracts about 5 mm. long; pedicel solitary, 1-1.5 cm. long, distinctly jointed to the scape; sepals 6-9, oval, rose-colored or white, 1.5-2.5 cm. long; petals 12-18, rose-colored to white, 2-2.5 cm. long, elliptic or oblong; stamens 30-50; filaments united at the base; styles 5-8, exserted; capsule ovoid, 5-6 mm. long, 6-9-seeded; seeds black or dark-brown, smooth, shining, round-reniform, 2.5 mm. long.

TYPE LOCALITY: Banks of Clark's River [Clark's Fork of Columbia].

DISTRIBUTION: British Columbia and Montana, and southward to Colorado and northern California.

ILLUSTRATIONS: Jour. Acad. Phila. 7: pl. 2; Bot. Misc. 1: pl. 70; H. & A. Bot. Beech. Voy. pl. 86; Bot. Mag. pl. 5395; Proc. Calif. Acad. 2: f. 36; Mont. Agr. Coll. Stud. 1: pl.; E. & P. Nat. Pl. 3¹⁶: f. 22.

2. *Lewisia minor* Rydberg, sp. nov.

Perennial, with a thick fleshy root and short caudex; leaves fleshy, 1-2 cm. long, clavate, rounded at the apex, and more or less grooved on the upper surface; scape about 1 cm. long, with 3-6 lance-subulate scarios bracts 3-5 mm. long; pedicel 1-5 mm. long; sepals 6-8, white or pinkish, broadly oval, 10-12 mm., rarely 15 mm. long; petals 12-15, oblong, about 15 mm. long, rounded or truncate and dentate at the apex; stamens 20-30; styles 5-7; ovules 25-40; seeds black, round-reniform, oblique, 2.5 mm. long, 2 mm. wide.

Folia clavata ad paginam superam nonnihil sulcata; pedicelli quam scapo valde breviores; sepala 6-8 late ovalia; petala 12-15; stamina 20-30; styli 5-7; ovula 25-40; semina rotundato-reniformia obliqua nigra.

Type collected in Ventura County, California, July 1902, A. D. E. Elmer 3886 (herb. N. Y. Bot. Gard.).

DISTRIBUTION: Western Nevada to southern California.

3. *Lewisia disepala* Rydberg, sp. nov.

Lewisia rediviva yosemitana K. Brand. Proc. Calif. Acad. II. 4: 89. 1894. Not *L. yosemitana* Jepson, 1923.

Perennial, with rather slender fleshy roots and short caudex; leaves fleshy, clavate, 8-15 mm. long, rounded at the apex; scape 0.5-1 cm. long, fleshy; bracts 2 or 3, mostly ovate, rarely one of them lanceolate, 2-3 mm. long; pedicels 1-2 mm. long; sepals 2, broadly obovate, rounded at the apex, white or pinkish; petals 5-7, the outer broadly oblanceolate, 13-14 mm. long, the inner narrower and shorter; stamens about 15, the filaments about 1 cm. long, the anthers 2.5 mm. long; capsule broadly ellipsoid, at last 4-valved; seeds black, round-reniform, 1.5 mm. long.

TYPE LOCALITY: Yosemite Valley, California.

DISTRIBUTION: Type locality and vicinity.

17. **PORTULACA** * [Tourn.] L. Sp. Pl. 445. 1753.

Diffuse or ascending, annual or perennial, succulent herbs. Leaves alternate or opposite, flat or terete, often in whorls around the flowers. Stipules scarious or none, or reduced to hairy tufts. Flowers perfect, solitary or crowded at the top of the stem and branches, of various colors. Calyx 2-cleft. Petals 4-6, usually 5. Stamens 8 to many, inserted at the base of the petals. Ovary partly or wholly inferior; styles 3-9. Ovules numerous. Capsule 1-celled, membranous, circumscissile, many-seeded. Seeds reniform or cochleate, with a smooth or minutely tuberculate testa.

Type species, *Portulaca oleracea* L.

Stems creeping, filiform, rooting at the nodes; leaves opposite, the blades flat, ovate to oval; hairs in a ring at each node; corolla yellow; capsule circumscissile near the base; ripe seeds gray or grayish-black.

Stems erect, ascending, or prostrate; leaves alternate; hairs in tufts in the axils of the leaves or wanting.

Rim of the capsule crowned by a narrow wing; leaf-blades flat; hairs in the leaf-axils inconspicuous or wanting; corolla yellow or orange and partly red; capsule circumscissile above the middle, the lid saucer-shaped; ripe seeds gray.

Rim of the capsule not crowned by a narrow wing.

Capsule circumscissile above the middle, the lid saucer-shaped; petals yellow; ripe seeds brown.

Capsule circumscissile about the middle or below (sometimes above in *P. poliosperma*), the lid cup-shaped or shallowly cup-shaped.

Ripe seeds gray.

Seeds without spiny tubercles; hairs at the nodes inconspicuous; petals purple; capsule circumscissile at the middle or a little above.

Seeds with spiny tubercles.

Petals 4-13 mm. long, 3-4.5 mm. broad, purplish; native species.

Petals 4-4.5 mm. long, obtuse at the apex; capsule 4 mm. high, 3.5-4 mm. in diameter.

Petals 10-13 mm. long, 2-lobed at the apex; capsule 5 mm. in diameter.

Petals 1.5-2.5 cm. long, 1.5-2 cm. broad, 2-lobed, variously colored; stem hairy in tufts in the axils of the leaves; capsule circumscissile at or a little below the middle; introduced species.

Ripe seeds black (or blackish-brown in *P. cubensis*).

Sepals keeled; hairs surrounding the flowers and in the axils of the leaves inconspicuous or wanting; leaf-blades flat, obovate or cuneate or oblanceolate; flowers yellow; capsule circumscissile at about the middle.

Seeds conspicuously echinate-tuberculate, 0.9-1 mm. in diameter; style-lobes 3 or 4.

Seeds minutely muricate, 0.6-0.8 mm. (rarely 1 mm.) in diameter; style-lobes 5 or 6 (rarely 4).

Plant prostrate; stamens 6-10.

Plant ascending; stamens 12-18.

1. *P. quadrifida*.

2. *P. lanceolata*.

3. *P. phaeosperma*.

4. *P. poliosperma*.

4a. *P. poliosperma cubensis*.

5. *P. biloba*.

6. *P. grandiflora*.

7. *P. retusa*.

8. *P. oleracea*.

9. *P. neglecta*.

* By PERCY WILSON.

Sepals not keeled; hairs surrounding the flowers and in the axils of the leaves long and conspicuous in most species; leaves terete in most species.

Flowers yellow, white, copper- or buff-colored (color unknown in *P. martinicensis* and *P. mexicana*).

Sepals 5-7 mm. long; petals 7-12 mm. long; capsule circumscissile at the middle or a little below.

Leaf-blades elliptic, 3-4.5 mm. long, 1-2 mm. broad; small perennial herb, with thick fleshy taproot; capsule circumscissile at the middle. Cuba.

Leaf-blades 1-2.8 cm. long; medium-sized or tall herbs, sometimes with tuberous-thickened rootstocks, Continental.

Stems usually pale-straw-color, often somewhat woody at the base; leaf-blades terete, linear, 1-2.8 cm. long, 1-1.8 mm. broad; capsule circumscissile a little below the middle; seeds 0.5 mm. broad.

Stems brown or dark-brown, fleshy; leaf-blades flat, lanceolate, oblanceolate, or obovate, 1.5-2.7 cm. long, 2.5-4.5 mm. broad; capsule circumscissile at the middle; seeds 0.8 mm. broad.

Sepals 2-4 mm. long; petals 2.5-5.5 mm. long; capsule circumscissile below the middle; corolla white or yellowish.

Leaf-blades linear to oblong-elliptic or oblong-lanceolate; sepals triangular.

Petals ovate or ovate-elliptic; capsule subglobose.

Seeds 0.3-0.4 mm. (rarely 0.5 mm.) broad, granulate; sepals 2-2.3 mm. long.

Seeds 0.6 mm. broad; spiny-tuberculate; sepals 3-3.5 mm. long.

Petals obovate.

Capsule globose or subglobose, 1.7-2.5 mm. in diameter, 1.7-2.5 mm. long, angular or ovate, 2-2.7 mm. long.

Hairs in the axils of the leaves long and conspicuous; leaves deciduous in drying; petals 4; seeds 0.6-0.7 mm. broad, spiny-tuberculate.

Hairs in the axils of the leaves few and inconspicuous; leaves persistent in drying; petals 5; seeds 0.5 mm. broad, rounded-tuberculate.

Capsule ovoid, 4-4.2 mm. high, 3-3.5 mm. in diameter; sepals orbicular, 3.5-4 mm. long.

Leaf-blades obovoid or globose-obovoid; sepals orbicular; petals obovate; seeds 0.4 mm. in diameter, granulate.

Flowers purple, crimson, or pinkish (color unknown in *P. mexicana* and *P. martinicensis*).

Sepals 2-4 mm. long; petals 2.5-7 mm. long; stamens 8-32; style-lobes 3-6; ascending, erect, or sometimes nearly prostrate herbs up to about 15 or 18 cm. high.

Petals obovate.

Capsule circumscissile at about the middle, 3-4 mm. in diameter, the lid hemispheric, usually brownish-green; seeds 0.4-0.5 mm. wide.

Capsule circumscissile below the middle, the lid high-hemispheric.

Capsule 1.8-2.5 mm. in diameter, the lid pale-straw-color; seeds 0.4-0.5 mm. wide.

Capsule 3-3.5 mm. in diameter, the lid greenish-brown; seeds 0.6-0.7 mm. wide.

Capsule subglobose; seeds low-rounded-tuberculate. Santo Domingo.

10. *P. cubensis*.

11. *P. suffrutescens*.

12. *P. Conzattii*.

13. *P. halimoides*.

21. *P. martinicensis*.

14. *P. nana*.

15. *P. brevifolia*.

20. *P. mexicana*.

16. *P. caulerpoides*.

17. *P. pilosa*.

18. *P. parvula*.

19. *P. procumbens*.

- Capsule ovoid; seeds minutely spiny-tuberculate. Mexico. 20. *P. mexicana*.
 Petals oblong-elliptic to elliptic-ovate or ovate.
 Seeds 0.6 mm. wide. Lesser Antilles. 21. *P. martinicensis*.
 Seeds 0.7-0.9 mm. wide. Southern United States. 22. *P. Smallii*.
 Sepals 6-9 mm. long; petals 8-10 mm. long; stamens 36-40; style-lobes 6 or 8; erect herb up to about 35 cm. high. 23. *P. erecta*.

1. *Portulaca quadrifida* L. Mant. 73. 1767.

Portulaca microphylla A. Rich. Ess. Fl. Cuba 620. 1845.

A prostrate, much-branched annual, with slender stems, creeping and rooting at the nodes, hairy in tufts in the axils of the leaves; leaves opposite, the blades flat, elliptic to elliptic-ovate, ovate, or oval, 3-6 mm. long, 1.2-3 mm. broad, acute or obtuse at the apex, rounded or acutish at the base, short-petioled, fleshy; flowers terminal, solitary or 2, surrounded with long white hairs and an involucre of 4 or 5 leaves; sepals oblong-oval, about 2 mm. long, obtuse, thin; corolla yellow; petals 4, elliptic or oval, obtuse; stamens 8-12; style-lobes 4; capsule circumscissile above the base; seeds grayish or grayish-black, 0.8-0.9 mm. wide, spiny-tuberculate.

TYPE LOCALITY: Egypt.

DISTRIBUTION: West Indies; also in South America and the Old World tropics.

ILLUSTRATIONS: Jacq. Coll. 2: pl. 17, f. 4; Wight, Ill. Ind. Bot. pl. 109; Holterm. Einfl. Klimas pl. 10, f. 51.

2. *Portulaca lanceolata* Engelm. Bost. Jour. Nat. Hist. 6: 154. 1850.

Portulaca lanceolata versicolor Engelm. Bost. Jour. Nat. Hist. 6: 154. 1850.

Portulaca lanceolata minor Engelm. Bost. Jour. Nat. Hist. 6: 154. 1850.

Portulaca coronata Small, Bull. Torrey Club 23: 126. 1896.

A glabrous, erect or ascending annual, with angled stems; leaves rather few, the blades flat, sessile, the lower spatulate or obovate, obtuse, the upper oblanceolate to oblong, often acute, 1-2.5 cm. long, 2-11 mm. broad; flowers clustered at the ends of the branches; sepals ovate, obscurely carinate; corolla yellow or orange and partly red; petals spatulate or obovate, acutish or cuspidate; stamens 7-27; styles 3-6; capsule circumscissile at the middle or above, the rim crowned by a narrow wing, the lid flattish; seeds gray, tuberculate.

TYPE LOCALITY: Granite region of western Texas.

DISTRIBUTION: Western Texas to Arizona and Lower California; Georgia; Cuba and Jamaica.

3. *Portulaca phaeosperma* Urban, Symb. Ant. 4: 233. 1905.

Portulaca halimoides A. Gray, Syn. Fl. N. Am. 12: 264. 1884. Not *P. halimoides* L. 1762.

Portulaca gagaiosperma Millsp. Field Mus. Publ. Bot. 2: 299, in part. 1909.

An ascending or spreading herb, with fleshy stems and tuberous roots, the tufts of axillary hairs usually rather inconspicuous; leaves alternate, the blades terete or somewhat flattened, linear or oblong-linear, 0.5-2 cm. long, 1-3.5 mm. broad, acute at the apex, fleshy, the petiole 1-1.2 mm. long; flowers terminal, surrounded with long brownish or whitish hairs and an involucre of 5-8 leaves; sepals ovate-orbicular, 3-4.2 mm. long; corolla yellow, 9-15 mm. in diameter; petals obovate to oval-obovate, 5-8 mm. long, 2-5 mm. broad, rounded at the apex; stamens 12-16; style-lobes 5-7; capsule globose, 3-3.5 mm. high, 2.5-3 mm. in diameter, circumscissile above the middle; seeds brown, 0.6 mm. wide, granulate or rounded-tuberculate.

TYPE LOCALITY: Guanica, Porto Rico.

DISTRIBUTION: Florida and the Keys; Bahamas, Cuba, Jamaica, Hispaniola, Porto Rico, Mona, St. Thomas, St. Croix, Virgin Gorda; Yucatan (?); also in Curaçao.

ILLUSTRATION: Symb. Ant. 5: 343, f. O.

4. *Portulaca poliosperma* Urban, Symb. Ant. 4: 232. 1905.

?*Portulaca poliosperma minor* Urban, Symb. Ant. 4: 233. 1905.

An ascending or spreading, often much-branched herb, with short inconspicuous tufts of hairs in the axils of the leaves; leaves alternate, the blades somewhat flattened, linear, 4.5-15

mm. long, 1-2 mm. broad, obtuse or acutish at the apex, fleshy, the short petioles 1-1.5 mm. long; flowers terminal, in clusters of 2 or more, surrounded with rather short white hairs and an involucre of 6-9 leaves; sepals broadly ovate or ovate-orbicular, 3.5-4 mm. long; corolla purple; petals obovate or oval-obovate, 4-4.5 mm. long, obtuse; stamens numerous; style-lobes 5-7; capsule oval or subglobose, about 3.5-5 mm. high, 3-3.5 mm. in diameter, circumscissile at about the middle; seeds gray, 0.7 mm. wide, without spiny tubercles.

TYPE LOCALITY: Dorado, Porto Rico.

DISTRIBUTION: Cuba; Porto Rico; St. Martin.

ILLUSTRATION: Symb. Ant. 5: 343. f. L-M.

4a. *Portulaca poliosperma cubensis* Urban, Symb. Ant. 5: 342. 1907. An ascending or spreading herb, similar to *Portulaca poliosperma*; stamens about 40; capsule subglobose, 4 mm. high, 3.5-4 mm. broad, circumscissile about the middle; seeds gray, 0.7-0.8 mm. broad, with conspicuous spiny tubercles. TYPE LOCALITY: Cuba. DISTRIBUTION: Cuba and Isle of Pines; Dominica (?). ILLUSTRATION: Symb. Ant. 5: 343. f. N.

5. *Portulaca biloba* Urban, Repert. Sp. Nov. 22: 355. 1926.

A fleshy annual herb, the branches up to 25 cm. long, sparsely hairy in tufts in the axils of the leaves; leaf-blades linear-lanceolate or linear, 6-14 mm. long, 0.5-3 mm. broad, obtuse or obtusish at the apex; flowers in clusters of 1-3, surrounded with a few pale-brown hairs; corolla purplish; sepals broadly triangular or semi-orbicular, 5-6 mm. long; petals narrowly obovate-cuneate, 10-13 mm. long, 4.5-5.5 mm. broad, the apex 2-lobed; stamens 40 or more; style-lobes 5 or 6; capsule 5 mm. high, 5 mm. in diameter; seeds gray, spiny-tuberculate, 0.7 mm. wide.

TYPE LOCALITY: Near Santayana, Camaguey, Cuba.

DISTRIBUTION: Cuba.

6. *Portulaca grandiflora* Hook. Bot. Mag. pl. 2885. 1829.

Portulaca Gilliesii Engelm. Bost. Jour. Nat. Hist. 6: 155. 1850. Not *P. Gilliesii* Hook. 1831.

An ascending or spreading annual, with terete stems and branches, hairy in tufts in the axils of the leaves; leaves alternate, the terete blades 0.8-2.5 cm. long, 2-2.5 mm. thick, with short petioles 1-2 mm. long; flowers terminal, 2-5 cm. in diameter, in clusters of 1-3, surrounded with long white or brownish hairs and an involucre of 6-9 leaves; sepals triangular-ovate, 7-10 mm. long, 6-8 mm. broad, acute or slightly acuminate at the apex, not keeled; corolla pink, red, salmon, yellow, orange, or white; petals obovate, 1.5-2.5 cm. long, 1.5-2 cm. broad; stamens 40 or more; style-lobes 5-9; capsule broadly ellipsoid or subglobose, 4-5 mm. high, 3.2-4.5 mm. in diameter, circumscissile a little below the middle; seeds metallic-gray or blackish-gray, 0.8-0.9 mm. wide, spiny-tuberculate.

TYPE LOCALITY: Argentina.

DISTRIBUTION: Naturalized in eastern and western North America, and in Europe; native of South America.

ILLUSTRATIONS: Hutchinson, Fam. Fl. Pl. f. 56; Bot. Mag. pl. 2885; Stand. Cycl. Hort. f. 3150; Cycl. Am. Hort. f. 1793; Britt. & Brown, Ill. Fl. f. 1437; ed. 2. f. 1748; Bot. Mag. Tokyo 34: pl. 1; Step, Fav. Fl. 1: pl. 43; Nichols. Diet. Gard. 3: f. 255; Dec. & Naud. Man. Amat. Jard. 2: f. 123.

7. *Portulaca retusa* Engelm. Bost. Jour. Nat. Hist. 6: 154. 1850.

A glabrous, rather stout annual, similar to *P. oleracea* in habit, but rather more slender; leaf-blades cuneate, 0.4-2.5 cm. long, 2-9 mm. broad, mostly retuse or emarginate at the apex, some of them rounded or nearly truncate; sepals in bud obtuse, carinate-winged; corolla yellow, smaller than in *P. oleracea*; stamens 7-19; style-lobes 3 or 4; capsule 5-6 mm. high; seeds black, 0.9-1 mm. wide, echinate-tuberculate.

TYPE LOCALITY: Granite region of western Texas.

DISTRIBUTION: Arkansas to Utah and Arizona.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1435; ed. 2. f. 1746.

8. *Portulaca oleracea* L. Sp. Pl. 445. 1753.

Portulaca parvifolia Haw. Syn. Pl. Succ. 122. 1812.
Portulaca oleracea parviflora Griseb. Fl. Brit. W. Ind. 57. 1859.
Portulaca oleracea parvifolia Griseb. Fl. Brit. W. Ind. 707. 1864.
Portulaca oleracea macrantha Eggers, Fl. St. Croix 27. 1879.
Portulaca oleracea micrantha Eggers, Fl. St. Croix 27. 1879.

A glabrous fleshy annual, with often stout prostrate or ascending branches, the branches spreading radially, 0.6–3 dm. or more long; axillary hairs few and inconspicuous; leaves alternate, the flat blades obovate-cuneate or spatulate, 0.6–3 cm. long, 0.2–13 mm. broad, occasionally larger, rounded or nearly truncate at the apex; buds flattened, acute; flowers clustered or solitary, sessile, the hairs surrounding them inconspicuous or wanting; sepals broadly ovate to orbicular, 2.8–4.5 mm. long, 2.8–3.8 mm. broad, keeled, acutish; corolla yellowish; petals 3–4.6 mm. long, 1.8–3 mm. broad; stamens 6–10; style-lobes 4–6; capsule 5–9 mm. high, circumscissile at or about the middle; seeds black, 0.7–0.8 mm. (rarely 1 mm.) wide, granulate.

TYPE LOCALITY: Southern Europe.

DISTRIBUTION: Temperate and tropical regions of the world.

ILLUSTRATIONS: Fawcett & Rendle, Fl. Jam. 3: f. 63; Britton, Fl. Bermuda f. 146; Britt. & Brown, Ill. Fl. f. 1434; ed. 2. f. 1745; A. Gray, Gen. III. pl. 99; Rendle, Classif. Fl. Pl. 2: f. 55; Stand. Cycl. Hort. f. 3151; Cycl. Am. Hort. f. 1927; Hegi, Ill. Fl. Mittel-Eur. pl. 98, f. 2; Coste, Fl. Fr. f. 1326; DC. Pl. Grasses pl. 123; Le Maout & Dec. Traité Gén. 442; ed. 2. 454; Baillon, Hist. Pl. 9: f. 70; Sibth, Fl. Graeca 5: pl. 457; Blanco, Fl. Filip. ed. 3. pl. 164; Thomé, Fl. Deutschl. 2: pl. 226; Rep. Comm. Agr. U. S. 1887: pl. 6; Rep. N. J. Exp. Sta. 11: pl. 5; Bull. N. C. Exp. Sta. 70: pl. 4; Pammel, Weeds f. 112; Ontario Dep. Agr. Bull. 188: f. 16; Georgia, Man. Weeds f. 103.

9. *Portulaca neglecta* Mackenzie & Bush, Trans. Acad. St. Louis 12: 81. 1902.

A robust annual, forming tufts mostly 5–10 dm. in diameter; stems fleshy, reddish-purple, often upright or ascending, 1.2 cm. thick; axillary hairs few and inconspicuous; leaves alternate, the flat blades obovate-cuneate, obovate-spatulate, or oblanceolate, 2.5–6 cm. long, 0.8–2.5 cm. broad, mostly obtuse or retuse at the apex; buds flattened, acute; flowers mostly clustered, the hairs surrounding them inconspicuous or wanting; sepals triangular-orbicular, 4.5 mm. long, 4 mm. broad, keeled; flowers 8–12 mm. wide; corolla yellow; petals oblong, deeply cleft; stamens 12–18; style-lobes 5 or 6; capsule 8–12 mm. high, circumscissile at about the middle; seeds 0.6 mm. wide, black, minutely muricate.

TYPE LOCALITY: Courtney, Jackson County, Missouri.

DISTRIBUTION: Missouri, Kansas, and Arkansas.

10. *Portulaca cubensis* Britton & Wilson; Britton, Mem. Torrey Club 16: 64. 1920.

A small perennial herb, 2–7 cm. high, with a thick fleshy taproot; leaves alternate, the blades oblong to elliptic, 3–4.5 mm. long, 1–2 mm. broad, rounded at the apex, acutish at the base, thick and fleshy, the axils sparingly pilose; flowers mostly solitary, surrounded with few white hairs and an involucre of 5 or 6 leaves; sepals ovate, 5–5.5 mm. long, 3 mm. broad at the base; corolla yellow; petals narrowly obovate, 8–12 mm. long, 2–3.5 mm. broad, rounded at the apex, cuneate at the base; stamens 26 or more, the filaments 5–6 mm. long; style-lobes 5; capsule circumscissile at about the middle; seeds (mature?) blackish-brown.

TYPE LOCALITY: Palm-barrens, Motembo, Santa Clara, Cuba.

DISTRIBUTION: Cuba.

11. *Portulaca suffrutescens* Engelm. Bot. Gaz. 6: 236. 1881.

Portulaca pilosa Engelm.; A. Gray, Pl. Wright. 1: 13, in part. 1852. Not *P. pilosa* L. 1753.
Portulaca pilosa var. *erecua* A. Gray, Pl. Wright. 2: 20. 1853.
Portulaca stelliformis Moc. & Sessé; A. Gray, Syn. Fl. N. Am. 1: 264. 1897.

An erect or ascending herb, 0.8–3 dm. high, with creeping tuberous-thickened rootstocks and often rather few hairs in the axils of the leaves, sometimes rather woody at the base;

leaves alternate, the blades terete, linear, 1-2.8 cm. long, 1-1.8 mm. broad, short-petioled, often persistent; flowers terminal, in clusters of 2 or 3, surrounded with rather long pale-brown hairs and an involucre of 6-8 leaves; sepals broadly triangular-ovate or suborbicular, 6-7 mm. long, 5-8 mm. broad; corolla copper- or buff-colored, the petals obovate or emarginate, about 7-12 mm. long; stamens numerous; style-lobes 5 or 6; capsule subglobose, 3.5-4.2 mm. in diameter, circumscissile a little below the middle; seeds black, 0.5 mm. wide, rounded-tuberculate.

TYPE LOCALITY: Western New Mexico, at the copper mines [Santa Rita].

DISTRIBUTION: Arkansas to Arizona and Mexico.

ILLUSTRATION: ? Moc. & Sessé, Calq. Dess. *pl.* 389.

12. *Portulaca Conzattii* P. Wilson, *Torreyia* 28: 28. 1928.

A rather slender, erect, annual herb, 1.5-3 dm. tall, with slender roots, and tufts of long white hairs in the axils of the leaves; leaves alternate, the blades flat, 1.5-2.7 cm. long, 2.5-4.5 mm. broad, lanceolate, obovate, or oblanceolate, obtuse or acutish at the apex; flowers terminal, in clusters of 2 or 3, surrounded with long white hairs and an involucre of 8 or more leaves; sepals triangular-orbicular, 5 mm. long, 6.5 mm. broad; corolla yellow; petals obovate or elliptic-obovate, 7-8 mm. long, 3-3.5 mm. broad; stamens about 20; style-lobes 4 or 5; capsule subglobose, 4 mm. in diameter, circumscissile at the middle; seeds black, 0.8 mm. wide, rounded-tuberculate.

TYPE LOCALITY: Cerro San Antonio, Oaxaca, Mexico.

DISTRIBUTION: Southern Mexico.

13. *Portulaca halimoides* L. Sp. Pl. ed. 2. 639. 1762.

Portulaca pilosa halimoides Kuntze, *Rev. Gen.* 3^d: 15. 1898.

An erect or diffuse, much-branched annual, 5-15 cm. high, with terete stems, often conspicuously hairy in tufts in the axils of the leaves; leaves alternate, the blades subcylindric, oblong-linear, 0.5-1.5 cm. long, 1.4-2.5 mm. broad, fleshy, often acutish at the apex, the petiole 0.5 mm. long; flowers terminal in clusters of 3-6, surrounded with numerous long white hairs and an involucre of 4-8 leaves; sepals triangular, about 2-2.3 mm. long, acute, not keeled; corolla white with a yellow center; petals ovate to ovate-elliptic, 3 mm. long, 1.2-1.3 mm. broad; stamens 8-20; style-lobes 3-5; capsule globose or ovoid-globose, 1.5-2 mm. high, 1.5-1.6 mm. in diameter, circumscissile below the middle; seeds black, 0.3-0.5 mm. wide, granulate.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Bahamas, Cuba, and Jamaica to Curçao and Aruba; Mexico (according to Urban).

ILLUSTRATIONS: Sloane, *Hist. Jam. pl.* 129, *f.* 3; *Symb. Ant.* 5: 343, *f.* C-J.

14. *Portulaca nana* Urban, *Repert. Sp. Nov.* 13: 447. 1914.

A small, succulent, ascending herb, 2-6 cm. high, with fleshy stems and conspicuous tufts of hairs in the axils of the leaves; leaves alternate, the blades oblong or oblong-lanceolate, 2.5-5 mm. long, 0.8-1.9 mm. broad, obtuse or rounded at the apex, short-petioled; flowers terminal in clusters of 1-3, surrounded with conspicuous brownish hairs and an involucre of 6-8 leaves; sepals oval or triangular-oval, 2 mm. long; corolla white, 4 mm. long; petals narrowly obovate; stamens about 9, the filaments filiform, 1.5 mm. long; style-lobes 4; capsule globose, 2 mm. in diameter, circumscissile below the middle; seeds black, 0.6-0.7 mm. wide, tuberculate.

TYPE LOCALITY: Savannas near Camaguey, Cuba.

DISTRIBUTION: Cuba.

15. *Portulaca brevifolia* Urban, *Symb. Ant.* 5: 340. 1907.

A rather small prostrate or ascending herb, with short inconspicuous tufts of hairs in the axils of the leaves; stems 2-5 cm. long; leaves alternate, the blades nearly terete, 2-4 mm.

long, 0.8–1.3 mm. broad, elliptic-oblong or oblong-lanceolate, obtuse at the apex, persistent, the short petiole 0.5 mm. long; flowers terminal in clusters of 1–3, surrounded with brownish hairs and an involucre of 4 or more leaves; calyx connate near the base; sepals triangular or ovate, 2.2–2.7 mm. long, 2.8–3 mm. broad; corolla white; petals obovate, 3–4 mm. long, acute or obtuse; stamens 8 or 9, the filaments filiform; style-lobes 3 or 4; capsule globose, 1.7 mm. in diameter, subtruncate at the apex, circumscissile near the base; seeds blackish, 0.5 mm. wide, granulate.

TYPE LOCALITY: Cuba.
DISTRIBUTION: Cuba.

16. *Portulaca caulerpoides* Britton & Wilson; Britton, Bull.
Torrey Club 42: 515. 1915.

A fleshy prostrate herb, forming tufts 8–12 cm. in diameter, the stems slender, branched, hairy in the axils; leaves alternate, the blades obovoid or globose-obovoid, 2–5 mm. long, 1.2–3 mm. broad, rounded at the apex, narrowed at the base, subsessile, glabrous, shining, with labyrinthine or tortuous mottling; flowers terminal, solitary, surrounded with white hairs and an involucre of obovoid leaves; sepals suborbicular, about 2 mm. long, 2–2.2 mm. broad, rounded at the apex; corolla yellowish-white; petals broadly obovate, 2.5–3 mm. long, 2–2.5 mm. broad, notched at the apex; capsule subglobose, 1.5 mm. high, 1–1.2 mm. in diameter, circumscissile near the base seeds black, 0.4 mm. wide, granulate.

TYPE LOCALITY: Limestone rocks, Cayo Muertos, Porto Rico.
DISTRIBUTION: Type locality.

17. *Portulaca pilosa* L. Sp. Pl. 445. 1753.

?*Portulaca Karwinskii* Fisch. & Mey.; C. Meyer, Ind. Sem. Hort. Petrop. 11: Suppl. 60. 1846.
Portulaca gagalosperma Millsp. Field Mus. Publ. Bot. 2: 299. 1909.

An ascending or sometimes prostrate annual, with terete stems, often conspicuously hairy in tufts in the axils of the leaves; leaves alternate, the blades oblong-lanceolate, often somewhat flattened, 5–16 mm. long, 2–4 mm. broad, acute, short-petioled; flowers terminal, surrounded with long whitish or brownish hairs and an involucre of 6–10 leaves; sepals not keeled, triangular-ovate or ovate, 2–3 mm. long, 2.2–2.5 mm. broad; corolla purple-pink; petals obovate to broadly obovate, 3–5.7 mm. long, 2.5–4.5 mm. broad, sometimes notched at the apex; stamens 15–32, the filaments crimson; style-lobes 4 or 6; capsule subglobose, 3–4 mm. in diameter, circumscissile at about the middle; seeds black, 0.4–0.5 mm. wide, tuberculate.

TYPE LOCALITY: Tropical America.
DISTRIBUTION: Florida, Alabama, Mississippi, Lower California; Bahamas, Cuba, and Jamaica to Trinidad; Mexico and Central America; also in South America.
ILLUSTRATIONS: Symb. Ant. 5: 343, f. A–B; Gaertn. Fruct. pl. 128, f. 8; Lam. Tab. Encyc. pl. 402.

18. *Portulaca parvula* A. Gray, Proc. Am. Acad. 22: 274. 1887.

Portulaca pilosa A. Gray, Mem. Am. Acad. II, 4: 14. 1849. Not *P. pilosa* L. 1753.
Portulaca pilosa Engelm.; A. Gray, Pl. Wright. 1: 13, in part. 1852. Not *P. pilosa* L. 1753.
Portulaca pilosa var. [*diffusa*] A. Gray, Pl. Wright. 2: 20. 1853.

An annual herb, usually with many yellowish-brown corymbosely-branched stems, hairy in tufts in the axils of the leaves; upper leaves often persistent in drying, the lower usually deciduous; leaf-blades nearly terete, 0.4–1.4 cm. long, 0.4–2 mm. broad, obtuse at the apex, the petioles 1 mm. long or less; inflorescence terminal and lateral, sometimes short-stalked or nearly sessile and in the axils of the lower leaves; flowers red, in clusters of 1 or more, surrounded with numerous, rather long, brownish-white hairs and an involucre of leaves; sepals triangular or triangular-orbicular, 2.5–3 mm. long, 2.1–3 mm. broad; petals elliptic-obovate or obovate, 3–4 mm. long, 1.2–2 mm. broad; stamens 10–22 or fewer; style-lobes 4 or 5; capsule subglobose, 1.8–2.5 mm. in diameter, circumscissile a little below the middle; seeds black, 0.4–0.5 mm. wide, sometimes with short rounded tubercles.

TYPE LOCALITY: Not given; but the type came from Santa Fé, New Mexico.

DISTRIBUTION: Missouri and Arkansas to California and Colorado, and southward into Mexico. Occasionally on ballast in the Delaware River.

ILLUSTRATIONS: Britt. & Brown, Ill. Fl. f. 1436; ed. 2. f. 1747 (as *Portulaca pilosa*).

19. *Portulaca procumbens* Urban & Ekman; Urban, Ark. Bot.

23A¹¹: 9. 1931.

A decumbent herb, with fleshy roots; stems terete, conspicuously hairy in the leaf-axils; leaves alternate, the blades linear, 5-9 mm. long, 0.7-1.5 mm. broad, acute, short-petioled; flowers terminal, surrounded with brownish-white hairs and an involucre of leaves; calyx 3.5 mm. long; sepals broadly triangular, 3-3.5 mm. broad; corolla purple; petals obovate, 4-5 mm. long, 3 mm. broad; stamens about 24; style-lobes 6; capsule subglobose, 3 mm. in diameter, circumscissile below the middle; seeds black, 0.7 mm. wide, low-rounded-tuberculate.

TYPE LOCALITY: Valle del Cibao, province of Monte Cristi, Santo Domingo.

DISTRIBUTION: Santo Domingo.

20. *Portulaca mexicana* P. Wilson, Torreya 28: 29. 1928.

A fleshy perennial herb, with ascending or spreading branches, hairy in tufts in the axils of the leaves; leaves often persistent, the blades terete, linear, 5-9 mm. long, 1.5-2.2 mm. broad, acutish or obtuse at the apex, short-petioled; flowers terminal in clusters of 2-4, surrounded by brownish hairs and an involucre of 9-12 leaves; sepals orbicular or triangular-orbicular, 3.5-4 mm. long, 3.6-4 mm. broad; petals obovate, 4.5-5.3 mm. long, 2.5-3 mm. broad; stamens about 14; style-lobes 3 or 4; capsule ovoid, 4-4.2 mm. high, 3-3.5 mm. in diameter, circumscissile near the base; seeds 0.6-0.7 mm. wide, minutely spiny-tubercled.

TYPE LOCALITY: Lava field, Tizapan, Mexico.

DISTRIBUTION: Mexico.

21. *Portulaca martinicensis* Urban, Symb. Ant. 5: 342. 1907.

An ascending annual herb, with terete branches, the stems 7-25 cm. long, hairy in tufts in the axils of the leaves; leaves alternate, the blades linear or lanceolate-linear, 5-12 mm. long, 1-2.5 mm. broad; petioles 0.7-1.3 mm. long; flowers terminal, in clusters of 3-6, surrounded with rather long brownish hairs, and an involucre of 6-12 leaves; sepals triangular-ovate, 3-3.5 mm. long; corolla (color unknown) 3.5-4 mm. long; petals ovate, 2.5-3 mm. long, 1.5 mm. broad; stamens 10-12, the filaments 1-1.5 mm. long; style-lobes 4; capsule globose, 2 mm. in diameter, circumscissile below the middle; seeds black, 0.6 mm. wide, tuberculate.

TYPE LOCALITY: Martinique.

DISTRIBUTION: Martinique and Dominica.

ILLUSTRATION: Symb. Ant. 5: 343. f. K.

22. *Portulaca Smallii* P. Wilson, sp. nov.

A spreading annual herb, with more or less angled stems, the hairs in the axils of the leaves usually not very conspicuous; leaves alternate, the blades terete, linear, 1-1.5 cm. long, 1.2-1.5 mm. thick; flower terminal, surrounded with pale-brown hairs and an involucre of 10 or more leaves; sepals deltoide-orbicular, 3 mm. long, 3-3.5 mm. broad; corolla "pinkish"; petals oblong-elliptic to elliptic-ovate, 3 mm. long, 1.5 mm. broad, often acutish at the apex; stamens 8-12, the filaments filiform; style-lobes 4; capsule subglobose, 3.2 mm. or more in diameter, circumscissile a little below the middle; seeds black, 0.7-0.9 mm. wide, tuberculate.

Caulis annui patentes; folia alternata teretia linearia; flos terminalis involucreatus; sepala deltoideo-orbicularia ecarinata; petala oblongo-elliptica vel elliptico-ovata quam sepalis aequilonga et semilata; stamina 8-12; styli lobi 4; capsula subglobose, paulum infra mediam circumscissilis; semina nigra tuberculata, 0.7-0.9 mm. lata.

Type collected on Little Stone Mountain, De Kalb County, Georgia, J. K. Small, Sept. 11, 1894 (herb. N. Y. Bot. Gard.); also collected at Stone Mountain, Georgia, J. K. Small, Jan. 1894, and at Dunn's Mountain, Rowan County, North Carolina, J. K. Small, August 18-27, 1894.

23. *Portulaca erecta* Urban & Ekman; Urban, Ark. Bot. 23A¹¹:
9. 1931.

An erect or ascending succulent herb, the stems simple or branched, 12-35 cm. long, with conspicuous tufts of long white or brownish hairs in the axils; leaves alternate, ascending, the blades terete, linear, 0.8-20 cm. long, 0.5-1.5 mm. broad, acute or mucronate at the apex, the petioles about 1 mm. long; flowers terminal, in clusters of 3 or 4, surrounded with long pale-brownish-white hairs and an involucre of 8-17 leaves; sepals orbicular, about 6-9 mm. long, 6 mm. or more broad; corolla reddish-yellow; petals narrowly to broadly obovate, 7 mm. long, 4-7 mm. broad; stamens about 36-40; style-lobes 6-8; capsule subglobose, 3.8-5 mm. in diameter, circumscissile below the middle; seeds black, 0.5 mm. wide, obtusely tuberculate.

TYPE LOCALITY: Llano Costero, province of Santo Domingo near Baní, Santo Domingo.

DISTRIBUTION: Cuba and Santo Domingo.

NOTE: Similar to *P. venezuelensis* Urban.

DOUBTFUL SPECIES

A specimen of *PORTULACA* collected at Kaighn's Point, New Jersey, by Isaac Burk in October, 1885, is in the herbarium of the Academy of Natural Sciences, Philadelphia. The plant appears to be the same as a cultivated one in the herbarium of the New York Botanical Garden determined at Kew by N. E. Brown as *Portulaca eriophora* Casaretto.

PORTULACA SPLENDENS Lindl., recorded by Britton, Sterns, & Poggenburg as found on ballast in the vicinity of New York and Philadelphia, is probably *Portulaca grandiflora* Hook.

Family 8. BASELLACEAE

By PERCY WILSON

Somewhat succulent glabrous vines. Leaves alternate, the blades entire, often cordate. Flowers small, perfect, in simple or branched racemes, or spikes. Bract one at the base of the pedicel and bractlets 2 at the apex of the pedicel, persistent or deciduous. Calyx of 2 sepals, sometimes winged in fruit. Corolla of 5 petals. Stamens 5, inserted on a hypogynous disk adnate to the base of the corolla, opposite to the petals. Filaments terete or flattened, sometimes reflexed in bud. Ovary superior, 1-celled; ovule solitary. Styles 1-3; stigmas entire or cleft. Fruit included in the perianth. Seed erect, with a membranous testa; embryo annular or spirally twisted.

Embryo annular; filaments recurved in bud.

Sepals broadly winged down the back.

Sepals not winged.

Embryo spiral; filaments erect in bud.

1. ANREDERA.

2. BOUSSINGAULTIA.

3. BASELLA.

1. ANREDERA Juss.; J. F. Gmel. Syst. Nat. 2: 454. 1791.

?*Clarisia* Abat, Mem. Soc. Med. Sevilla 10: 418. 1792.

Clarisia Benth. & Hook. Gen. Pl. 3: 78. 1880.

Vines, with fleshy stems and tuberous roots. Leaves alternate, the blades fleshy. Flowers perfect, in simple or branched spike-like racemes. Sepals 2, boat-shaped, broadly winged along the back. Petals 5, not longer than the sepals. Stamens 5; filaments flattened and dilated below, inserted on the disk, recurved in the bud; anthers versatile. Ovary small, compressed; ovule sessile; styles 3, connate at the base; stigmas 2-lobed. Seed erect, compressed; testa coriaceous; embryo annular; cotyledons subclavate; radicle stout.

Type species, *Anredera spicata* J. F. Gmel.

1. *Anredera vesicaria* (Lam.) Gaertn. f. in Gaertn. Fruct. 3: 176. 1807.

Polygonum scandens L. Sp. Pl. 364, in part. 1753.

Basella vesicaria Lam. Encyc. 1: 382. 1785.

Anredera spicata J. F. Gmel. Syst. Nat. 2: 454. 1791.

?*Clarisia volubilis* Abat, Mem. Soc. Med. Sevilla 10: 418. 1792.

Anredera vesiculosa Poir. in Lam. Encyc. Suppl. 1: 391. 1811.

Anredera scandens Moq. in DC. Prodr. 13: 230. 1849.

A slender, much-branched vine, with often high-climbing stems; leaf-blades oblong-ovate or ovate, 3-6.5 cm. long, 1.7-4.3 cm. broad, acute, acuminate, or obtuse at the apex, abruptly narrowed or truncate at the base, short-petioled; racemes stout, 2-13 cm. long, densely flowered; wing of the sepals in fruit 4-5 mm. long; petals pale, elliptic or elliptic-oval, 1.8-2 mm. long.

TYPE LOCALITY: Peru.

DISTRIBUTION: Cuba and Jamaica; Texas; Mexico; Panama; southward to Peru. Naturalized in the Philippine Islands.

ILLUSTRATIONS: Fawcett & Rendle, Fl. Jam. 3: f. 66; Sloane, Hist. Jam. pl. 90, f. 1; E. & P. Nat. Pl. 3^a: f. 74, C-D; Gaertn. Fruct. pl. 213, f. 4; Lam. Tab. Encyc. pl. 215, f. 2; Le Maout & Dec. Traité Gén. 458.

2. BOUSSINGAULTIA H.B.K. Nov. Gen. & Sp. 7: 194. 1825.

Tandonia Moq. in DC. Prodr. 13: 226. 1849.

Vines with much-branched stems. Leaves alternate, the blades fleshy. Flowers perfect, in axillary or terminal racemes or panicles. Sepals 2, somewhat shorter than the petals.

Petals 5. Stamens 5, inserted at the base of the petals; filaments subulate or lanceolate, recurved in the bud; anthers versatile. Ovary ovoid; stigma 3-lobed or stigmas 3; ovule subsessile. Utricle included in the perianth. Seed erect; testa crustaceous; embryo semi-annular; cotyledons plano-convex; radicle stout.

Type species, *Boussingaultia baselloides* H.B.K.

Styles connate at or above the base; stigmas 3.

Flowers 5-6 mm. in diameter; stigmas stout, entire; bractlets at the apex of the pedicel connate, persistent.

Flowers 3-3.8 mm. in diameter; stigmas slender, usually 2-cleft; bractlets at the apex of the pedicel free, deciduous.

Styles united throughout; stigma 3-lobed.

1. *B. baselloides*.
2. *B. leptostachys*.
3. *B. ramosa*.

1. *Boussingaultia baselloides* H. B. K. Nov. Gen. & Sp. 7: 196.

1825.

Anredera baselloides Baillon, Hist. Pl. 9: 147. 1887.

A vine with glabrous stems and foliage; leaf-blades ovate to orbicular-ovate or deltoid-ovate, 2.4-12 cm. long, 1.6-10 cm. broad, acute to short-acuminate at the apex, cordate or abruptly narrowed at the base, short-petioled; racemes slender, simple or compound, 5-22 cm. or more long; pedicels about 2 mm. long; flowers white turning dark-purple, 5-6 mm. wide; bractlets connate, about 0.5 mm. long, persistent; sepals suborbicular, 2-2.5 mm. long, 2.3-2.6 mm. broad; petals elliptic-oval or oval, 2.7-3 mm. long, 2 mm. broad; filaments lanceolate; anthers elliptic to oval; ovary ovoid or globose-ovoid; styles connate near the middle; stigmas stout, entire; fruit globose, about 1 mm. in diameter, brown.

TYPE LOCALITY: Loja, Ecuador.

DISTRIBUTION: Mexico to Argentina. Naturalized in Bermuda; introduced in China.

ILLUSTRATIONS: H. B. K. Nov. Gen. & Sp. pl. 645 bis; Bot. Mag. pl. 3620; Cycl. Am. Hort. f. 250; Stand. Cycl. Hort. f. 617; Britton, Fl. Bermuda f. 138; Baillon, Hist. Pl. 9: f. 208-210.

2. *Boussingaultia leptostachys* Moq. in DC. Prodr. 13²: 229. 1849.

Tournonia leptostachys Moq. in DC. Prodr. 13²: 229, as synonym. 1849.

A glabrous vine with slender stems. Leaf-blades ovate to ovate-elliptic or ovate-orbicular, 2-8 cm. long, 1.5-6.8 cm. broad, acute or acuminate at the apex, gradually or abruptly narrowed at the base, short-petioled; racemes slender, lax, 6-20 cm. long; pedicels about 1 mm. long; flowers white, 3-3.8 mm. wide; bractlets free, 0.6-0.8 mm. long, deciduous; sepals 1.3-1.6 mm. long, 0.9-1 mm. wide; petals oblong to oval, about 2 mm. long, 0.8-1 mm. wide; filaments subulate; anthers oblong; ovary ovoid; styles connate near the base; stigmas slender, usually 2-cleft.

TYPE LOCALITY: Mexico.

DISTRIBUTION: South Florida; Texas and continental tropical America; Cuba; Jamaica, Hispaniola, Porto Rico, St. Thomas, St. Croix, Tortola, Guadeloupe, Dominica, and Martinique; also in Brazil.

ILLUSTRATION: Fawcett & Rendle, Fl. Jam. 3: f. 65.

3. *Boussingaultia ramosa* (Moq.) Hemsl. Biol. Centr. Am. Bot. 3:

27. 1882.

Tandonia ramosa Moq. in DC. Prodr. 13²: 227. 1849.

Dioscorea calyculata Donn. Smith, Bot. Gaz. 20: 295. 1895.

A glabrous herbaceous vine; leaf-blades ovate to orbicular-ovate, 2-7 cm. long, 1.5-6 cm. broad, acute to acuminate at the apex, subcordate or subtruncate at the base, petioled; racemes slender, rather lax, 4-15 cm. long; pedicels 1-2 mm. long; basal bracts subulate, often longer than the pedicels; apical bractlets ovate or triangular-ovate, 0.3 mm. long, persistent; flowers white turning purplish; sepals oval, 1.4 mm. long, 1.2 mm. broad; petals oblong-elliptic or elliptic-obovate, 2 mm. long, 1 mm. broad; filaments subulate; anthers elliptic; styles united throughout; stigma 3-lobed; fruit globose-obovoid, about 1 mm. long, 0.9-1 mm. broad, brown, shining.

TYPE LOCALITY: Guatemala.

DISTRIBUTION: Central Mexico to Costa Rica.

DOUBTFUL SPECIES

BOUSSINGAULTIA LACHAUMEI Carr. Rev. Hort. 44: 279. 1872. Supposed to have been a native of Cuba.

3. BASELLA L. Sp. Pl. 272. 1753.

Twining succulent herbs with branching stems. Leaves alternate. Flowers perfect, in simple or occasionally branched axillary spikes. Bracts minute, caducous. Calyx-lobes 2, the tube adnate to the corolla. Corolla white, rose, or violet, urn-shaped, fleshy, 5-lobed. Stamens 5, inserted near the top of the corolla-tube; filaments short, erect in the bud; anthers versatile. Ovary ovoid; ovule solitary; styles 3, connate at the base; stigmas linear. Utricle completely enclosed in the enlarged fleshy perianth. Seed erect; testa crustaceous; embryo spiral; cotyledons large, thin.

Type species, *Basella rubra* L.

1. *Basella rubra* L. Sp. Pl. 272. 1753.

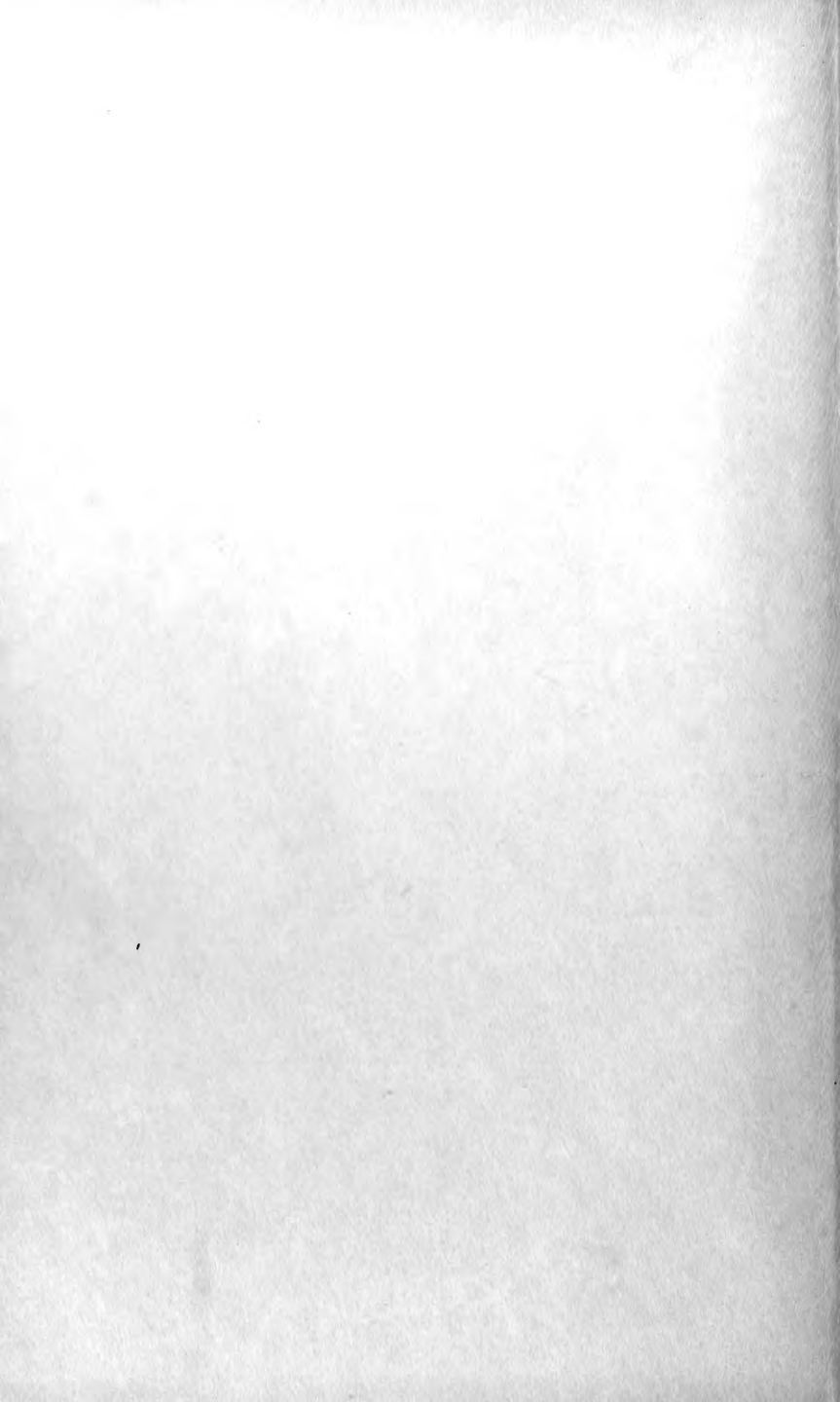
Basella alba L. Sp. Pl. 272. 1753.

A vine 1 meter or more long, with glabrous stems and leaves; leaf-blades ovate to orbicular, 5-15 cm. long, 4-14 cm. broad, obtuse, rounded or sometimes acutish at the apex, subtruncate, rounded or often cordate at the base, entire, thick and brittle, petioled; spikes 9-18 cm. long, rather loosely flowered; flowers often sessile; calyx-lobes oval to suborbicular, 2 mm. long; corolla-lobes oval, 1.7-2.2 mm. long, obtuse; fruit depressed-globose, 8-10 mm. in diameter, red, white, or black; seeds subglobose, 5 mm. in diameter.

TYPE LOCALITY: India.

DISTRIBUTION: Spontaneous after cultivation in Cuba; also in South America. Native of tropical Asia and Africa.

ILLUSTRATIONS: Lam. Tab. Encyc. pl. 215, f. 1; Rheede, Hort. Mal. 7: pl. 24; Gaertn. Fruct. pl. 126; Wight, Ic. Pl. Ind. Or. pl. 896; E. & P. Nat. Pfl. 3^{1a}: f. 73, A-F; Le Maout & Dec. Traité Gén. 446; ed. 2. 458; Baillon, Hist. Pl. 9: f. 203-207; Addisonia pl. 420; Philipp. Agr. Rev. 13²: pl. 7; Blanco, Fl. Filip. ed. 3. pl. 74.



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