ONAGRACEAE OF OHIO.
Rose Gormley.

ONAGRACEAE. Evening-primrose Family.

Annual or perennial herbs, rarely shrubs, with alternate or opposite leaves without stipules, and with axillary, spicate or racemose, bisporangiate, epigynous flowers often with an hypanthium; sepals 2-6 (usually 4) rarely none; stamens as many or twice as many as the petals; ovularly with 1-6 cavities, styles united; ovules indefinite, usually anatropous; fruit, a capsule or small nut; seeds, small; endosperm little or none; embryo straight.

Synopsis.
I. Fruit a many-seeded capsule opening by valves or pores; cavities 6-4.
   A. Floral parts not on an hypanthium.
      1. Seeds naked; calyx persistent.
         a. Leaves alternate. Ludwigia (1).
         b. Leaves opposite; petals none or very small; stems creeping or floating. Isnardia (2).
      2. Seeds with a tuft of silky hairs; calyx deciduous. Chamaenerion (3).
   B. Floral parts on a prominent epigynous hypanthium.
      2. Seeds naked or sometimes tuberculate.
         a. Stamens equal in length.
            1. Ovules and seeds horizontal and prismatic-angled. Oenothera (5).
            2. Ovules and seeds ascending, not angled. Raimannia (6).
         b. Stamens unequal in length, one set longer.
            1. Ovules and seeds many. Kneiffia (7).
            2. Ovules and seeds few. Lavauxia (9).
   II. Fruit indehiscent; cavities 4-1.
      A. Floral whorls 4-parted. Gaura (10).
      B. Floral whorls 2-parted. Circaea (11).

Key.
1. Floral whorls with 4 or more parts. 2.
   1. Floral whors 2 parted. Circaea (11).
   2. Without an hypanthium. 3.
   3. Leaves alternate. 4.
   3. Leaves opposite; stamens 4; flowers axillary. Isnardia (2).
   4. Powers in terminal racemes, purple or white. Chamaenerion (3).
   4. Flowers axillary in ours, yellow or green. Ludwigia (1).
   5. Plants acaulescent, stamens unequal in length; flowers in our species white or pink. Lavauxia (9).
   5. Plants caulescent. 6.
   6. Flowers yellow. 7.
   6. Flowers white, pink or red. 9.
   7. Stamens all of the same length; flowers nocturnal. 8.
8. Leaves undulate or toothed; ovules and seeds horizontal prismatic-angled. *Oenothera* (5).
8. Leaves sinuate or pinnatifid; ovules and seeds ascending not angled. *Raimannia* (6).
9. Leaves pinnatifid or lacinate, flowers 1¼-3 in. broad; buds drooping. *Hartmannia* (8).
10. Ovules usually 4, one in each cavity, ovulary clubshaped, narrowed below, anther filaments with scales at the base. *Gaura* 10.

1. **Ludwigia** L.

Herbs, perennial or annual with alternate entire leaves, flowers, terminal or axillary; sepals usually 4, persistent; petals 4; stamens usually 4; capsule winged or with basal bracelets, dehiscent or opening by a terminal pore.

1. Flowers inconspicuous, sessile in the axis of the leaves, with small greenish petals; capsules not prominently ribbed or winged, valves separating from the terminal disk. *L. polycarpa*.

1. Flowers showy, peduncled, with large yellow petals; capsules prominently ribbed and winged, opening by an apical pore. *L. alternifolia*.

1. **Ludwigia polycarpa** S. & P. Many-fruited Ludwigia.

Plants 1-3 ft. tall with entire, sessile, narrowly lanceolate leaves, ¾-3½ in. long; flowers small with minute greenish petals and acute triangular sepals; capsules, top shaped, with linear bractlets at the base, the valves separating from the terminal disk. Hocking, Cuyahoga, Auglaize, Lucas.

2. **Ludwigia alternifolia** L. Seed-box. Stems erect, 2-4 ft. high with short-petoled, entire, lanceolate, leaves 1-3½ in. long, flowers showy, with large ovate sepals and yellow petals of about equal length with the sepals; capsules, winged, opening by a pore in the apex. Lake, Fairfield, Cuyahoga, Muskingum, Erie, Defiance, Hocking, Lucas, Adams, Gallia, Brown.

2. **Isnardia** L.

Annual or perennial, prostrate or decumbent, herbs, creeping or floating, often rooting at the nodes; leaves opposite, entire, narrowed at the base; flowers axillary, sessile, often without petals; calyx top-shaped, 4—parted, persistent; petals 4 or none; stamens 4; ovulary with 4 cavities; stigma 4 lobed; capsule 4 angled; seeds numerous.

1. **Isnardia palustris** L. Marsh Purslane. Procumbent or floating herbs, glabrous, branched 4-15 in. long; leaves ovate, narrowing at the base ½-1½ in. long; flowers solitary in the axis of the leaves, about ½ in. broad; sepals 4, acute; petals, if present, reddish. Crawford, Summit, Ottawa, Knox, Hancock, Stark, Wayne, Madison, Lucas, Wyandot, Licking, Lorain, Lake, Franklin, Defiance, Geauga, Huron, Warren, Erie, Belmont.
3. **Chamaenerion** (Tourn.) Adans.

Perennial herbs with alternate, entire leaves, densely set on the stem; flowers showy, in terminal racemes; sepals 4, purple, linear, deciduous; petals 4 ovate, stamens 8, stigma 4-parted; capsule angled, dehiscent opening longitudinally, seeds tufted.

1. **Chamaenerion angustifolium** (L.) Scop. Fire-weed. Erect herbs 1½-8 ft.; leaves lanceolate, entire, 1½-5 in. long; flowers purple or white about 1 in. broad, capsules 1½-2 in. long, slender, white pubescent. Ashtabula, Stark, Lake, Medina, Erie, Cuyahoga, Williams, Summit, Geauga, Lorain, Defiance, Fulton.

4. **Epilobium** L.

Herbs with opposite or alternate leaves; flowers solitary, spicate, or racemose; calyx deciduous, 4 parted; petals 4, stamens 8, capsule long, slender 4-sided dehiscent longitudinally; seeds tufted with hairs.

1. Leaves entire, margins revolute. 2.

1. Leaves denticulate or serrulate; margins not revolute. 3.

2. Leaves narrowly linear, less than ½ in. wide, veins obscure; entire plant covered with white incurved hairs giving it a gray green appearance. *E. lineare*. 2. Leaves lanceolate ¼ in. or more wide, veins evident; glandular pubescent hairs spreading. *E. strictum*. 3. Leaves narrowly lanceolate, 2-6 in. long; seeds obconic, beakless; coma red-brown. *E. coloratum*. 3. Leaves ovate-lanceolate, rarely over 2½ in. long; seeds ellipsoid, short-beaked; coma white. *E. adenocaulon*.

1. **Epilobium lineare** Muhl. Linear-leaf Willow-herb. Erect, perennial, much branched herbs 1-2 ft. high, the entire plant covered with white incurved hairs; leaves linear A/iyi in. long, opposite or alternate, entire, margin revolute; flowers pink or white in the axils of upper leaves of the branches; capsules about 2 in. long. Erie, Clarke, Portage, Ottawa.

2. **Epilobium strictum** Muhl. Downy Willow-herb. Erect herbs 1-3 ft. high, pubescent with white spreading hairs; leaves sessile, lanceolate, ½-2 in. long, opposite or alternate, entire, flowers in the axils of the upper leaves of branches, ½ in. broad, pink or white; capsules about 2 in. long. Licking County.

3. **Epilobium coloratum** Muhl. Purple Willow herb. Erect, branched herb, 1-3 ft. tall, somewhat canescent, often purplish; leaves narrow lanceolate, sharply dentate 2-6 in. long; flowers many, axillary, pink and white about ½ in. broad, seeds obconic, beakless; coma reddish-brown. General.

4. **Epilobium adenocaulon** Haussk. Northern Willow-herb. Resembling the above species but leaves broader and rarely exceeding 2½ in. in length; seeds obovoid, short-beaked; coma white. Cuyahoga, Ashtabula, Defiance, Erie, Medina, Ottawa, Summit, Franklin.
5. **Oenothera L.**

Annual or biennial herbs, leaves alternate with sinuate or toothed margin; flowers yellow, in terminal spikes, hypanthium long and slender; petals and sepals 4; stamens 8; ovulary with 4 cavities; capsule 4-angled, opening longitudinally.

1. Hirsute-pubescent; upper bracts shorter than the ovulary, deciduous. *O. biennis.*

2. Velvety-pubescent; upper bracts longer than the ovulary, persistent. *O. oakesiana.*

1. **Oenothera biennis** L. Common Evening-primrose. Tall, erect, branched biennial herb, hirsute pubescent, 1-6 ft. high; leaves lanceolate, acute, denticulate 1-6 in. long; flowers yellow, borne in leafy bracts, 1-2 in. broad, capsule about \(\frac{3}{4}\) in. long, hirsute, narrowed at the top. General.

2. **Oenothera oakesiana** Robb. Oakes' Evening-primrose. Plant resembling the preceding species but with velvety appressed hairs; leaves narrow, oblanceolate, dentate; flowers yellow 1-1\(\frac{1}{2}\) in. broad. Erie County.

6. **Raimannia** Rose.

Annual, biennial or perennial herbs with prostrate or erect stems; leaves alternate sinuate or pinnatifid; flowers, yellow axillary or sometimes in terminal spikes, nocturnal; hypanthium long, sepals 4; petals 4; stamens 8; ovulary with 4 cavities; capsule dehiscent longitudinally.

1. **Raimannia laciniata** (Hill.) Rose. Cutleaf Evening-primrose. Stem decumbent or erect, 4 in. to 2\(\frac{1}{2}\) ft. tall; leaves deeply sinuate-dentate or pinnatifid; \(\frac{3}{4}-2\) in. long; flowers usually axillary, yellow; capsule linear \(\frac{3}{4}-1\frac{1}{2}\) in. long, hirsute-pubescent. Cuyahoga County.

7. **Kneiffia** Spach.

Shrubby, annual or perennial herbs with alternate, linear, entire or dentate leaves, flowers yellow in terminal spikes or racemes; sepals and petals 4; stamens 8; stigma 4-cleft; capsules oval or clubshaped, 4 winged or angled, opening longitudinally.

1. Flowers \(\frac{1}{2}\) in. broad or less; hypanthium equal to or less than ovulary. *K. pumila.*


1. **Kneiffia pratensis** Small. Meadow Sundrops. Erect, perennial, hirsute herbs 1\(\frac{3}{4}-3\frac{1}{2}\) ft. high; leaves oblong-lanceolate or elliptic-lanceolate; flowers in terminal leafy-bracted spikes; capsules clubshaped, sessile. No specimens.

3. **Kneiffia fructicosa** (L.) Raim. Common Sundrops. Erect pubescent herbs; leaves lanceolate to ovate, denticulate or nearly entire; capsule sessile or short stalked, oblong with prominent wings. Fairfield, Lake, Jackson, Wayne, Lucas, Muskingum, Trumbull, Cuyahoga, Belmont, Carroll, Stark, Portage, Crawford, Harrison, Hocking, Clarke, Lorain, Summit, Richland.

8. **Hartmannia** Spach.
Annual or perennial, erect or decumbent herbs with alternate pinnatifid or lyrate leaves; flowers in terminal spikes or racemes, drooping in the bud, white, purple or red; sepals 4, deciduous, petals 4, large; stamens 8; ovulary with 4 cavities; capsules clavate, 4 winged.

1. **Hartmannia speciosa** (Nutt.) Small. White Evening-primrose. More or less branched puberulent herbs, ½-3 ft. tall; leaves lanceolate, pinnatifid or sinuate, 1-2 in. long, flowers white or pink, 2 in. broad; capsules ½-¾ in. long. Franklin County.

9. **Lavauxia** Spach.
Low herbs usually acaulescent sometimes with a short stem, basal leaves pinnatifid; flowers bisporangiate, white, pink, or pale yellow; sepals and petals 4; stamens 8; ovulary 4-angled, stigma 4-cleft; capsules sometimes winged above.

1. **Lavauxia triloba** (Nutt.) Spach. Three-lobed Evening-primrose. Perennial, nearly glabrous herbs; leaves, petioled pinnatifid or sinuate, oblong lanceolate, 1-8 in. long; flowers pink or white; hypanthium slender, 2-4 in. long; capsule as wide as long, about ½ in. long. Montgomery County.

10. **Gaura** L.
Annual, biennial, or perennial herbs, rather woody at the base, leaves, alternate, sessile; flowers bisporangiate, white, pink or red, in terminal spikes or racemes; hypanthium prolonged beyond the ovulary deciduous, sepals 4; petals 4 (sometimes 3); stamens 8; stigma 4 lobed; fruit resembling a nut, ribbed or angled, indehiscent.

1. **Gaura biennis** L. Biennial Gaura. Erect hairy or softly pubescent herbs, 2-5 ft. tall with lanceolate, acute or acuminate leaves; flowers white, turning pink, in long slender spikes; fruit sessile, ¾-¾ in. long, 4-angled. Stark, Paulding, Montgomery,
11. **Circaea** (Tourn.) L.

Perennial herbs; leaves opposite, dentate; flowers white in terminal and lateral racemes; hypanthium extended beyond the ovularly, sepals 2; petals 2; stamens 2; ovulary with 1 or 2 cavities; fruit obovoid, indehiscent, bristly with hooked hairs.

1. Leaves firm, rounded at the base, slightly toothed; bracts none. **C. lutetiana**.

2. Leaves thin, cordate, strongly toothed; with minute bracts. **C. intermedia**.

3. Petals not so long as the calyx, fruit 1-locular, the hairs soft and tender. **C. alpina**.

1. **Circaea lutetiana** L. Common Enchanter's-nightshade. Erect finely pubescent herbs 1-2 ft. tall; leaves 1-4 in. ovate, acuminate, rounded at the base; flowers about % in., broad; fruit % in. long, bilocular, covered with hooked hairs. General.

2. **Circaea intermedia** Ehrh. Intermediate Enchanter's-nightshade. Plants 8-16 in. tall; leaves thin, ovate, middle and upper ones cordate, teeth salient; minute bracts usually present; petals as long as the calyx; fruit as in the above species. No specimens.

3. **Circaea alpina** L. Small Enchanter's-nightshade. Plant small 4-12 in. high, glabrate or pubescent, with ovate, coarsely dentate, leaves, usually cordate at the base, %2-2% in. long; flowers about % in. broad; fruit % in. long with soft, hooked hairs, unilocular. Lorain, Summit, Hocking, Cuyahoga, Clarke, Ashtabula.