

1. PHYTOLACCA, Tourn. POKEWEED.

Calyx of 5 rounded and petal-like sepals. Stamens 5-30. Ovary of 5-12 carpels, united in a ring, with as many short separate styles, in fruit forming a depressed-globose 5-12-celled berry, with a single vertical seed in each cell. Embryo curved in a ring around the albumen. — Tall and stout perennial herbs, with large petioled leaves, and terminal racemes which become lateral and opposite the leaves. (Name compounded of *φυτόν*, plant, and the French *lac*, lake, in allusion to the crimson coloring matter which the berries yield.)

1. *P. decandra*, L. (COMMON POKE OR SCOKE. GARGET. PIGEON-BERRY.) Stamens and styles 10. — Low grounds. July-Sept. — A smooth plant, with a rather unpleasant odor, and a very large poisonous root, often 4-6' in diameter, sending up stout stalks at length 6-9° high; calyx white; ovary green; berries in long racemes, dark-purple and filled with crimson juice, ripe in autumn.

ORDER 89. POLYGONACEÆ. (BUCKWHEAT FAMILY.)

Herbs, with alternate entire leaves, and stipules in the form of sheaths (ocreae, these sometimes obsolete) above the swollen joints of the stem; the flowers mostly perfect, with a more or less persistent calyx, a 1-celled ovary bearing 2 or 3 styles or stigmas, and a single erect orthotropous seed. Fruit usually an achene, compressed or 3-4-angled or -winged. Embryo curved or straightish, on the outside of the albumen, or rarely in its centre. Stamens 4-12, inserted on the base of the 3-6-cleft calyx. (Juice often acrid, sometimes agreeably acid, as in Sorrel; the roots, as in Rhubarb, sometimes cathartic.)

* Flowers involucrate; stamens 9; stipules none.

1. *Eriogonum*. Involucre several-flowered, with flowers exserted. Calyx 6-cleft.

** Flowers without involucre; stamens 4 to 8.

+ Stipular sheaths manifest; ovule erect from the base of the cell.

++ Sepals 4 or 6, the outer row reflexed, the inner erect and enlarging in fruit.

2. *Oxyria*. Sepals 4. Stigmas 2. Achene orbicular-winged. Leaves reniform.

3. *Rumex*. Sepals 6. Stigmas 3. Achene 3-angled.

--- Sepals 5 (sometimes 4), equal and erect in fruit. Achene triangular or lenticular.

4. *Polygonum*. Embryo slender, curved around one side of the albumen. Pedicels mostly fascicled.

5. *Fagopyrum*. Embryo in the albumen, its very broad cotyledons twisted-plaited.

6. *Polygonella*. Embryo slender, nearly straight. Pedicels solitary. Leaves jointed at base.

++ Stipules obsolete; ovule hanging from the apex of a slender stalk.

7. *Brunnichia*. Calyx 5-parted, in fruit with a wing decurrent on the pedicel. Tendrill-climber.

1. ERIOGONUM, Michx.

Flowers perfect, involucrate; involucre 4-8-toothed or lobed, usually many-flowered; the more or less exserted pedicels intermixed with narrow scarious bracts. Calyx 6-parted or -cleft, colored, persistent about the achene. Stamens 9, upon the base of the calyx. Styles 3; stigmas capitate. Achene

triangular. Embryo straight and axile, with foliaceous cotyledons. — Annuals or perennials, with radical or alternate or whorled entire leaves, without stipules. (Name from *ἐπίον*, wool, and *γόνυ*, knee.)

1. *E. annuum*, Nutt. Annual, erect, leafy, naked above, 2° high, white-floccose-tomentose throughout; leaves oblong-lanceolate, acute at both ends, short-petiolate, flat; bracts small, triangular; involucre numerous in terminal cymes, turbinate, shortly pedicelled, 1-1½" long, very tomentose; flowers white, the outer sepals oblong-obovate, 1" long or less. — Central Kan. to Col., and southward.

2. OXYRIA, Hill. MOUNTAIN SORREL.

Calyx herbaceous, of 4 sepals; the outer smaller and spreading, the inner broader and erect (but unchanged) in fruit. Stamens 6. Stigmas 2, sessile, tufted. Achene lenticular, thin, flat, much larger than the calyx, surrounded by a broad veiny wing. Seed flattened contrary to the wing. Embryo straight, in the centre of the albumen, slender. — Low alpine perennial, with round-kidney-form and long-petioled leaves chiefly from the root, obliquely truncate sheaths, and small greenish flowers clustered in paniced racemes on a slender scape. (Name from *ὄξυς*, sour, in allusion to the acid leaves.)

1. *O. digyna*, Hill. Leaves all round-kidney-form, usually notched at the end; fruit orbicular. — Alpine region of the White Mts., and far north and westward. (Eu.)

3. RUMEX, L. DOCK. SORREL.

Calyx of 6 sepals; the 3 outer herbaceous, sometimes united at base, spreading in fruit; the 3 inner larger, somewhat colored, enlarged after flowering (in fruit called *valves*) and convergent over the 3-angled achene, veiny, often bearing a grain-like tubercle on the back. Stamens 6. Styles 3; stigmas tufted. Embryo slightly curved, lying along one side of the albumen, slender. — Coarse herbs, with small and homely (mostly green) flowers, which are crowded and commonly whorled in paniced racemes; the petioles somewhat sheathing at base. (The ancient Latin name; of unknown etymology.)

§ 1. *LAPATHUM*. (Dock.) Flowers perfect or monaciously polygamous; herbage not sour or scarcely so; none of the leaves halberd-shaped. (Flowering through the summer.)

* Perennials, 1-7° high, mostly with fusiform roots; valves not bearing bristles.

+ Valves (large, 3" broad or more, thin) all naked or one with a small grain.

R. PATIENTIA, L. (PATIENCE DOCK.) A very tall species, with ovate-oblong and lanceolate leaves (broadest above the base), those from the root 2-3° long, and one of the heart-shaped nearly or quite entire valves (3" broad) bearing a small grain, or its midrib thickened at base. — N. Eng. and N. Y. (Adv. from Eu.)

1. *R. venosus*, Pursh. Stems from running rootstocks, erect (1° high or less), with conspicuous dilated stipules; leaves on short but rather slender petioles, ovate or oblong to lanceolate (3-6' long), acute or acuminate, only the lowest obtuse at base; panicle nearly sessile, short, dense in fruit; valves entire, glandless, broadly cordate with a deep sinus, 9-12" in diameter, bright rose-color. — Sask. to central Mo. and Kan., and westward.

+ Valves smaller, one or more of them conspicuously grain-bearing.

→ Indigenous; leaves not wavy, none heart-shaped, except the lowest of n. 5.

2. *R. Británnica*, L. (GREAT WATER-DOCK.) Tall and stout (5-6' high); leaves oblong-lanceolate, rather acute at both ends, transversely veined, and with obscurely erose-crenulate margins (the lowest, including the petiole, 1-2° long, the middle rarely truncate or obscurely cordate at base); racemes upright in a large compound panicle, nearly leafless; whorls crowded; *pedicels* capillary, nodding, about twice the length of the fruiting calyx; the valves orbicular or round-ovate, very obtuse, obscurely heart-shaped at base, finely reticulated, entire or repand-denticulate (2-3" broad), all grain-bearing. (*R. orbiculatus*, Gray.) — Wet places, N. Eng. to N. J., west to Minn. and Kan.

3. *R. altissimus*, Wood. (PALE DOCK.) Rather tall (2-6° high); leaves ovate- or oblong-lanceolate, acute, pale, thickish, obscurely veiny (the cauline 3-6' long, contracted at base into a short petiole); racemes spike-like and paniced, nearly leafless; whorls crowded; *pedicels* nodding, shorter than the fruiting calyx; valves broadly ovate or obscurely heart-shaped, obtuse or acutish, entire, loosely reticulated (about 2" broad), one with a conspicuous grain, the others with a thickened midrib or naked. (*R. Británnica*, Gray; not L.) — Moist grounds, N. Y. and N. J. to Minn. and Kan.

4. *R. salicifolius*, Weinmann. (WHITE DOCK.) Rather low (1-3° high); root white; leaves narrowly or linear-lanceolate, or the lowest oblong; whorls much crowded; *pedicels* much shorter than the fruiting calyx; valves deltoid-ovate, obtusish or acutish (about 1½" long), one, two or sometimes all with a conspicuous often very large grain; otherwise nearly as n. 3. — Salt marshes, from Newf. to N. Eng., about the Great Lakes, and far westward.

5. *R. verticillatus*, L. (SWAMP DOCK.) Rather tall (3-5° high); leaves lanceolate or oblong-lanceolate, rather obtuse, thickish, pale-green, the lowest often heart-shaped at base; racemes nearly leafless, elongated, loose, the whorls crowded or the lower ones distant; fruit-bearing *pedicels* slender, club-shaped, abruptly reflexed, 3-4 times longer than the fruiting calyx; valves dilated-rhomboid, obtusely somewhat pointed, strongly rugose-reticulated, each bearing a very large grain. — Wet swamps, common.

→ → Naturalized European weeds; lower leaves mostly heart-shaped at base.

R. crispus, L. (CURLED DOCK.) Smooth (3-4° high); leaves with strongly wavy-curved margins, lanceolate, acute, the lower truncate or scarcely heart-shaped at base; whorls crowded in prolonged wand-like racemes, leafless above; valves round-heart-shaped, obscurely denticulate or entire, mostly all grain-bearing. — In cultivated and waste ground, very common. A hybrid of this with the next is reported from Mass., N. Y., and Md.

R. obtusifolius, L. (BITTER DOCK.) Stem roughish; lowest leaves ovate-heart-shaped, obtuse, rather downy on the veins beneath, somewhat wavy-margined, the upper oblong-lanceolate, acute; whorls loose and distant; valves ovate-halberd-shaped, with some sharp awl-shaped teeth at base, strongly reticulated, one of them principally grain-bearing. — Fields, etc., common.

R. sanguineus, L. Leaves oblong-lanceolate, often fiddle-shaped, wavy-margined; whorls distant, in long slender leafless spikes; *pedicels* very short, jointed at base; valves narrowly oblong, obtuse, entire, one at least grain-bearing; veins of the leaf red, or green. — Waste and cultivated ground.

R. conglomeratus, Murray. (SMALLER GREEN DOCK.) Like the last, but leaves not fiddle-shaped, and panicle leafy; *pedicels* short, jointed below the middle; valves acutish, all grain-bearing. — Moist places.

* * Annuals, low; valves bearing long awns or bristles.

6. *R. maritimus*, L. (GOLDEN DOCK.) Minutely pubescent, diffusely branched, 6-12' high; leaves lance-linear, wavy-margined, the lower auricled or heart-shaped at base; whorls excessively crowded in leafy and compact or interrupted spikes; valves rhombic-oblong, lance-pointed, each bearing 2-3 long awn-like bristles on each side, and a large grain on the back. — Sea-shore, Mass. to N. C.; also from Ill. to Minn., and westward.

§ 2. *ACETOSA*, (SORREL.) Flowers diœcious, small, in a terminal naked panicle; herbage sour; some leaves halberd-shaped; smooth perennials, spreading by running rootstocks, flowering in spring.

7. *R. hastátulus*, Baldw. Stem simple, 1-2° high; leaves nearly as in the next; *pedicels* jointed at or below the middle; valves of the fruiting calyx round-heart-shaped, thin, finely reticulated, naked, many times larger than the achene. (*R. Engelmanni*, Ledeb.) — S. W. Ill. to E. Kan., Tex., and Fla.; Riverhead, Long Island (Young).

R. ACETOSÉLLA, L. (FIELD OF SHEEP SORREL.) Low (6-12' high); leaves narrow-lanceolate or linear, halberd-form, at least those of the root, the narrow lobes entire; *pedicels* jointed with the flower; valves scarcely enlarging in fruit, ovate, naked. — Abundant everywhere. (Nat. from Eu.)

R. ACETOSA, L. (SORREL DOCK.) Like the last, but taller (1-3° high); leaves oblong or broadly lanceolate; valves enlarging in fruit and orbicular, the outer reflexed. — Charlotte, Vt., and Penn Yan, N. Y. (Nat. from Eu.)

4. POLYGOŒNUM, Tourne. KNOTWEED.

Calyx mostly 5-parted; the divisions often petal-like, all erect in fruit, withering or persistent. Stamens 4-9. Styles or stigmas 2 or 3; achene accordingly lenticular or 3-angular. Embryo placed in a groove on the outside of the albumen and curved half-way around it; the radicle and usually the cotyledons slender. — *Pedicels* jointed. Ours all herbaceous, with fibrous roots (except n. 19), flowering through late summer and early autumn. (Name composed of *πολύς*, many, and *γόνυ*, knee, from the numerous joints.)

§ 1. *POLYGOŒNUM* proper. Flowers in axillary fascicles or spicate with foliaceous bracts; leaves and bracts jointed upon a very short petiole adnate to the short sheath of the 2-lobed or lacerate scarious stipules; stems striate; calyx 5-6-parted, usually more or less herbaceous; stamens 3-8, the 3 inner filaments broad at base; styles 3; cotyledons incumbent; albumen horny; glabrous annuals, except n. 1. (§ *Avicularia*, Meisn.)

* Leafy throughout.

1. *P. maritimum*, L. Perennial, at length woody at base (or sometimes annual), prostrate, glaucous, the stout stems very shortly jointed; leaves thick, oval to linear-oblong (3-10" long), exceeding the nodes; stipules very conspicuous; sepals petaloid; stamens 8; achene smooth and shining, exerted. — Sea-coast from Mass. to Ga. (Eu.)

2. *P. aviculare*, L. Slender, mostly prostrate or ascending, bluish-green; leaves oblong to lanceolate (3-10" long), usually acute or acutish; sepals hardly 1" long, green with pinkish margins; stamens 8 (rarely 5); achene dull and minutely granular, mostly included. — Common everywhere in yards, waste places, etc. (Eu., Asia.)

3. *P. erectum*, L. *Stouter, erect or ascending* (1-2° high), yellowish; leaves oblong or oval ($\frac{1}{2}$ -2' long), usually obtuse; flowers mostly $1\frac{1}{2}$ " long, often yellowish, on more or less exserted pedicels; stamens 5-6; achene dull, included. (*P. aviculare*, var. *erectum*, Roth.) — Common, by waysides, etc.

* * Leaves much reduced above and bract-like.

4. *P. ramosissimum*, Michx. Erect or ascending (2-4° high), yellowish-green; leaves lanceolate to linear (1-2' long), acute; flowers and achene as in n. 3, but sepals more frequently 6, the stamens 3-6, and the achene mostly smooth and shining. — Sandy shores and banks of streams, E. Mass. to N. Y., west to Minn., Ark., Tex., and far westward.

5. *P. tenue*, Michx. Stem angled, erect ($\frac{1}{2}$ -1' high), glabrous, or slightly scabrous at the nodes; leaves narrowly linear to lanceolate (1-2' long), 3-nerved, acute at each end and often cuspidate, the margins somewhat scabrous and at length revolute; flowers often solitary, nearly sessile; stamens 8; achene included, dull black. — Dry soil, N. Eng. to S. C., west to Minn., Mo., and Tex.

6. *P. camporum*, Meisn. Stem terete, erect or ascending (2-3° high), glabrous; leaves deciduous, linear to oblong, usually short; pedicels slender, exserted from the scuriously sheaths; stamens 8. — E. Kan. to Tex.

§ 2. *PERSICARIA*. Flowers in dense spikes, with small scarious bracts; leaves not jointed on the petiole; sheaths cylindrical, truncate, entire, naked or ciliate-fringed or margined; calyx colored, 5-parted, appressed to the fruit; stamens 4-8; filaments filiform; cotyledons accumbent.

* Sheaths and bracts not ciliate or fringed; sepals not punctate; style 2-cleft.

7. *P. lapathifolium*, L. Annual, branching, 1-4° high, glabrous or the peduncles often minutely glandular; leaves lanceolate, attenuate upward from near the cuneate base and acuminate, somewhat scabrous with short appressed hairs on the midrib and margin, or rarely floccose-tomentose beneath; sheaths and bracts rarely somewhat ciliolate; spikes oblong to linear ($\frac{1}{2}$ -2' long), dense, erect or nearly so; flowers white or pale rose-color; stamens 6; achene ovate, rarely 1" broad. (*P. nodosum*, Pers. *P. incarnatum*, Man., in part.) — Wet places; N. Eng. and Can. to Ill., Wisc., and far westward. Very variable. (Eu.)

Var. *incarnatum*, Watson. Leaves often large (6-12' long, 1-3' wide); spikes more slender and elongated (2-4' long), nodding. (*P. incarnatum*, Ell.) — Penn. to Ill., Mo., and southward.

Var. *incanum*, Koch. Low (6-12' high); leaves small, obtusish, more or less hoary beneath with floccose tomentum; spikes short. — Cayuga Lake, N. Y., Ont., shores of L. Superior, and northwestward (Eu.)

8. *P. pennsylvanicum*, L. A similar species, but the branches above and especially the peduncles beset with stipitate glands; flowers larger and often bright rose-color, in short erect spikes, often on exserted pedicels; stamens usually 8; achene nearly orbicular, over 1" broad. — Moist soil, in open waste places, common.

9. *P. amphibium*, L. Perennial, aquatic or rooting in the mud, stout and glabrous or nearly so, not branching above the rooting base; leaves usually floating, thick, smooth and shining above, mostly long-petioled, elliptical

to oblong or sometimes lanceolate, acutish, cuneate or cordate at base (2-5' long); spike terminal, dense, ovate or oblong ($\frac{1}{2}$ -1' long); flowers bright rose-color ($1\frac{1}{2}$ -3" long); the 5 stamens and 2-cleft style exserted. — Widely distributed and rather common. (Eu., Asia.)

10. *P. Muhlenbergii*, Watson. Perennial, in muddy or dry places, decumbent or suberect, scabrous with short appressed or glandular hairs; leaves thinner, rather broadly lanceolate, narrowly acuminate (4-7' long); spikes more elongated (1-3' long), often in pairs; flowers and fruit nearly as in the last. (*P. amphibium*, var. *terrestre*, Gray, Manual; not Leers.) — N. Eng. to Fla., westward across the continent.

* * Sheaths and bracts bristly ciliate or the sheaths foliaceously margined.

+ Sepals not punctate; style 2-cleft; achene somewhat flattened.

11. *P. Hartwrightii*, Gray. Perennial, very closely allied to n. 9, growing usually in mud, the ascending stems rooting at base and very leafy, more or less rough-hairy, at least on the sheaths and bracts, the former ciliate and often with abruptly spreading foliaceous borders; leaves rather narrow (2-7' long), on very short petioles; flowers and fruit as in n. 9. — N. Eng. and N. Y., to Minn., Iowa, and far westward. When growing in water the floating leaves are thicker and glabrous.

12. *P. Carey*, Olney. Annual, erect, the stem (3-5° high) and peduncles glandular-bristly; leaves narrowly lanceolate, attenuate to both ends, roughish; sheaths ciliate or sometimes margined; spikes slender, loose and nodding; flowers purplish; stamens mostly 5. — Shady swamps, S. Maine and N. H. to Penn. and Ont.

P. ORIENTALE, L. (PRINCE'S FEATHER.) Tall branching annual, soft-hairy; leaves ovate or oblong, pointed, distinctly petioled; sheaths ciliate or often with an abrupt spreading border; flowers large, bright rose-color, in dense cylindrical nodding spikes; stamens 7. — Sparingly escaped from gardens into waste grounds. (Adv. from India.)

P. PERSICARIA, L. (LADY'S THUMB.) Nearly smooth and glabrous (12-18' high); sheaths more or less bristly-ciliate; leaves lanceolate, pointed, roughish, often marked with a dark triangular or lunar spot near the middle; spikes ovoid or oblong, dense, erect, on smooth (or at least not glandular) peduncles; stamens mostly 6; styles half 2-3-cleft; achene gibbous-flattened or sometimes triangular, smooth and shining. — Waste and damp places, very common. (Nat. from Eu.)

+ + Sepals conspicuously dotted and leaves punctate (except n. 13), with acrid juice; style mostly 3-parted, and achene triangular; sheaths bristle-fringed.

13. *P. hydropiperoides*, Michx. (MILD WATER-PEPPER.) Perennial, not acrid; stem smooth (1-3° high), branching; the narrow sheaths hairy; leaves narrowly lanceolate, sometimes oblong; spikes erect, slender, sometimes filiform, often interrupted at base (1-2' long); flowers small, flesh-color or nearly white; sepals not dotted; stamens 8; achene sharply triangular, smooth and shining. — Wet places and in shallow water; common, especially southward.

14. *P. Hydrópiper*, L. (COMMON SMARTWEED OR WATER-PEPPER.) Annual, 1-2° high, smooth; leaves narrowly to linear-lanceolate; spikes nodding, usually short or interrupted; flowers mostly greenish; stamens 6; style 2-3-parted; achene dull, minutely striate. — Moist or wet grounds; apparently introduced eastward, but indigenous north and westward. (Eu.)

15. *P. acre*, HBK. (WATER SMARTWEED.) Perennial, nearly smooth; stems rooting at the decumbent base, 2-5° high; leaves larger and longer than in the last, taper-pointed; spikes erect; flowers whitish, sometimes flesh-color; stamens 8; style mostly 3-parted; achene smooth and shining. — Wet places; common, especially southward.

§ 3. *BISTORTA*. Glabrous alpine perennials, with thick creeping rootstocks and simple stems; flowers in a spike-like raceme; calyx colored, deeply 5-cleft; stamens 8; styles 3, long.

16. *P. viviparum*, L. Smooth, dwarf (4-8' high), bearing a linear erect spike of flesh-colored flowers (or often little red bulblets in their place); leaves lanceolate. — Alpine summits of N. Eng., shores of L. Superior, and northward. (Eu.)

§ 4. *TOVÀRA*. Perennials; flowers in loose naked long and slender spikes; calyx rather herbaceous (greenish), unequally 4-parted; stamens 5; styles 2, distinct, rigid and persistent on the smooth lenticular achene.

17. *P. Virginianum*, L. Almost smooth; stem terete, upright (2-4° high); sheaths cylindrical, hairy and fringed; leaves ovate, or the upper ovate-lanceolate, taper-pointed, rounded at the base, short-petioled, rough-ciliate (3-6' long); flowers 1-3 from each bract, somewhat curved, the styles deflexed in fruit, minutely hooked. — Thickets in rich soil, common. (Asia.)

§ 5. *TINIÀRIA*. Annuals or perennials, mostly twining or climbing, and with petioled cordate or sagittate leaves; flowers in loose panicles or racemes or in terminal or axillary clusters; calyx green with colored margins, 5- (rarely 4-) parted; stamens mostly 8; styles or stigmas 3 (2 in n. 18).

* Annuals, erect, or somewhat climbing by reflexed prickles on the angles of the stem and petioles; sepals (pale rose-color or white) not keeled; bracts chaff-like.

18. *P. arifolium*, L. (HALBERD-LEAVED TEAR-THUMB.) Stem grooved-angled; leaves halberd-shaped, taper-pointed, long-petioled; flowers somewhat racemed (few); peduncles glandular-bristly; calyx often 4-parted; stamens 6; styles 2, very short; achene lenticular (large). — Low grounds. (Asia.)

19. *P. sagittatum*, L. (ARROW-LEAVED TEAR-THUMB.) Stem 4-angled; leaves arrow-shaped, short-petioled; flowers capitate; peduncles smooth; stamens mostly 8; styles 3, slender; achene sharply 3-angled. — Low grounds, common. — Slender, smooth except the angles of the stem and midrib beneath, which are armed with fine and very sharp saw-toothed prickles. (Asia.)

* * Stems not prickly; calyx with the 3 outer divisions keeled, at least in fruit; flowers in loose paniced racemes; bracts short-sheathing.

P. CONVÓLVULUS, L. (BLACK BINDWEED.) Annual, twining or procumbent, low, roughish, the joints naked; leaves halberd-heart-shaped, pointed; flowers in small interrupted corymbose racemes; outer calyx-lobes keeled; achene smoothish. — Cult. and waste grounds, common. (Nat. from Eu.)

20. *P. cilinode*, Michx. Perennial, minutely downy; the sheaths fringed at the base with reflexed bristles; leaves heart-shaped and slightly halberd-shaped, taper-pointed; racemes paniced; calyx-lobes obscurely keeled; achene very smooth and shining. — Copses and rocky hills, N. Eng. to mountains of N. C., west to Mich. and Minn. Climbing 3-9° high.

21. *P. dumetorum*, L., var. *scandens*, Gray. (CLIMBING FALSE BUCKWHEAT.) Perennial, smooth; sheaths naked; leaves heart-shaped or slightly halberd-shaped, pointed; racemes interrupted, leafy; the 3 outer calyx-lobes strongly keeled and in fruit winged; achene smooth and shining. — Moist thickets, common. Twining 8-12° high over bushes.

P. cuspidatum, Sieb. & Zucc. Perennial, erect, stout and tall, glabrous except the loose axillary paniced racemes; leaves round-ovate, shortly acuminate, truncate or cordate at base; outer sepals broadly winged in fruit. — Occasionally escaped from gardens. (Japan.)

5. FAGOPYRUM, Tourn. BUCKWHEAT.

Calyx petal-like, equally 5-parted, withering and nearly unchanged in fruit. Stamens 8. Styles 3; stigmas capitate. Achene 3-sided, longer than the calyx. Embryo large, in the centre of the albumen, which it divides into 2 parts, with very broad and foliaceous plaited and twisted cotyledons. — Glabrous annuals, with triangular-heart-shaped or halberd-shaped leaves, semicylindrical sheaths, and corymbose racemes or panicles of white flowers, often tinged with green or rose-color. (Name from *fagus*, the beech, and *wpós*, wheat, from the resemblance of the grain to the beech-nut; so the English name Buckwheat, from the German *buche*, beech.)

F. ESCULÉNTUM, Moench. (BUCKWHEAT.) Smoothish; flower with 8 honey-bearing yellow-glands interposed between the stamens; achene acute and entire, smooth and shining. — Old fields, remaining as a weed after cultivation, and escaping into copses. June-Sept. (Adv. from Eu.)

F. TATÁRICUM, Gaertn. (INDIA-WHEAT.) Flowers very small, on shorter pedicels; achene very dull and roughish, the sides sulcate. — An occasional escape from cultivation. (Adv. from Asia.)

6. POLYGONÉLLA, Michx.

Flowers perfect or polygamous-dioecious. Calyx 5-parted, petaloid, loosely persistent about the achene, the 3 inner divisions often enlarging in fruit, in which case the outer are usually spreading. Stamens 8. Styles 3, and achene 3-angular. Embryo slender, straight or nearly so, toward one side of the albumen. — Slender glabrous annuals or perennials, with alternate mostly linear leaves jointed at the base, and rather rigid truncate or oblique naked sheaths and bracts. Flowers on solitary jointed pedicels (nodding in fruit) in slender paniced racemes. (Diminutive of *Polygonum*.)

1. *P. articulata*, Meisn. Annual, erect, branching, glaucous, 4-12' high; leaves linear-filiform, deciduous; flowers rose-color, nodding, in very slender racemes, the calyx a little enlarged in fruit; 3 inner filaments dilated at base; achene exserted, smooth. (*Polygonum articulatum*, Gray.) — Dry, sandy soil; on the coast from Maine to N. J., and along the Great Lakes.

7. BRUNNÍCHIA, Banks.

Calyx 5-parted; the divisions somewhat petal-like, oblong, connivent and coriaceous in fruit, the base and almost the whole length of the pedicel winged on one side. Stamens 8; filaments capillary. Styles 3, slender; stigmas depressed-capitate. Ovule pendulous on a slender erect funiculus; seed erect, 6-grooved. Achene obtusely triangular, partly 3-celled, enclosed in the indurated calyx. Embryo in one of the angles of the mealy albumen, somewhat curved. — Somewhat shrubby with grooved stems, climbing by tendrils from the ends of the branches. (Named for *F. Brunnich*, a Danish naturalist.)

§ 3. *Calyx-tube straight, open, with ample 6-lobed limb, the lobes appendaged; anthers equidistant; erect herbs; flowers in axillary cymose fascicles.*

A. CLEMÁTITIS, L., with long-petioled cordate leaves, from Europe, is said to have permanently escaped near Ithaca, N. Y. (Dudley).

ORDER 92. PIPERACEÆ. (PEPPER FAMILY.)

Herbs, with jointed stems, alternate entire leaves, and perfect flowers in spikes, entirely destitute of floral envelopes, and with 3-5 more or less separate or united ovaries. — Ovules few, orthotropous. Embryo heart-shaped, minute, contained in a little sac at the apex of the albumen. — The characters are those of the Tribe Saurureæ, the Piperaceæ proper (wholly tropical) differing in having a 1-celled and 1-ovuled ovary.

1. SAURURUS, L. LIZARD'S-TAIL.

Stamens mostly 6 or 7, hypogynous, with distinct filaments. Fruit somewhat fleshy, wrinkled, of 3-4 indehiscent carpels united at base. Stigmas recurved. Seeds usually solitary, ascending. — Perennial marsh herbs, with heart-shaped converging-ribbed petioled leaves, without distinct stipules; flowers (each with a small bract adnate to or borne on the pedicel) crowded in a slender wand-like and naked peduncled terminal spike or raceme (its appearance giving rise to the name, from *σαῦρος*, a lizard, and *οὐρά*, tail).

1. *S. cernuus*, L. Flowers white, fragrant; spike nodding at the end; bract lanceolate; filaments long and capillary. — Swamps, Conn. to Ont., Minn., Mo., and southward. June-Aug.

ORDER 93. LAURACEÆ. (LAUREL FAMILY.)

Aromatic trees or shrubs, with alternate simple leaves mostly marked with minute pellucid dots, and flowers with a regular calyx of 4 or 6 colored sepals, imbricated in 2 rows in the bud, free from the 1-celled and 1-ovuled ovary, and mostly fewer than the stamens; anthers opening by 2 or 4 uplifted valves. — Flowers clustered. Style single. Fruit a 1-seeded berry or drupe. Seed anatropous, suspended, with no albumen, filled by the large almond-like embryo.

• Flowers perfect, panicled; stamens 12, three of them sterile, three with extrorse anthers.

1. *Persea*. Calyx persistent. Anthers 4-celled. Evergreen.

• • Flowers dioecious, or nearly so; stamens in the sterile flowers 9. Leaves deciduous.

2. *Sassafras*. Flowers in corymb- or umbel-like racemes. Anthers 4-celled, 4-valved.

3. *Litsea*. Flowers few in involucre umbels. Anthers 4-celled, 4-valved.

4. *Lindera*. Flowers in umbel-like clusters. Anthers 2-celled, 2-valved.

1. PÉRSEA, Gaertn. ALLIGATOR PEAR.

Flowers perfect, with a 6-parted calyx, persistent at the base of the berry-like fruit. Stamens 12, in four rows, the 3 of the innermost row sterile and gland-like, the rest bearing 4-celled anthers (i. e. with each proper cell divided transversely into two), opening by as many uplifted valves; the anthers of 3 stamens turned outward, the others introrse. — Trees, with persistent entire leaves, and small panicled flowers. (An ancient name of some Oriental tree.)

1. *P. Carolinensis*, Nees. (RED BAY.) Hoary with a fine down, at least when young; leaves oblong, pale, soon smooth above; peduncle bearing few flowers in a close cluster; sepals downy, the outer shorter; berries dark blue, on a red stalk. — Swamps, S. Del. to Fla. and Tex. May. A small tree.

2. SÁSSAFRAS, Nees.

Flowers dioecious, with a 6-parted spreading calyx; the sterile kind with 9 stamens inserted on the base of the calyx in 3 rows, the 3 inner with a pair of stalked glands at the base of each; anthers 4-celled, 4-valved; fertile flowers with 6 short rudiments of stamens and an ovoid ovary. Drupe ovoid (blue), supported on a club-shaped and rather fleshy reddish pedicel. — Trees, with spicy-aromatic bark, and very mucilaginous twigs and foliage; leaves deciduous, often lobed. Flowers greenish-yellow, naked, in clustered and peduncled corymbed racemes, appearing with the leaves, involucre with scaly bracts. Leaf-buds scaly. (The popular name, applied by the early French settlers in Florida.)

1. *S. officinale*, Nees. Trees 15-125° high, with yellowish-green twigs; leaves ovate, entire, or some of them 3-lobed, soon glabrous. — Rich woods, E. Mass. to S. Ont., Mich., E. Iowa and Kan., and south to the Gulf. April.

3. LÍTSEA, Lam.

Flowers dioecious, with a 6-parted deciduous calyx; the sterile with 9 stamens in 3 rows; their anthers all introrse, 4-celled, 4-valved; fertile flowers with 12 or more rudiments of stamens and a globular ovary. Drupe globular. — Shrubs or trees, with entire leaves, and small flowers in axillary clustered umbels. (Name of Chinese origin.)

1. *L. geniculata*, Benth. & Hook. (POND SPICE.) Flowers (yellow) appearing before the deciduous oblong leaves, which are hairy on the midrib beneath; branches forked and divaricate, the branchlets zigzag; involucre 2-4-leaved, 2-4-flowered; fruit red. (*Tetranthera geniculata*, Nees.) — Swamps, Va. to Fla. April.

4. LÍNDERA, Thunb. WILD ALLSPICE. FEVER-BUSH.

Flowers polygamous-dioecious, with a 6-parted open calyx; the sterile with 9 stamens in 3 rows, the inner filaments 1-2-lobed and gland-bearing at base; anthers 2-celled and 2-valved; fertile flowers with 15-18 rudiments of stamens in 2 forms, and a globular ovary. Drupe obovoid, red, the stalk not thickened. — Shrubs, with deciduous leaves, and honey-yellow flowers in almost sessile lateral umbel-like clusters, appearing before the leaves (in our species); the clusters composed of smaller clusters or umbels, each of 4-6 flowers and surrounded by an involucre of 4 deciduous scales. Leaf-buds scaly. (Named for John Linder, a Swedish botanist of the early part of the 18th century.)

1. *L. Benzoin*, Blume. (SPICE-BUSH. BENJAMIN-BUSH.) Nearly smooth (6-15° high); leaves oblong-obovate, pale underneath. — Damp woods, N. Eng. to Ont., Mich., E. Kan., and southward. March, April.

2. *L. melissæfolia*, Blume. Young branches and buds pubescent; leaves oblong, obtuse or heart-shaped at base, downy beneath; umbels few. — Low grounds, N. C. to Fla., west to S. Ill. and Mo. April.

ORDER 94. THYMELÆACEÆ. (MEZEREUM FAMILY.)

Shrubs, with acrid and very tough (not aromatic) bark, entire leaves, and perfect flowers with a regular and simple colored calyx, bearing usually twice as many stamens as its lobes, free from the 1-celled and 1-ovuled ovary, which forms a berry-like drupe in fruit, with a single suspended anatropous seed. Embryo large; albumen little or none.

1. *Dirca*. Calyx tubular, without spreading lobes. Stamens and style exserted.
2. *Daphne*. Calyx-lobes (4) spreading. Stamens included. Style very short or none.

1. *DÍRCA*, L. LEATHERWOOD. MOOSEWOOD.

Calyx petal-like, tubular-funnel-shaped, truncate, the border wavy or obscurely about 4-toothed. Stamens 8, long and slender, inserted on the calyx above the middle, protruded, the alternate ones longer. Style thread-form; stigma capitate. Drupe oval (reddish). — A much-branched bush, with jointed branchlets, oval-obovate alternate leaves, at length smooth, deciduous, on very short petioles, the bases of which conceal the buds of the next season. Flowers light yellow, preceding the leaves, 3 or 4 in a cluster from a bud of as many dark-hairy scales, forming an involucre, from which soon after proceeds a leafy branch. (Name of uncertain derivation.)

1. *D. palústris*, L. Shrub 2–5° high; the wood white, soft, and very brittle; but the fibrous bark remarkably tough (used by the Indians for thongs, whence the popular names). — Damp rich woods, N. Brunswick to Minn. and Mo., south to the Gulf. April.

2. *DÁPHNE*, Linn. MEZEREUM.

Calyx salver-shaped or somewhat funnel-shaped, the border spreading and 4-lobed. Stamens 8, included; the anthers nearly sessile on the calyx-tube. Style very short or none; stigma capitate. Drupe red. — Hardy low shrub. (Mythological name of the nymph transformed by Apollo into a Laurel.)

- D. MEZEREUM*, L. Shrub 1–3° high, with purple-rose-colored (rarely white) flowers, in lateral clusters on shoots of the preceding year, before the lanceolate very smooth green leaves; berries red. — Escaped from cultivation in Canada, Mass., and N. Y. Early spring. (Nat. from Eu.)

ORDER 95. ELÆAGNACEÆ. (OLEASTER FAMILY.)

Shrubs or small trees, with silvery-scurfy leaves and perfect or dioecious flowers; further distinguished from the Mezereum Family by the erect or ascending albuminous seed, and the calyx-tube becoming pulpy and berry-like in fruit, strictly enclosing the achene.

1. *Elæagnus*. Flowers perfect. Stamens 4. Leaves alternate.
2. *Shepherdia*. Flowers dioecious. Stamens 8. Leaves opposite.

1. *ELÆÁGNUS*, Tourn.

Flowers perfect. Calyx cylindric-campanulate above the persistent oblong or globose base, the limb valvately 4-cleft, deciduous. Stamens 4, in the throat. Style linear, stigmatic on one side. Fruit drupe-like, with an oblong, 8-striate stone. — Leaves alternate, entire and petioled, and flowers axillary and pedi-

cellate. (From *ἐλάτα*, the olive, and *ἄγνος*, sacred, the Greek name of the Chaste-tree, *Vitex Agnus-castus*.)

1. *E. argénteá*, Pursh. (SILVER-BERRY.) A stoloniferous unarmed shrub (6–12° high), the younger branches covered with ferruginous scales; leaves elliptic to lanceolate, undulate, silvery-scurfy and more or less ferruginous; flowers numerous, deflexed, silvery without, pale yellow within, fragrant; fruit scurfy, round-ovoid, dry and mealy, edible, 4–5" long. — N. W. Minn. to Utah and Montana.

2. *SHEPHERDIA*, Nutt.

Flowers dioecious; the sterile with a 4-parted calyx (valvate in the bud) and 8 stamens, alternating with as many processes of the thick disk; the fertile with an urn-shaped 4-cleft calyx, enclosing the ovary (the orifice closed by the teeth of the disk), and becoming berry-like in fruit. Style slender; stigma 1-sided. — Leaves opposite, entire, deciduous; the small flowers nearly sessile in their axils on the branches, clustered, or the fertile solitary. (Named for John Shepherd, formerly curator of the Liverpool Botanic Garden.)

1. *S. Canadénsis*, Nutt. Leaves elliptical or ovate, nearly naked and green above, silvery-downy and scurfy with rusty scales beneath; fruit yellowish-red, insipid. — Rocky or gravelly banks, Vt. and N. Y. to Mich., Minn., and north and westward. May. — Shrub 3–6° high, the branchlets, young leaves, yellowish flowers, etc., covered with rusty scales.

2. *S. argénteá*, Nutt. (BUFFALO-BERRY.) Somewhat thorny, 5–18° high; leaves cuneate-oblong, silvery on both sides; fruit ovoid, scarlet, acid and edible. — N. Minn. to Col., and westward.

ORDER 96. LORANTHACEÆ. (MISTLETOE FAMILY.)

Shrubby plants with coriaceous greenish foliage, parasitic on trees, represented in the northern temperate zone chiefly by the Mistletoe and its near allies; distinguished from the next family more by the parasitic growth and habit, and by the more reduced flowers, than by essential characters.

1. *Phoradendron*. Anthers 2-celled. Berry globose, pulpy. Leaves foliaceous.
2. *Arceuthobium*. Anthers a single orbicular cell. Berry compressed, fleshy. Leaves scale-like, connate.

1. *PHORADÉNDRON*, Nutt. FALSE MISTLETOE.

Flowers dioecious, in short catkin-like jointed spikes, usually several to each short fleshy bract or scale, and sunk in the joint. Calyx globular, 3- (rarely 2–4-) lobed; in the staminate flowers a sessile anther is borne on the base of each lobe, transversely 2-celled, each cell opening by a pore or slit; in the fertile flowers the calyx-tube adheres to the ovary; stigma sessile, obtuse. Berry 1-seeded, pulpy. Embryo small, half imbedded in the summit of mucilaginous albumen. — Yellowish-green woody parasites on the branches of trees, with jointed much-branched stems, thick and firm persistent leaves (or only scales in their place), and axillary small spikes of flowers. (Name composed of *φάπ*, a thief, and *δένδρον*, tree; from the parasitic habit.)

1. *P. flavescens*, Nutt. (AMERICAN MISTLETOE.) Leaves obovate or oval, somewhat petioled, longer than the spikes, yellowish; berries white. — On various deciduous trees, N. J. to S. Ind., Mo., and southward.

2. *ARCEUTHOBium*, Bieb.

Flowers axillary or terminal, solitary or several from the same axil. Calyx mostly compressed; the staminate usually 3-parted, the pistillate 2-toothed. Anthers a single orbicular cell, opening by a circular slit. Berry compressed, fleshy, on a short recurved pedicel. — Parasitic on Conifers, glabrous, with rectangular branches and connate scale-like leaves; flowers often crowded in apparent spikes or panicles, opening in summer or autumn and maturing fruit the next autumn. (From *ἄρκευθος*, the juniper, and *βίος*, life.)

1. *A. pusillum*, Peck. Very dwarf, the slender scattered or clustered stems 3–10" high, usually simple, olive-green to chestnut; scales obtuse; flowers solitary in most of the axils; fruit narrowly oblong, 1" long. — On *Abies nigra*; N. New York; Hanover, N. H. (*Jesup*); Pocono Mt., Penn.

ORDER 97. *SANTALACEÆ*. (SANDALWOOD FAMILY.)

Herbs, shrubs, or trees, with entire leaves; the 4–5-cleft calyx valvate in the bud, its tube coherent with the 1-celled ovary, which contains 2–4 ovules suspended from the apex of a stalk-like free central placenta which rises from the base of the cell, but the (indehiscent) fruit always 1-seeded. — Seed destitute of any proper seed-coat. Embryo small, at the apex of copious albumen; radicle directed upward; cotyledons cylindrical. Stamens equal in number to the lobes of the calyx, and inserted opposite them into the edge of the fleshy disk at their base. Style 1. A small order, the greater part belonging to warm regions.

1. *Comandra*. Flowers perfect, in umbel-like clusters. Low herbaceous perennials.

2. *Pyrularia*. Flowers dioecious or polygamous, in short spikes or racemes. Shrub.

✓ 1. *COMÁNDRA*, Nutt. BASTARD TOAD-FLAX.

Flowers perfect. Calyx bell-shaped or soon urn-shaped, lined above the ovary with an adherent disk which has a 5-lobed free border. Stamens inserted on the edge of the disk between its lobes, opposite the lobes of the calyx, to the middle of which the anthers are connected by a tuft of thread-like hairs. Fruit drupe-like or nut-like, crowned by the persistent calyx-lobes, the cavity filled by the globular seed. — Low and smooth (sometimes parasitic) perennials, with herbaceous stems from a rather woody base or root, alternate and almost sessile leaves, and greenish-white flowers in terminal or axillary small umbel-like clusters. (Name from *κόμη*, hair, and *ἄνδρες*, for stamens, in allusion to the hairs on the calyx-lobes which are attached to the anthers.)

1. *C. umbellata*, Nutt. Stem 8–10' high, branched, very leafy; leaves oblong, pale (1' long); peduncles several and corymbose-clustered at the summit, several-flowered; calyx-tube conspicuously continued as a neck to the dry globular-urn-shaped fruit; the lobes oblong; style slender. — Dry ground, common. May, June. Root forming parasitic attachments to the roots of trees.

2. *C. pallida*, A. DC. Leaves narrower, more glaucous and acuter, linear to narrowly lanceolate (or those upon the main stem oblong), all acute or some-

what cuspidate; fruit ovoid, larger (3–4" long), sessile or on short stout pedicels. — W. Minn. to S. W. Kan., and westward.

3. *C. livida*, Richardson. Peduncles slender, axillary, 3–5-flowered, shorter than the oval leaves; calyx-tube not continued beyond the ovary, the lobes ovate; style short; fruit pulpy when ripe, red. — Newf., N. Vt., sandy shores of L. Superior, and northward.

2. *PYRULARIA*, Michx. OIL-NUT. BUFFALO-NUT.

Flowers dioecious or polygamous. Calyx 4–5-cleft, the lobes recurved, hairy-tufted at base in the male flowers. Stamens 4 or 5, on very short filaments, alternate with as many rounded glands. Fertile flowers with a pear-shaped ovary invested by the adherent tube of the calyx, naked at the flat summit; disk with 5 glands; style short and thick; stigma capitate-flattened. Fruit fleshy and drupe-like, pear-shaped; the globose endocarp thin. Embryo small; albumen very oily. — Shrubs or trees, with alternate short-petioled and deciduous leaves; the small greenish flowers in short and simple spikes or racemes. (Name a diminutive of *Pyrus*, from the shape of the fruit.)

1. *P. pubera*, Michx. Shrub straggling (3–12° high), minutely downy when young, at length nearly glabrous; leaves obovate-oblong, acute or pointed at both ends, soft, very veiny, minutely pellucid-punctate; spike small and few-flowered, terminal; calyx 5-cleft; fruit 1' long. (*P. oleifera*, Gray.) — Rich woods, mountains of Penn. to Ga. Whole plant, especially the fruit, imbued with an acrid oil.

ORDER 98. *EUPHORBIACEÆ*. (SPURGE FAMILY.)

Plants usually with a milky acrid juice, and monœcious or dioecious flowers, mostly apetalous, sometimes achlamydeous (occasionally polypetalous or monopetalous); the ovary free and usually 3-celled, with a single or sometimes a pair of ovules hanging from the summit of each cell; stigmas or branches of the style as many or twice as many as the cells; fruit commonly a 3-lobed capsule, the lobes or carpels separating elastically from a persistent axis and elastically 2-valved; seed anatropous; embryo straight, almost as long as and the flat cotyledons mostly as wide as the fleshy or oily albumen. Stipules often present. — A vast family in the warmer parts of the world; most numerous represented in northern countries by the genus *Euphorbia*, which has very reduced flowers within a calyx-like involucre.

* Flowers all without calyx, included in a cup-shaped calyx-like involucre, — the whole liable to be mistaken for a single flower.

1. *Euphorbia*. Involucre surrounding many staminate flowers (each of a single naked stamen) and one pistillate flower (a 3-lobed pistil).

** Flowers with a calyx, without involucre.

+ Seeds and ovules 2 in each cell; flowers monœcious.

2. *Pachysandra*. Flowers in basal spikes. Calyx 4-parted. Stamens 4, distinct.

3. *Phyllanthus*. Flowers axillary. Stamens 3, united.

+ + Seeds and ovules 1 in each cell.

a. Flowers apetalous, in cymose panicles (2–3-chotomous); stamens 10, erect in the bud.

4. *Jatropha*. Calyx corolla-like, the staminate salver-form; armed with stinging hairs.