

§ 2. **HYPÓPITYS**. Plant commonly fragrant; flowers several in a scaly raceme; the terminal one usually 5-merous, the rest 3-4-merous; bract-like sepals mostly as many as the petals; anthers opening by a continuous line into 2 very unequal valves; style longer than the ovary, hollow.

2. **M. Hypópitys**, L. (PINE-SAP. FALSE BEECH-DROPS.) Somewhat pubescent or downy, tawny, whitish, or reddish (4-12' high); pod globular or oval; stigma ciliate. — Oak and pine woods, from Canada to Fla., west to Oregon. June-Aug. (Eu.)

#### ORDER 59. DIAPENSIACEÆ.

Low perennial herbs or suffruticulose tufted plants, glabrous or nearly so, with simple leaves, no stipules, regular 5-merous flowers (except the 3-celled ovary), stamens adnate to the corolla and sometimes monadelphous (those opposite its lobes when present reduced to staminodia); pollen simple; loculicidal capsule and seeds of Ericaceæ. — Flowers solitary or racemose. Style 1, with 3-lobed stigma. Distinguished from the Ericaceæ chiefly by the insertion of the stamens upon the corolla.

**Tribe I. DIAPENSIEÆ.** Dwarf woody evergreens, with small entire crowded coriaceous leaves. Staminodia none; filaments adnate to the campanulate corolla up to the sinuses; anthers 2-celled. Calyx conspicuously bracteolate. Flowers solitary.

1. **Pyxidantha**. Flowers sessile on short leafy branchlets. Anther-cells awn-pointed at base, opening transversely.
2. **Diapensia**. Flower (or at least fruit) on a scape-like peduncle. Anther-cells blunt, obliquely dehiscent.

**Tribe II. GALACINEÆ.** Acaulescent, with creeping rootstocks sending up long-petioled evergreen leaves, and a 1-several-flowered scape. Staminodia present.

3. **Galax**. Calyx minutely 2-bracteolate. Stamens monadelphous; anthers 1-celled.

#### 1. PYXIDANTHERA, Michx.

Sepals thin. Anther-cells awn-pointed at base, opening by a strictly transverse line. Otherwise much as in *Diapensia*. — Prostrate and creeping, with narrowly oblanceolate and awl-pointed leaves, mostly alternate on the sterile branches and somewhat hairy near the base. Flowers solitary and sessile, very numerous, white or rose-color. (Name from *πυξίς*, a small box, and *ἀνθήρα*, anther, the anther opening as if by a lid.)

1. **P. barbulata**, Michx. (FLOWERING MOSS. PYXIE.) Leaves 3" long. — Sandy pine barrens of N. J. to N. C. April, May.

#### 2. DIAPENSIA, L.

Calyx of 5 concave imbricated coriaceous sepals. Corolla bell-shaped, 5-lobed; lobes rounded. Filaments broad and flat, adherent to the corolla up to the sinuses, short; anthers adnate, of 2 ovoid pointless cells, diverging below, each opening therefore by a transverse-descending line. Capsule, enclosed in the calyx, cartilaginous; cells few-seeded. — Alpine, growing in very dense convex tufts, with the stems imbricated below with cartilaginous narrowly spatulate mostly opposite leaves, terminated by a scape-like 1-flowered peduncle, 3-bracted under the calyx. Corolla white ( $\frac{1}{2}$  wide). (Said to be an

ancient Greek name of the Sanicle, of obscure meaning, strangely applied by Linnæus to this plant.)

1. **D. Lappónica**, L. Leaves 3-5" long; peduncle at length 1-2' long. — Alpine summits of N. Eng. and N. Y., and northward to Lab. and the Arctic coast. July. (Eu., Asia.)

#### 3. GALAX, L.

Calyx 5-parted, imbricate, persistent. Petals 5, hypogynous, obovate-spatulate, rather erect, deciduous. Filaments united in a 10-toothed tube, slightly cohering with the base of the petals, the 5 teeth opposite the petals naked, the alternate ones shorter and bearing roundish 1-celled anthers, which open across the top. Style short, stigma 3-lobed. Capsule ovoid, 3-celled; columella none. Seeds numerous, the cellular loose coat tapering to each end. — Evergreen herb, with a thick matted tuft of scaly creeping rootstocks, beset with fibrous red roots, sending up round-heart-shaped crenate-toothed and veiny shining leaves (about 2' wide) on slender petioles, and a slender naked scape, 1-2° high, bearing a wand-like spike or raceme of small and minutely-bracted white flowers. (Name from *γάλα*, milk, — of no conceivable application to this plant.)

1. **G. aphylla**, L. — Open woods, Va. to Ga. June.

#### ORDER 60. PLUMBAGINACEÆ. (LEADWORT FAMILY.)

Maritime herbs, with regular 5-merous flowers, a plaited calyx, the 5 stamens opposite the separate petals or the lobes of the corolla, and the free ovary one-celled, with a solitary ovule hanging from a long cord which rises from the base of the cell. — Only the **STATICEÆ** or **MARSH-ROSEMARY TRIBE** is represented in our region, in gardens by the Thrift (*Arméria vulgaris*), on the coast by a single species of

#### 1. STÁTICE, Tourn. SEA-LAVENDER. MARSH-ROSEMARY.

Flowers scattered or loosely spiked and 1-sided on the branches, 2-3-bracted. Calyx funnel-form, dry and membranaceous, persistent. Corolla of 5 nearly or quite distinct petals, with long claws, the 5 stamens severally attached to their bases. Styles 5, rarely 3, separate. Fruit membranous and indehiscent, in the bottom of the calyx. Embryo straight, in mealy albumen. — Sea-side perennials, with thick and stalked radical leaves; the naked flowering stems or scapes branched into panicles. (*Στατική*, an ancient name given to this or some other herb, on account of its astringency.)

1. **S. Limonium**, L. Root thick and woody, very astringent; leaves oblong, spatulate or obovate-lanceolate, 1-ribbed, tipped with a deciduous bristly point, petioled; scape much-branched, corymbose-panicled (1-2° high); spikelets 1-3-flowered; flowers lavender-color; calyx-tube hairy on the angles, the lobes ovate-triangular, with as many teeth in the sinuses. (Eu.)

Var. **Caroliniana**, Gray, the plant of the Northern States, has more erect branches, rather panicled inflorescence with at length scattered flowers, and very acute or acuminate calyx-lobes. — Salt marshes along the coast, from Lab. to Tex. Aug., Sept.

## ORDER 61. PRIMULACEÆ. (PRIMROSE FAMILY.)

Herbs, with simple leaves, and regular perfect flowers, the stamens as many as the lobes of the monopetalous (rarely polypetalous) corolla and inserted opposite them (on the tube or base), and a 1-celled ovary with a central free placenta rising from the base, bearing several or many seeds. — Calyx free from the ovary, or in *Samolus* partly coherent. (Corolla none in *Glaux*.) Stamens 4 or 5, rarely 6 or 8. Style and stigma one. Seeds with a small embryo in fleshy albumen. Ovules amphitropous, except in *Tribe I*.

**Tribe I. HOTTONIÆ.** Ovary wholly free; ovules anatropous. Aquatic; immersed leaves pectinate.

1. *Hottonia*. Corolla short salver-form. Flowers verticillate and racemose.

**Tribe II. PRIMULÆ.** Ovary wholly free.

\* Stemless; leaves all in a cluster from the root; capsule dehiscient by valves or teeth.

2. *Dodecatheon*. Corolla reflexed, 5-parted. Stamens exserted, connivent in a cone.

3. *Primula*. Corolla funnel-form or salver-shaped, open at the throat. Stamens included.

4. *Androsace*. Corolla short, very small, constricted at the throat. Stamens included.

\* \* Stems leafy; corolla rotate (none in *Glaux*); leaves entire.

+ Capsule dehiscient vertically by valves or irregularly, mostly globose.

5. *Trientalis*. Corolla mostly 7-parted. Stem leafy only at the summit.

6. *Steironema*. Corolla 5-parted. Five slender staminodia between the fertile stamens.

7. *Lysimachia*. Corolla 5-6-parted or 5-6-petalled. Staminodia none. Leaves dotted.

8. *Glaux*. Corolla none; the calyx petal-like. Flowers axillary.

+ + Globose capsule circumscissile, the top falling off as a lid; flowers axillary.

9. *Anagallis*. Corolla longer than the calyx, 5-parted. Leaves opposite.

10. *Centunculus*. Corolla shorter than the calyx, 4-5-cleft. Leaves alternate.

**Tribe III. SAMOLEÆ.** Ovary connate at base with the base of the calyx.

11. *Samolus*. Corolla bell-shaped, with 5 staminodia in the sinases. Flowers racemose.

1. *HOTTONIA*, L. FEATHERFOIL. WATER VIOLET.

Calyx 5-parted, the divisions linear. Corolla salver-shaped, with a short tube; limb 5-parted. Stamens 5, included. Capsule many-seeded, 5-valved; the valves cohering at the base and summit. Seeds anatropous. — Aquatic perennials, with pectinate immersed leaves, and the erect hollow flower-stems almost leafless. Flowers white or whitish, whorled at the joints, forming an interrupted raceme. (Named for *Prof. Hotton*, a botanist of Leyden.)

1. *H. inflata*, Ell. Leaves dissected into thread-like divisions, scattered on the floating and rooting stems, and crowded at the base of the cluster of peduncles, which are strongly inflated between the joints (often as thick as one's finger); pedicels short. — Pools and ditches, Mass. to S. Ind., and south to the Gulf. June-Aug.

2. *DODECATHEON*, L. AMERICAN COWSLIP.

Calyx deeply 5-cleft, the divisions lanceolate, reflexed. Corolla with a very short tube, thickened throat, and 5-parted reflexed limb; the divisions long and narrow. Filaments short, monadelphous at base; anthers long and linear, approximate in a slender cone. — Perennial smooth herb, with fibrous roots, a cluster of oblong or spatulate leaves, and a simple naked scape, involucre

with small bracts at the summit, bearing an ample umbel of showy flowers, nodding on slender pedicels. Corolla rose-color, or sometimes white. (Name from *δέδεκα*, twelve, and *θεοί*, gods, given by Pliny to the primrose, which was believed to be under the care of the superior gods.)

1. *D. Meadia*, L. (SHOOTING-STAR.) Rich woods, Penn. and Md. to Wisc., south to Ga. and Tex. May, June. — Very handsome in cultivation.

3. *PRÍMULA*, L. PRIMROSE. COWSLIP.

Calyx tubular, angled, 5-cleft. Corolla salver-shaped, enlarging above the insertion of the stamens; the 5 lobes often notched or inversely heart-shaped. Stamens 5, included. Capsule many-seeded, splitting at the top into 5 valves or 10 teeth. — Low perennial herbs, producing a tuft of veiny leaves at the root, and simple scapes, bearing the flowers in an umbel. (Name a diminutive of *primus*, from the flowering of the true Primrose in early spring.)

1. *P. farinosa*, L. (BIRD'S-EYE PRIMROSE.) Scape 3-10' high; leaves elliptical or obovate-lanceolate, denticulate, the lower side and the 3-20-flowered involucre, etc., covered with a white mealiness, at least when young; corolla pale lilac with a yellow eye. — Maine to N. shore of L. Superior, and northward. June, July. (Eu., Asia.)

2. *P. Mistassinica*, Michx. Scape 2-6' high; leaves spatulate or wedge-oblong, thin and veiny, not meal-y; involucre 1-8-flowered; lobes of the flesh-colored corolla broadly and deeply obcordate. — Wet banks and shores, northern N. Eng. and N. Y. to L. Superior, and northward. May. (Eu.)

4. *ANDRÓSACE*, Tourn.

Calyx 5-cleft; tube short. Corolla salver-shaped or funnel-form; the tube shorter than the calyx, contracted at the throat; limb 5-parted. Stamens and style included. Capsule 5-valved. — Small herbs, with clustered root-leaves, and very small solitary or umbelled flowers. (An ancient Greek name of a polyp, formerly believed to be a plant.)

1. *A. occidentalis*, Pursh. Smoothish annual; scapes diffuse (2-4' high), many-flowered; leaves and leaflets of the involucre oblong-ovate, entire, sessile; calyx-lobes leafy, triangular-lanceolate, longer than the (white) corolla. — Bare hills, from Minn. to Ill. and Ark., and west to the mountains.

5. *TRIENTALIS*, L. CHICKWEED-WINTERGREEN.

Calyx mostly 7-parted; the divisions linear-lanceolate, pointed. Corolla mostly 7-parted, spreading, flat, without tube. Filaments slender, united in a ring at the base; anthers oblong, revolute after flowering. Capsule few-seeded. — Low and smooth perennials, with simple erect stems, bearing a few alternate usually minute and scale-like leaves below, and a whorl of thin veiny leaves at the summit. Peduncles one or more, very slender, bearing a delicate white and star-shaped flower. (A Latin name, meaning the third part of a foot, alluding to the height of the plant.)

1. *T. Americana*, Pursh. (STAR-FLOWER.) Spreading by very slender elongated rootstocks; leaves elongated-lanceolate, tapering to both ends; petals finely pointed. — Damp cold woods, from Lab. to Minn., south to N. Ind., and the mountains of Va. May. — Rootstocks often 1-2' long (*Hitchings*).

## 6. STEIRONÈMA, Raf.

Calyx 5-parted. Corolla rotate, with no proper tube, deeply 5-parted, the sinuses rounded; divisions ovate, cuspidate-pointed, erose-denticulate above, each separately involute around its stamen. Filaments distinct or nearly so on the ring at base of corolla, alternating with 5 subulate staminodia; anthers linear. Capsule 10-20-seeded. — Leafy-stemmed perennials, glabrous except the ciliate petioles, not punctate, the leaves all opposite, but mostly in seeming whorls on the flowering branches. Peduncles slender, axillary, bearing yellow flowers. (From *στεῖρος*, *sterile*, and *νήμα*, *thread*, referring to the staminodia.)

1. *S. ciliatum*, Raf. Stem erect (2-4° high); leaves lanceolate-ovate (2-6' long), tapering to an acute point, rounded or heart-shaped at base, all on long and fringed petioles; corolla longer than the calyx. (*Lysimachia ciliata*, L.) — Low grounds and thickets, common. July.

2. *S. radicans*, Gray. Stem slender, soon reclined, the elongated branches often rooting in the mud; leaves ovate-lanceolate, mostly rounded at base, on slender petioles; corolla about the length of the calyx. (*Lysimachia radicans*, Hook.) — Swampy river-banks, W. Va. to Ark. and La. — Leaves and flowers nearly one half smaller than in the last.

3. *S. lanceolatum*, Gray. Stem erect (10'-2° high); leaves lanceolate, varying to oblong and linear, narrowed into a short margined petiole or tapering base, or the lowest short and broad on long petioles. (*Lysimachia lanceolata*, Walt.) — Low grounds and thickets, Ont. to Fla., the Dakotas, and Tex. Polymorphous; the extremes are var. *HYBRIDUM*, Gray, with cauline leaves from oblong to broadly linear, common north and west, — and var. *ANGUSTIFOLIUM*, Gray, with stems more branched, a span to 2° high, and the cauline leaves linear, acute at both ends, more sessile, 1-2' broad; mainly southward.

4. *S. longifolium*, Gray. Stem erect, 4-angled, slender (1-3° high), often branched below; stem-leaves sessile, narrowly linear, elongated (2-4' long, 2-3" wide), smooth and shining, rather rigid, obtuse, the margins often a little revolute, the veins obscure; the lowest oblong or spatulate; corolla (8-9" broad) longer than the calyx, the lobes conspicuously pointed. (*Lysimachia longifolia*, Pursh.) — Banks of streams, from western N. Y. to Va., Minn., and Iowa. July-Sept.

## 7. LYSIMACHIA, Tourn. LOOSESTRIFE.

Calyx 5-6-parted. Corolla rotate, the divisions entire, convolute in bud. Filaments commonly monadelphous at base; anthers oblong or oval; staminodia none. Capsule few-several-seeded. — Leafy-stemmed perennials, with herbage commonly glandular-dotted. (In honor of King *Lysimachus*, or from *λύσις*, *a release from*, and *μάχη*, *strife*.)

§ 1. *LYSIMACHIA* proper. Corolla yellow, rotate, and very deeply parted, and with no teeth between the lobes; stamens more or less monadelphous, often unequal; leaves opposite or whorled, or some abnormally alternate.

\* Flowers (middle-sized) in a terminal leafy panicle; corolla without marks.

*L. vulgáris*, L., a coarse and tall European species, pubescent and branching, with ovate-lanceolate distinctly petioled leaves, and glandular filaments united to near the middle. — Naturalized in a few places in E. Mass.

\* \* Flowers (small) in a virgate terminal raceme or in the upper axils; corolla dark-dotted or streaked; filaments conspicuously monadelphous, unequal.

1. *L. quadrifolia*, L. Somewhat hairy; stem simple (1-2° high); leaves whorled in fours or fives (sometimes in twos, threes, or sixes, rarely only opposite or partly alternate), ovate-lanceolate; flowers on long capillary peduncles from the axils of the leaves; lobes of the corolla ovate-oblong. — Moist or sandy soil, N. Brunswick to Minn., and Ga. June.

2. *L. stricta*, Ait. Stems 1-2° high, often bearing oblong or moniliform bulbets in the axils; smooth, at length branched, very leafy; leaves opposite or rarely alternate, lanceolate, acute at each end; flowers on slender pedicels in a long raceme (5-12'), leafy at base; lobes of the corolla lance-oblong. — Low grounds, Newf. to Minn., Ark., and N. Ga. June-Aug.

\* \* \* Flowers (rather large) solitary in the axils of ordinary leaves; corolla not dark-dotted nor streaked; filaments slightly monadelphous.

*L. NUMMULARIA*, L. (MONEYWORT.) Smooth; stems trailing and creeping; leaves roundish, small, short-petioled; peduncles axillary, 1-flowered; divisions of the corolla broadly ovate, obtuse, longer than the lance-ovate calyx-lobes and stamens. — Escaped from gardens into damp ground in some places. July-Sept. (Nat. from Eu.)

§ 2. *NAUMBURGIA*. Corolla very deeply 5- (or 6-7-) parted into linear divisions (somewhat purplish-dotted), with a small tooth in each sinus; filaments distinct, equal; leaves opposite, the lowest scale-like.

3. *L. thyrsiflora*, L. (TUFTED LOOSESTRIFE.) Smooth; stem simple (1-2° high); all but the lower leaves lanceolate, the axils of one or two middle pairs bearing short-peduncled head-like or spike-like clusters of small light yellow flowers. — Cold swamps, from Penn. to S. Ill., Iowa, and northward. June, July. (Eu.)

## 8. GLAUX, Tourn. SEA-MILKWORT.

Calyx bell-shaped, 5-cleft; lobes ovate, petal-like. Corolla wanting. Stamens 5, on the base of the calyx, alternate with its lobes. Capsule 5-valved, few-seeded. — A low and leafy fleshy perennial, with opposite oblong and entire sessile leaves, and solitary nearly sessile (purplish and white) flowers in their axils. (An ancient Greek name, from *γλαυκός*, *sea-green*.)

1. *G. maritima*, L. — Sea-shore of N. Eng. from Cape Cod northward. Also in subsaline soil, Minn. to Neb., and westward. June. (Eu.)

## 9. ANAGALLIS, Tourn. PIMPERNEL.

Calyx 5-parted. Corolla wheel-shaped, with almost no tube, 5-parted, longer than the calyx; the divisions broad. Stamens 5; filaments bearded. Capsule membranaceous, circumscissile, the top falling off like a lid, many-seeded. — Low, spreading or procumbent herbs, mostly annuals, with opposite or whorled entire leaves, and solitary flowers on axillary peduncles. (The ancient Greek name, probably from *ἀνά*, *again*, and *ἀγάλλω*, *to delight in*.)

*A. ARVENSIS*, L. (COMMON PIMPERNEL.) Leaves ovate, sessile, shorter than the peduncles; petals obovate, obtuse, fringed with minute teeth or stalked glands. — Waste sandy fields. June-Aug. — Flowers variable in size, scarlet, sometimes purple, blue, or white, quickly closing at the approach of bad weather; whence the English popular name of "Poor Man's Weather-glass." (Nat. from Eu.)

## 10. CENTUNCULUS, Dill. CHAFFWEED.

Calyx 4-5-parted. Corolla shorter than the calyx, 4-5-cleft, wheel-shaped, with an urn-shaped short tube, usually withering on the summit of the pod (which is like that of *Anagallis*). Stamens 4 or 5; filaments beardless. — Small annuals, with alternate entire leaves, and solitary inconspicuous flowers in their axils. (Derivation obscure.)

1. *C. minimus*, L. Stems ascending (2-6' long); leaves ovate, obovate, or spatulate-oblong; flowers nearly sessile, the parts mostly in fours. — Low grounds, from Ill. and Minn. to Fla. and Tex., and westward. (Eu.)

## 11. SÁMOLUS, Tourne. WATER PIMPERNEL. BROOK-WEED.

Calyx 5-cleft; the tube adherent to the base of the ovary. Corolla somewhat bell-shaped, 5-cleft, commonly with 5 sterile filaments in the sinuses. True stamens 5, on the corolla-tube, included. Capsule globose, 5-valved at the summit, many-seeded. — Smooth herbs, with alternate entire leaves, and small white racemed flowers. ("According to Pliny, an ancient Druidical name.")

1. *S. Valerandi*, L. Stem erect (6-12' high), leafy; leaves obovate or spatulate, the basal rosulate; bracts none; slender pedicels ascending, bracteolate in the middle. (Eu.) — Var. *Americanus*, Gray. More slender, becoming diffuse; racemes often paniced, the pedicels longer and spreading. — Wet places, through the U. S. June-Sept.

## ORDER 62. SAPOTACEÆ. (SAPODILLA FAMILY.)

Trees or shrubs, mostly with a milky juice, simple and entire alternate leaves (often rusty-downy beneath), small and perfect regular flowers usually in axillary clusters; the calyx free and persistent; the fertile stamens commonly as many as the lobes of the hypogynous short corolla and opposite them, inserted on its tube, along with one or more rows of appendages and scales (or sterile stamens); anthers turned outward; ovary 4-12-celled, with a single anatropous ovule in each cell; seeds large. — Albumen mostly none; but the large embryo with thickened cotyledons. Style single, pointed. — A small, mostly tropical order, producing the Sapodilla or Star-apple, and some other edible fruits.

## 1. BUMELIA, Swartz.

Calyx 5-parted. Corolla 5-cleft, with a pair of internal appendages at each sinus. Fertile stamens 5; anthers arrow-shaped. Sterile stamens 5, petal-like, alternate with the lobes of the corolla. Ovary 5-celled. Fruit small, resembling a cherry, black, containing a large ovoid and erect seed, with a roundish scar at its base. — Flowers small, white, in fascicles from the axils of the leaves. Branches often spiny. Leaves often fascicled on short spurs. Wood very hard. (The ancient name of a kind of Ash.)

1. *B. lycioides*, Pers. (SOUTHERN BUCKTHORN.) Spiny (10-25° high); leaves wedge-oblong varying to oval-lanceolate, with a tapering base, often acute, reticulated, nearly glabrous (2-4' long); clusters densely many-flowered, glabrous, fruit ovoid. — Moist ground, Va. to S. Ill., Fla., and Tex. May, June.

2. *B. lanuginosa*, Pers. Spiny (10-40° high); leaves oblong-obovate or wedge-obovate, rusty-woolly beneath, obtuse (1½-3' long); clusters 6-12-flowered, pubescent; fruit globular. — Woods, S. Ill. to Fla. and Tex. July.

## ORDER 63. EBENACEÆ. (EBONY FAMILY.)

Trees or shrubs, with alternate entire leaves, and polygamous regular flowers which have a calyx free from the 3-12-celled ovary; the stamens 2-4 times as many as the lobes of the corolla, often in pairs before them, their anthers turned inward, and the fruit a several-celled berry. Ovules 1 or 2, suspended from the summit of each cell. Seeds anatropous, mostly single in each cell, large and flat, with a smooth coriaceous integument; the embryo shorter than the hard albumen, with a long radicle and flat cotyledons. Styles wholly or partly separate. — Wood hard and dark-colored. No milky juice. — A small family, chiefly tropical.

## 1. DIOSPÏROS, L. DATE-PLUM. PERSIMMON.

Calyx 4-6-lobed. Corolla 4-6-lobed, convolute in the bud. Stamens commonly 16 in the sterile flowers, and 8 in the fertile, in the latter imperfect. Berry large, globular, surrounded at base by the thickish calyx, 4-8-celled, 4-8-seeded. — Flowers dieciously polygamous, the fertile axillary and solitary, the sterile smaller and often clustered. (Name, *Διός*, of *Jove*, and *πυρός*, grain.)

1. *D. Virginiana*, L. (COMMON PERSIMMON.) Leaves thickish, ovate-oblong, smooth or nearly so; peduncles very short; calyx 4-parted; corolla pale yellow, thickish, between bell-shaped and urn-shaped, 6-8" long in the fertile flowers, much smaller in the sterile; styles 4, two-lobed at the apex; ovary 8-celled. — Woods and old fields, R. I. and N. Y. to Iowa, and south to Fla. and La. June. — Tree 20-70° high, with very hard blackish wood; plum-like fruit 1' in diameter, exceedingly astringent when green, yellow when ripe, and sweet and edible after exposure to frost.

## ORDER 64. STYRACACEÆ. (STORAX FAMILY.)

Shrubs or trees, with alternate simple leaves destitute of stipules, and perfect regular flowers; the calyx either free or adherent to the 2-5-celled ovary; the corolla of 4-8 petals, commonly more or less united at base; the stamens twice as many as the petals or more numerous, monadelphous or polyadelphous at base; style 1; fruit dry or drupe-like, 1-5-celled, the cells commonly 1-seeded. — Seeds anatropous. Embryo nearly the length of the albumen; radicle slender, as long as or longer than the flat cotyledons. Corolla hypogynous when the calyx is free; the stamens adherent to its base. Ovules 2 or more in each cell. — A small family, mostly of warm countries, comprising two very distinct tribes.

Tribe I. STYRACEE. Calyx 4-8-toothed or entire. Stamens 2-4 times as many as the petals, in one series: anthers linear or oblong, adnate, introrse. Cotyledons flat. — Flowers white, handsome. Pubescence soft and stellate.

1. *Styrax*. Calyx coherent only with the base of the 3-celled ovary. Corolla mostly 5-parted. Fruit 1-celled, 1-seeded.

2. **Halesia**. Calyx coherent with the whole surface of the 2-4-celled ovary, which is 2-4-winged and 2-4-celled in fruit. Corolla 4-lobed.

**Tribe II. SYMPLOCINEÆ.** Calyx 5-cleft, imbricate. Stamens in several series; anthers short, innate. Embryo terete. Flowers yellow. Pubescence simple.

3. **Symplocos**. Calyx coherent. Petals 5, united merely at the base.

### 1. STYRAX, Tourn. STORAX.

Calyx truncate, somewhat 5-toothed, the base (in our species) coherent with the base of the 3-celled many-ovuled ovary. Corolla 5-parted (rarely 4-8-parted), large; the lobes mostly soft-downy. Stamens twice as many as the lobes of the corolla; filaments flat, united at the base into a short tube; anthers linear, adnate. Fruit globular, its base surrounded by the persistent calyx, 1-celled, mostly 1-seeded, dry, often 3-valved. Seed globular, erect, with a hard coat. — Shrubs or small trees, with commonly deciduous leaves, and axillary or leafy-racemed white and showy flowers on drooping peduncles; produced in spring. Pubescence scurfy or stellate. (The ancient Greek name of the tree which produces storax.)

1. **S. grandifolia**, Ait. Shrub 4-12° high; leaves obovate, acute or pointed, white-tomentose beneath (3-6' long); flowers mostly in elongated racemes; corolla ( $\frac{1}{2}$ ' long) convolute-imbricated in bud. — Woods, S. Va. to Fla.

2. **S. pulverulenta**, Michx. Shrub 1-4° high; leaves oval or obovate (1 or 2' long), above sparingly puberulent, and scurfy-tomentose beneath; flowers ( $\frac{1}{2}$ ' long) 1-3 together in the axils and at the tips of the branches, fragrant. — Low pine barrens, S. Va. to Fla. and Tex.

3. **S. Americana**, Lam. Shrub 4-8° high; leaves oblong, acute at both ends (1-3' long), smooth, or barely pulverulent beneath; flowers axillary or in 3-4-flowered racemes ( $\frac{1}{2}$ ' long); corolla valvate in the bud. — Along streams, Va. to Fla., La., and Ark.

### 2. HALËSIA, Ellis. SNOWDROP OR SILVER-BELL-TREE.

Calyx inversely conical, 4-toothed; the tube 4-ribbed, coherent with the 2-4-celled ovary. Petals 4, united at base, or oftener to the middle, into an open bell-shaped corolla, convolute or imbricated in the bud. Stamens 8-16; filaments united into a ring at base, and usually a little coherent with the base of the corolla; anthers linear-oblong. Ovules 4 in each cell. Fruit large and dry, 2-4-winged, within bony and 1-4-celled. Seeds single, cylindrical. — Shrubs or small trees, with large and veiny pointed deciduous leaves, and showy white flowers, drooping on slender pedicels, in clusters or short racemes, from axillary buds of the preceding year. Pubescence partly stellate. (Named for *Stephen Hales*, author of *Vegetable Statics*, &c.)

1. **H. tetraptera**, L. Leaves oblong-ovate; fruit 4-winged,  $1\frac{1}{2}$ ' long. — Banks of streams, W. Va. to Ill., south to Fla.

### 3. SYMPLOCOS, Jacq. SWEET-LEAF.

Calyx 5-cleft, the tube coherent with the lower part of the 3-celled ovary. Petals 5, imbricated in the bud, lightly united at base. Stamens very numerous, in 5 clusters, one cohering with the base of each petal; filaments slender; anthers very short. Fruit drupe-like or dry, mostly 1-celled and 1-seeded.

— Shrubs or small trees, the leaves commonly turning yellowish in drying, and furnishing a yellow dye. Flowers in axillary clusters or racemes, yellow. (Name *σύνπλοκος*, connected, from the union of the stamens.)

1. **S. tinctoria**, L'Her. (HORSE-SUGAR, &c.) Leaves elongated-oblong, acute, obscurely toothed, thickish, almost persistent, minutely pubescent and pale beneath (3-5' long); flowers 6-14, in close and bracted clusters, odorous. — Rich ground, Del. to Fla. and La. April. — Leaves sweet, greedily eaten by cattle.

### ORDER 65. OLEACEÆ. (OLIVE FAMILY.)

Trees or shrubs, with opposite and pinnate or simple leaves, a 4-cleft (or sometimes obsolete) calyx, a regular 4-cleft or nearly or quite 4-petalous corolla, sometimes apetalous; the stamens only 2 (rarely or accidentally 3 or 4); the ovary 2-celled, with 2 (rarely more) ovules in each cell. — Seeds anatropous, with a large straight embryo in hard fleshy albumen, or without albumen. — The Olive is the type of the true Oleaceæ, to which belongs the Lilac (*Syringa*), etc.; and the Jessamine (*Jasminum*) represents another division of the order.

**Tribe I. FRAXINEÆ.** Fruit dry, indehiscent, winged, a samara. Leaves pinnate.

1. **Fraxinus**. Flowers dioecious, mostly apetalous, sometimes also without calyx.

**Tribe II. OLEINEÆ.** Fruit, a drupe, or rarely a berry. Leaves simple.

2. **Forestiera**. Flowers apetalous, dioecious or polygamous, from a scaly catkin-like bud. Stamens 2-4.

3. **Chionanthus**. Flowers complete, sometimes polygamous. Calyx and corolla 4-merous, the latter with long and linear divisions.

4. **Ligustrum**. Corolla funnel-form, 4-cleft, the tube longer than the calyx.

### 1. FRAXINUS, Tourn. ASH.

Flowers polygamous or (in our species) dioecious. Calyx small and 4-cleft, toothed, or entire, or obsolete. Petals 4, or altogether wanting in our species. Stamens 2, sometimes 3 or 4; anthers linear or oblong, large. Style single; stigma 2-cleft. Fruit a 1-2-celled samara or key-fruit, flattened, winged at the apex, 1-2-seeded. Cotyledons elliptical; radicle slender. — Light timber-trees, with petioled pinnate leaves of 3-15 either toothed or entire leaflets; the small flowers in crowded panicles or racemes from the axils of last year's leaves. (The classical Latin name.)

\* Leaflets petiolulate; anthers linear-oblong; calyx small, persistent.

+ Fruit winged only at the upper part of the terete or nearly terete body.

1. **F. Americana**, L. (WHITE ASH.) Branchlets and petioles glabrous; leaflets 7-9, ovate- or lance-oblong, pointed, pale and either smooth or pubescent underneath, entire or sparingly serrate or denticulate; fruit (about  $1\frac{1}{2}$ ' long) marginless below, abruptly dilated into a lanceolate, oblanceolate, or wedge-linear wing 2 or 3 times as long as the terete cylindraceous body. — Rich or moist woods, common from the Atlantic to Minn., E. Neb. and Kan. April, May. — A large and very valuable forest tree, with gray furrowed bark, smooth gray branchlets and rusty-colored buds. Monoecious flowers rarely occur.

++ ++ *Body of fruit more slender, tapering gradually from summit to base, more or less margined upward by the decurrent wing.*

2. **F. pubescens**, Lam. (RED ASH.) *Branchlets and petioles velvety-pubescent; leaflets 7-9, ovate or oblong-lanceolate, taper-pointed, almost entire, pale or more or less pubescent beneath; fruit 1½-2' long, the edges gradually dilated into the linear or spatulate wing.*—Low grounds, throughout our range; rare west of Ohio.—Tree of middle or large size; inner face of outer bark of the branches red or cinnamon-color when fresh.

3. **F. viridis**, Michx. f. (GREEN ASH.) *Glabrous throughout; leaflets 5-9, ovate or oblong-lanceolate, often wedge-shaped at the base and serrate above, bright green both sides; fruit much as in n. 2.*—Along streams; common.—Intermediate forms occur with paler leaves somewhat pubescent beneath. A small or middle-sized tree.

+ + *Fruit with compressed and wing-margined body.*

4. **F. platycarpa**, Michx. (WATER-ASH.) *Branchlets terete, glabrous or pubescent; leaflets 5-7, ovate or oblong, acute at both ends, short-stalked; fruit broadly winged (not rarely 3-winged), oblong (9" wide), with a tapering base.*—Deep river-swamps, Va. to La. March. Tree of middle size.

5. **F. quadrangulata**, Michx. (BLUE ASH.) *Branchlets square, at least on vigorous shoots, glabrous; leaflets 7-9, short-stalked, oblong-ovate or lanceolate, pointed, sharply serrate, green both sides; fruit narrowly oblong, blunt, and of the same width at both ends, or slightly narrowed at the base, often notched at the apex (1½' long, 3-4" wide).*—Dry or moist rich woods, Ohio to Mich. and Minn., south to Tenn.—Large timber tree, the inner bark yielding a blue color to water.

\* \* *Lateral leaflets sessile; anthers short-oblong; flowers wholly naked.*

6. **F. sambucifolia**, Lam. (BLACK ASH.) *Branchlets and petioles glabrous; leaflets 7-11, oblong-lanceolate, tapering to a point, serrate, obtuse or rounded at the base, green and smooth both sides, when young with some rusty hairs along the midrib; fruit linear-oblong or narrowly elliptical, blunt at both ends.*—Swamps and wet banks, N. Scotia to Minn., south to Va. and Mo.—Small or middle-sized tree, with very tough and fissile wood. Bruised foliage exhales the odor of Elder.

## 2. FORESTIÆRA, Poir.

Flowers dioecious, crowded in catkin-like scaly buds from the axils of last year's leaves, imbricated with scales. Corolla none. Calyx of 4 minute sepals. Stamens 2-4; anthers oblong. Ovary ovate, 2-celled, with 2 pendulous ovules in each cell; style slender; stigma somewhat 2-lobed. Drupe small, ovoid, 1-celled, 1-seeded.—Shrubs, with opposite and often fascicled deciduous leaves and small flowers. Fertile peduncles short, 1-3-flowered. (Named for M. Forestier, a French physician.)

1. **F. acuminata**, Poir. *Glabrous, somewhat spinescent, 5-10° high; leaves thin, oblong-ovate or ovate-lanceolate, acuminate at both ends, often serrulate; drupe elongated-oblong, usually pointed.*—Wet river banks, S. W. Ind. to Mo., south to Tex. April.

## 3. CHIONÁNTHUS, L. FRINGE-TREE.

Calyx 4-parted, very small, persistent. Corolla of 4 long and linear petals, which are barely united at base. Stamens 2 (rarely 3 or 4), on the very base of the corolla, very short. Stigma notched. Drupe fleshy, globular, becoming 1-celled, 1-3-seeded.—Low trees or shrubs, with deciduous and entire petioled leaves, and delicate flowers in loose and drooping graceful panicles, from lateral buds. (Name from *χιών*, snow, and *ἄθος*, blossom, alluding to the light and snow-white clusters of flowers.)

1. **C. Virginica**, L. *Leaves oval, oblong, or obovate-lanceolate; flowers on slender pedicels; petals 1' long, narrowly linear, acute, varying to 5 or 6 in number; drupe purple, with a bloom, ovoid (6-8" long).*—River banks, N. J. and S. Penn. to Fla., Tex., and Mo.; very ornamental in cultivation. June.

## 4. LIGÜSTRUM, Tourn. PRIVET.

Calyx short-tubular, 4-toothed, deciduous. Stamens 2, on the tube of the corolla, included. Berry 2-celled, 1-2-seeded.—Shrubs, with entire leaves and small white flowers in terminal panicles. (The classical name.)

**L. vulgare**, L. (PRIVET, or PRIM.) *Leaves very smooth; berries black.*—Used for low hedges, and naturalized eastward; from Europe.

## ORDER 66. APOCYNACEÆ. (DOGBANE FAMILY.)

*Plants almost all with milky acrid juice, entire (chiefly opposite) leaves without stipules, regular 5-merous and 5-androus flowers; the 5 lobes of the corolla convolute and twisted in the bud; the filaments distinct, inserted on the corolla, and the pollen granular; calyx free from the two ovaries, which (in our genera) are distinct (forming follicles), though their styles or stigmas are united into one.*—Seeds amphitropous or anatropous, with a large straight embryo in sparing albumen, often bearing a tuft of down (comose).—Chiefly a tropical family (of acrid-poisonous plants), represented in gardens by the Oleander and Periwinkle.

1. **Amsonia**. Seeds naked. Corolla-tube bearded inside. Anthers longer than the filaments. Leaves alternate.
2. **Trachelospermum**. Seeds comose. Corolla funnel-form, not appendaged. Filaments slender. Calyx glandular inside. Leaves opposite.
3. **Apocynum**. Seeds comose. Corolla bell-shaped, appendaged within. Filaments short, broad and flat. Calyx not glandular. Leaves opposite.

## 1. AMSÔNIA, Walt.

Calyx 5-parted, small. Corolla with a narrow funnel-form tube bearded inside, especially at the throat; the limb divided into 5 long linear lobes. Stamens 5, inserted on the tube, included; anthers obtuse at both ends, longer than the filaments. Ovaries 2; style 1; stigma rounded, surrounded with a cup-like membrane. Pod (follicles) 2, long and slender, many-seeded. Seeds cylindrical, abrupt at both ends, packed in one row, naked.—Perennial herbs, with alternate leaves, and pale blue flowers in terminal paniced cymes. (Said to be named for a Mr. Charles Amson.)

1. **A. Tabernæmontana**, Walt. Loosely pubescent or hairy when young, soon glabrous; leaves from ovate-lanceolate to linear-lanceolate, taper-pointed; calyx-lobes short, awl-shaped; tube of the bluish corolla little longer than the lobes, the upper part either hairy when young or glabrous. — Low grounds, N. C. to S. Ind. and Mo., south to Fla. and Tex. May, June.

## 2. TRACHELOSPERMUM, Lemaire.

Calyx 5-parted, with 3-5 glands at its base inside. Corolla funnel-form, not appendaged; limb 5-lobed. Stamens 5, included; filaments slender; anthers arrow-shaped, with an inflexed tip. Pods (follicles) 2, slender, many-seeded. Seeds oblong, with a tuft of down. — Twining plants, more or less woody, with opposite leaves and small flowers in cymes. (Name from *τράχηλος*, a neck, and *σπέρμα*, seed, upon the supposition that the seed was beaked.)

1. **T. difforme**, Gray. Nearly herbaceous and glabrous; leaves oval-lanceolate, pointed, thin; calyx-lobes taper-pointed; corolla pale yellow. (*Forsteronia difformis*, A. DC.) — Damp grounds, Va. to Fla. and Tex. April.

## 3. APÓCYNUM, Tourn. DOGBANE. INDIAN HEMP.

Calyx 5-parted, the lobes acute. Corolla bell-shaped, 5-cleft, bearing 5 triangular appendages below the throat opposite the lobes. Stamens 5, on the very base of the corolla; filaments flat, shorter than the arrow-shaped anthers, which converge around the stigma, and are slightly adherent to it. Style none; stigma large, ovoid, slightly 2-lobed. Fruit of 2 long (2-7') and slender follicles. Seeds comose, with a tuft of long silky down at the apex. — Perennial herbs, with upright branching stems, opposite mucronate-pointed leaves, a tough fibrous bark, and small and pale cymose flowers on short pedicels. (Ancient name of the Dogbane, composed of *ἀπό*, from, and *κύων*, a dog.)

1. **A. androsæmifolium**, L. (SPREADING DOGBANE.) Smooth, or rarely soft-tomentose, branched above; branches divergently forking; leaves ovate, distinctly petioled; cymes loose, spreading, mostly longer than the leaves; corolla (pale rose-color, 4" broad) open-bell-shaped, with revolute lobes, the tube much longer than the ovate pointed divisions of the calyx. — Borders of thickets; common. June, July.

2. **A. cannabinum**, L. (INDIAN HEMP.) Glabrous or more or less soft-pubescent; stem and branches upright or ascending (2-3° high), terminated by erect and close many-flowered cymes, which are usually shorter than the leaves; leaves from oval to oblong and even lanceolate, short-petioled or sessile, with rounded or obscurely cordate base; corolla (greenish-white) with nearly erect lobes, the tube not longer than the lanceolate divisions of the calyx. — Moist grounds and banks of streams; common. Very variable. July, Aug.

## ORDER 67. ASCLEPIADACEÆ. (MILKWEED FAMILY.)

Plants with milky juice, and opposite or whorled (rarely scattered) entire leaves; the follicular pods, seeds, anthers (connected with the stigma), sensible properties, etc., just as in the last family: from which they differ in the

commonly valvate corolla, and in the singular connection of the anthers with the stigma, the cohesion of the pollen into wax-like or granular masses (pollinia), etc., as explained under the typical genus *Asclepias*.

**PERIPLOCA GRÆCA**, L., a woody climbing plant of the Old World, in ornamental cultivation, and in one or two places inclined to be spontaneous, represents a tribe with granulose pollen loosely aggregated in two masses in each anther-cell. It has a brownish rotate corolla, very hairy within, and with 5 awned scales in the throat.

**Tribe I. CYNANCHEÆ.** Anthers tipped with an inflexed or sometimes erect scarious membrane, the cells lower than the top of the stigma; pollinia suspended.

\* Stems erect or merely decumbent.

1. **Asclepiodora**. Corolla rotate, merely spreading. Crown of 5 hooded fleshy bodies, with a salient crest in each. Leaves alternate.

2. **Asclepias**. Corolla reflexed, deeply 5-parted. Crown as in n. 1, but with an incurved horn rising from the cavity of each hood. Leaves usually opposite.

3. **Acerates**. Corolla reflexed or merely spreading. Crown as in n. 1, but with neither crest nor horn inside. Leaves mainly alternate.

\*\* Stems twining. Leaves mostly opposite.

4. **Enslenia**. Corolla erect. Crown of 5 membranaceous flat bodies, terminated by a 2-cleft tail or awn.

5. **Vincetoxicum**. Corolla rotate, spreading. Crown a fleshy 5-10-lobed ring or disk.

**Tribe II. GONOLOBEÆ.** Anthers with short if any scarious tip, borne on the margin of or close under the disk of the stigma; pollinia horizontal.

6. **Gonolobus**. Corolla rotate. Crown a wavy-lobed fleshy ring. Stems twining.

## 1. ASCLEPIODORA, Gray.

Nearly as in *Asclepias*; but the corolla-lobes ascending or spreading, and the hoods destitute of a horn, widely spreading and somewhat incurved, slipper-shaped and laterally compressed, the cavity divided at the apex by a crest-like partition. — Umbels solitary and terminal or corymbed, loosely-flowered. Follicles oblong or ovate, often somewhat muricate with soft spinous projections. (*Ἀσκληπιός* and *δώρον* or *δωρεά*, the gift of *Æsculapius*.)

1. **A. viridis**, Gray. Almost glabrous; stems short (1° high); leaves alternate, short-petioled, ovate-oblong to lanceolate, 1-2' wide; umbels several in a cluster, short-peduncled; flowers large (1' in diameter), green, with a purplish crown. (*Acerates paniculata*, *Decaisne*.) — Prairies, Ill. to Tex. and S. Car. June.

## 2. ASCLÉPIAS, L. MILKWEED. SILKWEED.

Calyx 5-parted, persistent; the divisions small, reflexed. Corolla deeply 5-parted; the divisions valvate in the bud, reflexed, deciduous. Crown of 5 hooded bodies seated on the tube of stamens, each containing an incurved horn. Stamens 5, inserted on the base of the corolla; filaments united in a tube which encloses the pistil; anthers adherent to the stigma, each with 2 vertical cells, tipped with a membranaceous appendage, each cell containing a flattened pear-shaped and waxy pollen-mass; the two contiguous pollen-masses of adjacent anthers, forming pairs which hang by a slender prolongation of their summits from 5 cloven glands that grow on the angles of the stigma (extricated from the cells by insects, and directing copious pollen-tubes into the point