

Seeds smooth, flattened, and packed horizontally in 2 rows. — Perennials, with ample 2-3-ternately compound leaves, the ovate leaflets sharply cleft and toothed, and a short and thick terminal raceme of white flowers. (From *actæa*, ancient names of the elder, transferred by Linnaeus.)

1. *A. spicata*, L., var. *rubra*, Ait. (RED BANEERRY.) Raceme ovate; petals rhombic-spatulate, much shorter than the stamens; pedicels slender; berries cherry-red, or sometimes white, oval. — Rich woods, common, especially northward. April, May. — Plant 2° high. (Eu.)

2. *A. alba*, Bigel. (WHITE BANEERRY.) Leaflets more incised and sharply toothed; raceme oblong; petals slender, mostly truncate at the end, appearing to be transformed stamens; pedicels thickened in fruit, as large as the peduncle and red, the globular-oval berries white. — Rich woods, flowering a week or two later than the other, and more common westward and southward. — White berries rarely occur with slender pedicels, also red berries with thick pedicels; but these are perhaps the result of crossing.

21. HYDRÁSTIS, Ellis. ORANGE-ROOT. YELLOW PUCCOON.

Sepals 3, petal-like, falling away when the flower opens. Petals none. Pistils 12 or more in a head, 2-ovuled; stigma flat, 2-lipped. Ovaries becoming a head of crimson 1-2-seeded berries in fruit. — A low perennial herb, sending up in early spring, from a thick and knotted yellow rootstock, a single radical leaf and a simple hairy stem, which is 2-leaved near the summit and terminated by a single greenish-white flower. (Name unmeaning.)

1. *H. Canadensis*, L. (GOLDEN SEAL, etc.) Leaves rounded, heart-shaped at the base, 5-7-lobed, doubly serrate, veiny, when full grown in summer 4-9' wide. — Rich woods, N. Y. to Minn., and southward.

22. XANTHORRHIZA, Marshall. SHRUB YELLOW-ROOT.

Sepals 5, regular, spreading, deciduous. Petals 5, much smaller than the sepals, concave and obscurely 2-lobed, raised on a claw. Stamens 5 to 10. Pistils 5-15, with 2 pendulous ovules. Pods 1-seeded, oblong, the short style becoming dorsal. — A low shrubby plant; the bark and long roots deep yellow and bitter. Flowers polygamous, brown purple, in compound drooping racemes, appearing along with the 1-2-pinnate leaves from large terminal buds in early spring. (Name compounded of *ξανθός*, yellow, and *ρίζα*, root.)

1. *X. apiifolia*, L'Her. Stems clustered, 1-2° high; leaflets cleft and toothed. — Shady banks of streams, Penn. to S. W. New York and Ky., and south in the mountains. The rootstocks of this, and also of the last plant, were used as a yellow dye by the aborigines.

NIGELLA DAMASCENA, L., the FENNEL-FLOWER, which offers a remarkable exception in having the pistils partly united into a compound ovary, so as to form a several-celled capsule, grows nearly spontaneously around gardens.

ORDER 2. MAGNOLIACEÆ. (MAGNOLIA FAMILY.)

Trees or shrubs, with the leaf-buds covered by membranous stipules, polypetalous, hypogynous, polyandrous, polygynous; the calyx and corolla colored alike, in three or more rows of three, and imbricated (rarely convolute) in the bud. — Sepals and petals deciduous. Anthers adnate. Pistils many, mostly packed together and covering the prolonged receptacle, cohering with each other, and in fruit forming a sort of fleshy or dry cone. Seeds 1 or 2 in each carpel, anatropous; albumen fleshy; embryo minute. — Leaves alternate, not toothed, marked with minute transparent dots, feather-veined. Flowers single, large. Bark aromatic and bitter.

1. MAGNOLIA, L.

Sepals 3. Petals 6-9. Stamens imbricated, with very short filaments, and long anthers opening inward. Pistils coherent, forming a fleshy and rather woody cone-like red fruit; each carpel at maturity opening on the back, from which the 1 or 2 berry-like seeds hang by an extensile thread composed of unrolled spiral vessels. Inner seed-coat bony. — Buds conical, the coverings formed of the successive pairs of stipules, each pair enveloping the leaf next above, which is folded lengthwise and applied straight against the side of the next stipular sheath, and so on. (Named after Magnol, Professor of Botany at Montpellier in the 17th century.)

* Leaves all scattered along the branches; leaf-buds silky.

1. *M. glauca*, L. (SMALL OR LAUREL MAGNOLIA. SWEET BAY.) Leaves oval to broadly lanceolate, 3-6' long, obtuse, glaucous beneath; flower globular, white, 2' long, very fragrant; petals broad; cone of fruit small, oblong. — Swamps, from near Cape Ann and N. Y. southward, near the coast; in Penn. as far west as Cumberland Co. June-Aug. — Shrub 4-20° high, with thickish leaves, which farther south are evergreen.

2. *M. acuminata*, L. (CUCUMBER-TREE.) Leaves thin, oblong, pointed, green and a little pubescent beneath, 5-10' long; flower oblong bell-shaped, glaucous-green tinged with yellow, 2' long; cone of fruit 2-3' long, cylindrical. — Rich woods, western N. Y. to Ill., and southward. May, June. — Tree 60-90° high. Fruit when young slightly resembling a small cucumber, whence the common name.

3. *M. macrophylla*, Michx. (GREAT-LEAVED MAGNOLIA.) Leaves obovate-oblong, cordate at the narrowed base, pubescent and white beneath; flower open bell-shaped, white, with a purple spot at base; petals ovate, 6' long; cone of fruit ovoid. — S. E. Ky. and southward. May, June. — Tree 20-40° high. Leaves 1-3° long, somewhat clustered on the flowering branches.

* * Leaves crowded on the summit of the flowering branches in an umbrella-like circle; leaf-buds glabrous; flowers white, slightly scented.

4. *M. Umbrella*, Lam. (UMBRELLA-TREE.) Leaves obovate-lanceolate, pointed at both ends, soon glabrous, 1-2° long; petals obovate-oblong, 4-5' long. — S. Penn. to Ky. and southward. May. — A small tree. Fruit rose-color, 4-5' long, ovoid-oblong.

5. **M. Fraseri**, Walt. (EAR-LEAVED UMBRELLA-TREE.) Leaves oblong-ovate or spatulate, auriculate at the base, glabrous, 8-20' long; petals obovate-spatulate, with narrow claws, 4' long. — Va. and Ky., along the Alleghanies, and southward. April, May. — A slender tree 30-50° high. Flower more graceful and cone of fruit smaller than in the preceding.

2. LIRIODÉNDRON, L. TULIP-TREE.

Sepals 3, reflexed. Petals 6, in two rows, making a bell-shaped corolla. Anthers linear, opening outward. Pistils flat and scale-form, long and narrow, imbricating and cohering together in an elongated cone, dry, separating from each other and from the long and slender axis in fruit, and falling away whole, like a samara or key, indehiscent, 1-2-seeded in the small cavity at the base. Buds flat, sheathed by the successive pairs of flat and broad stipules joined at their edges, the folded leaves bent down on the petiole so that the apex points to the base of the bud. (Name from *λίριον*, lily or tulip, and *δένδρον*, tree.)

1. **L. Tulipifera**, L. — Rich soil, S. New Eng. to Mich., Wisc., and southward. May, June. — A most beautiful tree, sometimes 140° high and 8-9° in diameter in the Western States, where it is wrongly called WHITE POPLAR. Leaves very smooth, with 2 lateral lobes near the base, and 2 at the apex, which appears as if cut off abruptly by a broad shallow notch. Petals 2' long, greenish-yellow marked with orange. Cone of fruit 3' long.

ORDER 3. ANONACEÆ. (CUSTARD-APPLE FAMILY.)

Trees or shrubs, with naked buds and no stipules, a calyx of 3 sepals, and a corolla of 6 petals in two rows, valvate in the bud, hypogynous, polyandrous. — Petals thickish. Anthers adnate, opening outward; filaments very short. Pistils several or many, separate or cohering in a mass, fleshy or pulpy in fruit. Seeds anatropous, large, with a crustaceous seed-coat, and a minute embryo at the base of the ruminated albumen. — Leaves alternate, entire, feather-veined. Flowers axillary, solitary. — A tropical family, excepting the following genus: —

1. ASÍMINA, Adans. NORTH AMERICAN PAPAW.

Petals 6, increasing after the bud opens; the outer set larger than the inner. Stamens numerous in a globular mass. Pistils few, ripening 1-4 large and oblong pulpy several-seeded fruits. Seeds horizontal, flat, enclosed in a fleshy aril. — Shrubs or small trees with unpleasant odor when bruised; the lurid flowers solitary from the axils of last year's leaves. (Name from *Asiminier*, of the French colonists, from the Indian name *assimin*.)

1. **A. triloba**, Dunal. (COMMON PAPAW.) Leaves thin, obovate-lanceolate, pointed; petals dull-purple, veiny, round-ovate, the outer ones 3-4 times as long as the calyx. — Banks of streams in rich soil, western N. Y. and Penn. to Ill., S. E. Neb., and southward. April, May. — Tree 10-20° high; the young shoots and expanding leaves clothed with a rusty down, soon glabrous. Flowers appearing with the leaves, 1½' wide. Fruits 3-4' long, yellowish, sweet and edible in autumn.

ORDER 4. MENISPERMACEÆ. (MOONSEED FAMILY.)

Woody climbers, with palmate or peltate alternate leaves, no stipules, the sepals and petals similar, in three or more rows, imbricated in the bud; hypogynous, diœcious, 3-6-gynous; fruit a 1-seeded drupe, with a large or long curved embryo in scanty albumen. — Flowers small. Stamens several. Ovaries nearly straight, with the stigma at the apex, but often incurved in fruiting, so that the seed and embryo are bent into a crescent or ring. — Chiefly a tropical family.

* Sepals and petals present. Anthers 4-celled. Seed incurved.

1. **Cocculus**. Stamens, petals, and sepals each 6.

2. **Menispermum**. Stamens 12-24, slender. Petals 6-8.

** Petals none. Anthers 2-celled. Seed saucer-shaped.

3. **Calycocarpum**. Stamens in the sterile flowers 12; in the fertile flowers 6, abortive.

1. CÔCCULUS, DC.

Sepals, petals, and stamens 6, alternating in threes, the two latter short. Anthers 4-celled. Pistils 3-6 in the fertile flowers; style pointed. Drupe and seed as in *Menispermum*. — Flowers in axillary racemes or panicles. (An old name, a diminutive of *coccus*, κόκκος, a berry.)

1. **C. Carolinus**, DC. Minutely pubescent; leaves downy beneath, ovate or cordate, entire or sinuately or hastately lobed, variable in shape; flowers greenish, the petals in the sterile ones auriculate-inflexed below around the filaments; drupe red (as large as a small pea). — River-banks, Va. to S. Ill., Kan., and southward. July, Aug.

2. MENISPÉRMUM, L. MOONSEED.

Sepals 4-8. Petals 6-8, short. Stamens 12-24 in the sterile flowers, as long as the sepals; anthers 4-celled. Pistils 2-4 in the fertile flowers, raised on a short common receptacle; stigma broad and flat. Drupe globular, the mark of the stigma near the base, the ovary in its growth after flowering being strongly incurved, so that the (wrinkled and grooved) laterally flattened stone takes the form of a large crescent or ring. The slender embryo therefore is horseshoe-shaped; cotyledons filiform. — Flowers white, in small and loose axillary panicles. (Name from *μήνη*, moon, and *σπέρμα*, seed.)

1. **M. Canadense**, L. Leaves peltate near the edge, 3-7-angled or lobed. — Banks of streams; common. June, July. — Drupes black with a bloom, ripe in September, looking like frost grapes.

3. CALYCOCARPUM, Nutt. CUPSEED.

Sepals 6, petaloid. Petals none. Stamens 12 in the sterile flowers, short; anthers 2-celled. Pistils 3, spindle-shaped, tipped with a radiate many-cleft stigma. Drupe globular; the thin crustaceous putamen hollowed out like a cup on one side. Embryo foliaceous, heart-shaped. — Flowers greenish-white, in long racemose panicles. (Name from *κάλυξ*, a cup, and *καρπός*, fruit.)

1. **C. Lyoni**, Nutt. Leaves large, thin, deeply 3-5-lobed, cordate at the base; the lobes acuminate; drupe an inch long, black when ripe; the shell

crested-toothed on the edge of the cavity. — Rich soil, Ky. to S. Ill. and Kan., and southward. May. — Stems climbing to the tops of trees.

ORDER 5. BERBERIDACEÆ. (BARBERRY FAMILY.)

Shrubs or herbs, with the sepals and petals both imbricated in the bud, usually in two rows of 3 (rarely 2 or 4) each; the hypogynous stamens as many as the petals and opposite to them; anthers opening by 2 valves or lids hinged at the top. (Podophyllum is an exception, and Jeffersonia as respects the sepals in one row.) Pistil single. Filaments short. Style short or none. Fruit a berry or a pod. Seeds few or several, anatropous, with albumen. Embryo small, except in Berberis. Leaves alternate, with dilated bases or stipulate.

* Petals and stamens 6. Fruit few-seeded.

1. **Berberis**. Shrubs, with yellow flowers and wood; a pair of glandular spots on the base of each petal. Fruit a berry.
2. **Caulophyllum**. Herb, with greenish flowers; petals thick, much shorter than the sepals. Ovary soon bursting; the two seeds left naked.
3. **Diphyllia**. Herb with white flowers; petals much longer than the sepals. Berry 2-4-seeded.

* Petals 6-9. Stamens 8-18. Fruit many-seeded. Herbs.

4. **Jeffersonia**. Petals and stamens usually 8; anthers opening by uplifted valves. Pod opening by a lid.
5. **Podophyllum**. Petals 6-9. Stamens 12-18; anthers not opening by uplifted valves. Fruit a large berry.

1. BERBERIS, L. BARBERRY.

Sepals 6, roundish, with 2-6 bractlets outside. Petals 6, obovate, concave, with two glandular spots inside above the short claw. Stamens 6. Stigma circular, depressed. Fruit a 1-few-seeded berry. Seeds erect, with a crustaceous integument. — Shrubs, with yellow wood and inner bark, yellow flowers in drooping racemes, sour berries, and 1-9-foliate leaves. Stamens irritable. (Derived from *Berbērys*, the Arabic name of the fruit.)

1. **B. Canadensis**, Pursh. (AMERICAN BARBERRY.) Leaves repandly toothed, the teeth less bristly-pointed; racemes few-flowered; petals notched at the apex; berries oval; otherwise as in the next. — Alleghanies of Va. and southward; not in Canada. June. — Shrub 1-3° high.

B. vulgaris, L. (COMMON BARBERRY.) Leaves scattered on the fresh shoots of the season, mostly reduced to sharp triple or branched spines, from the axils of which the next season proceed rosettes or fascicles of obovate-oblong closely bristly-toothed leaves (the short petiole jointed!), and drooping many-flowered racemes; petals entire; berries oblong, scarlet. — Thickets and waste grounds in E. New Eng., where it has become thoroughly wild; elsewhere occasionally spontaneous. May, June. (Nat. from Eu.)

2. CAULOPHYLLUM, Michx. BLUE COHOSH.

Sepals 6, with 3 or 4 small bractlets at the base, ovate-oblong. Petals 6 thick and gland-like somewhat kidney-shaped or hooded bodies, with short claws, much smaller than the sepals, one at the base of each of them. Stamens 6; anthers oblong. Pistil gibbous; style short; stigma minute and unilateral;

ovary bursting soon after flowering by the pressure of the 2 erect, enlarging seeds, and withering away; the spherical seeds naked on their thick seed-stalks, looking like drupes, the fleshy integument turning blue; albumen horny. — A perennial glabrous herb, with matted knotty rootstocks, sending up in early spring a simple and naked stem, terminated by a small raceme or panicle of yellowish-green flowers, and a little below bearing a large triterately compound sessile leaf (whence the name, from *καυλός*, stem, and *φύλλον*, leaf; the stem seeming to form a stalk for the great leaf.)

1. **C. thalictroides**, Michx. (Also called PAPPOOSE-ROOT.) Stems 1-2½° high; leaflets obovate wedge-form, 2-3-lobed, a smaller biternate leaf often at the base of the panicle; flowers appearing while the leaf is yet small. — Deep rich woods; common westward. April, May. — Whole plant glaucous when young, as also the seeds, which are as large as peas.

3. DIPHYLLIA, Michx. UMBRELLA-LEAF.

Sepals 6, fugacious. Petals 6, oval, flat, larger than the sepals. Stamens 6; anthers oblong. Ovary oblong; style hardly any; stigma depressed. Ovules 5 or 6, attached to one side of the cell below the middle. Berry globose, few-seeded. Seeds oblong, with no aril. — A perennial glabrous herb, with thick horizontal rootstocks, sending up each year either a huge centrally peltate and cut-lobed, rounded, umbrella-like radical leaf, on a stout stalk, or a flowering stem bearing two similar (but smaller and more 2-cleft) alternate leaves which are peltate near one margin, and terminated by a cyme of white flowers. (Name composed of *δύς*, double, and *φύλλον*, leaf.)

1. **D. cymosa**, Michx. Root-leaves 1-2° in diameter, 2-cleft, each division 5-7-lobed; lobes toothed; berries blue. — Wet or springy places, mountains of Va. and southward. May.

4. JEFFERSONIA, Barton. TWIN-LEAF.

Sepals 4, fugacious. Petals 8, oblong, flat. Stamens 8; anthers oblong-linear, on slender filaments. Ovary ovoid, soon gibbous, pointed; stigma 2-lobed. Pod pear-shaped, opening half-way round horizontally, the upper part making a lid. Seeds many in several rows on the lateral placenta, with a fleshy lacerate aril on one side. — A perennial glabrous herb, with matted fibrous roots, long-petioled root-leaves, parted into 2 half-ovate leaflets, and simple naked 1-flowered scapes. (Named in honor of Thomas Jefferson.)

1. **J. diphylla**, Pers. Low; flower white, 1' broad, the parts rarely in threes or fives. — Woods, western N. Y. to Wisc. and southward. April, May. — Called *Rheumatism-root* in some places.

5. PODOPHYLLUM, L. MAY-APPLE. MANDRAKE.

Flower-bud with three green bractlets, which early fall away. Sepals 6, fugacious. Petals 6 or 9, obovate. Stamens twice as many as the petals in our species; anthers linear-oblong, not opening by uplifted valves. Ovary ovoid; stigma sessile, large, thick and undulate. Fruit a large fleshy berry. Seeds covering the very large lateral placenta, in many rows, each seed enclosed in a pulpy aril, all forming a mass which fills the cavity of the fruit. — Perennial herbs, with creeping rootstocks and thick fibrous roots. Stems

2-leaved, 1-flowered. (Name from *ποῦς*, a foot, and *φύλλον*, a leaf, probably referring to the stout petioles.)

1. *P. peltatum*, L. Stamens 12-18; leaves 5-9-parted, the lobes oblong, rather wedge-shaped, somewhat lobed and toothed at the apex. — Rich woods, common. May. — Flowerless stems terminated by a large round 7-9-lobed leaf, peltate in the middle like an umbrella. Flowering stems bearing two one-sided leaves, with the stalk fixed near their inner edge; the nodding white flower from the fork nearly 2' broad. Fruit ovoid, 1-2' long, ripe in July, sweet and slightly acid, edible. The leaves and roots are drastic and poisonous! — Found occasionally with from 2 to 6 carpels!

ORDER 6. NYMPHÆACEÆ. (WATER-LILY FAMILY.)

Aquatic perennial herbs, with horizontal rootstocks and peltate or sometimes only cordate leaves floating or emersed; the ovules borne on the sides or back (or when solitary hanging from the summit) of the cells, not on the ventral suture; the embryo enclosed in a little bag at the end of the albumen next the hilum, except in Nelumbium, which has no albumen. Radicle hardly any; cotyledons thick and fleshy, enclosing a well-developed plumule. — Flowers axillary, solitary. Vernal involute. Rootstocks apparently endogenous. — The few genera differ so much in the flower and fruit that they are separated into the three following suborders.

SUBORDER I. Cabombææ. Sepals and petals each 3 or sometimes 4, hypogynous and persistent. Stamens definite (3-18). Pistils 2-18, free and distinct, coriaceous and indehiscent, 1-3-seeded on the dorsal suture. — Stems slender, leafy, coated with mucilage. Flowers small.

1. *Cabomba*. Stamens 3-4. Carpels 2-3. Submersed leaves capillary-multifid.
2. *Brasenia*. Stamens 12-18. Carpels 4-18. Leaves all peltate.

SUBORDER II. Nelumboneæ. Sepals and petals numerous in several rows, passing gradually into each other, and with the indefinitely numerous stamens hypogynous and deciduous. Pistils several, 1-ovuled, separately immersed in the obconical receptacle, which is much enlarged and broadly top-shaped at maturity, the imbedded nut-like fruits resembling small acorns. Embryo large; no albumen. — Petioles and peduncles all from the tuberous rootstock, the centrally peltate leaves and the flowers large.

3. *Nelumbo*. Character of the Suborder.

SUBORDER III. Nymphaeaceæ proper. Sepals 4-6, and petals numerous in many rows, persistent or decaying away, either hypogynous or variously adnate to the surface of the compound 8-30-celled ovary, which is formed by the union of as many carpels; the numerous ovules inserted over the whole inner face of the cells, except at the ventral suture. Stigmas radiate as in Poppy. Fruit baccate, with a firm rind. Petioles and peduncles from a thick rootstock.

4. *Nymphaea*. Petals adnate to the ovary, large; the stamens on its summit.
5. *Nuphar*. Petals (very small and stamen-like) and stamens inserted under the ovary.

1. CABÓMBA, Aublet.

Sepals 3. Petals 3, oval, bi-auriculate above the very short claw. Stamens 3-6; anthers short, extrorse. Pistils 2-4, with small terminal stigmas. Seeds 3, pendulous. — Slender, mainly submersed, with opposite or verticillate capillary-dissected leaves, a few floating, alternate and centrally peltate. Flowers single on long axillary peduncles. (Probably an aboriginal name.)

1. *C. Caroliniana*, Gray. Floating leaves linear-oblong or -obovate, often with a basal notch; flowers 6-8" broad, white with yellow spots at base; stamens 6. — Ponds, S. Ill. (May-Sept., *Schneck*) to Fla. and Tex.

2. BRASENIA, Schreber. WATER-SHIELD.

Sepals 3 or 4. Petals 3 or 4, linear, sessile. Stamens 12-18; filaments filiform; anthers innate. Pistils 4-18, forming little club-shaped indehiscent pods; stigmas linear. Seeds 1-2, pendulous on the dorsal suture! — Rootstock creeping. Leaves alternate, long-petioled, centrally peltate, oval, floating. Flowers axillary, small, dull-purple. (Name of uncertain origin.)

1. *B. peltata*, Pursh. Leaves entire, 1-4' across. — Ponds and slow streams. June-Aug. (Asia, Africa and Australia.)

3. NELÚMBO, Tourn. SACRED BEAN.

The only genus of the suborder. (*Nelumbo* is the Ceylonese name of the East Indian species, the pink-flowered *N. speciosa*.)

1. *N. lutea*, Pers. (YELLOW NELUMBO, or WATER CHINQUAPIN.) Leaves usually raised high out of the water, circular, with the centre depressed or cupped, 1-2° in diameter; flower pale yellow, 5-10' broad; anthers tipped with a slender hooked appendage. (*Nelumbium luteum*, Willd.) — S. Conn. (probably of Indian introduction) to Lake Ontario, Mich., Minn., E. Neb., and southward; rare in the Middle States. — Tubers farinaceous and edible. Seeds also eatable. Embryo like that of *Nymphaea* on a large scale; cotyledons thick and fleshy, enclosing a plumule of 1 or 2 well-formed young leaves, enclosed in a delicate stipule-like sheath.

4. NYMPHÆA, Tourn. WATER-NYMPH. WATER-LILY.

Sepals 4, green outside, nearly free. Petals numerous, in many rows, the innermost gradually passing into stamens, imbricately inserted all over the ovary. Stamens indefinite, inserted on the ovary, the outer with dilated filaments. Ovary 12-35-celled, the concave summit tipped with a globular projection at the centre, around which are the radiate stigmas; these project at the margin, and are extended into linear and incurved sterile appendages. Fruit depressed-globular, covered with the bases of the decayed petals, maturing under water. Seeds enveloped by a sac-like aril. — Flowers white, pink, yellow, or blue, very showy. (Dedicated by the Greeks to the Water-Nymphs.)

1. *N. odorata*, Ait. (SWEET-SCENTED WATER-LILY.) Rootstock with few and persistent branches; leaves orbicular, cordate-cleft at the base to the petiole (5-9' wide), the margin entire; stipules broadly triangular or almost kidney-shaped, notched at the apex, appressed to the rootstock; flower white, very sweet scented (often as much as 5' in diameter when fully expanded, opening early in the morning, closing in the afternoon); petals obtuse; anthers

blunt; aril much longer than the distinctly stipitate *oblong seeds* (these about $1\frac{1}{2}$ " long).—Ponds and still or slow-flowing water; common. June–Sept.—Varies with pinkish-tinged and rarely with bright pink-red flowers (especially at Barnstable, Mass.), the leaves often crimson underneath,—and in size by gradations into

Var. *minor*, Sims, with leaves only 2–5' and flowers 2–3' broad.—Shallow water, in cold bogs and in sandy soil.

2. *N. reniformis*, DC. (TUBER-BEARING W.) Leaves reniform-orbicular, mostly larger (8–15' wide) and more prominently ribbed than the last, rarely purplish beneath; rootstock bearing numerous spontaneously detaching *often compound tubers*; flower scentless (or with a slight odor as of apples), white, never pinkish, $4\frac{1}{2}$ –9' in diameter, the petals proportionally broader and blunter than in *n. 1*; the fruit more depressed, and with fewer but much larger (i. e. twice as broad) *globular-ovoid seeds*, which when mature are barely enclosed by the aril and not stipitate. (*N. tuberosa*, Paine.)—Lakes, slow rivers, etc., western N. Y. (from Oneida Lake, Paine) and near Meadville, Penn., to Mich., E. Neb., and probably in the Southern States. July–Sept.

5. *NÛPHAR*, Smith. YELLOW POND-LILY. SPATTER-DOCK.

Sepals 5, 6, or sometimes more, colored, or partly green outside, roundish, concave. Petals numerous, small and thickish, stamen-like or scale-like, inserted with the very numerous short stamens on the receptacle under the ovary, not surpassing the disk-like 8–24-rayed sessile stigma, persistent and at length recurved. Fruit ovoid, naked, usually ripening above water. Aril none.—Rootstock creeping, cylindrical. Leaves with a deep sinus at the base. Flowers yellow or sometimes tinged with purple, produced all summer (Name said to be of Arabic origin.)

1. *N. advena*, Ait. f. Sepals 6, unequal; petals shorter than the stamens and resembling them, thick and fleshy, truncate; stigma nearly entire, 12–24-rayed, pale red; ovary and fruit ($1\frac{1}{2}$ ' long) ovate, not contracted above into a narrow neck; thin submersed leaves seldom present; floating or emersed and erect leaves thick (6–12' long), from roundish to ovate or almost oblong, the sinus open, or closed or narrow.—Very common, in still or stagnant water; stout and coarse; flower often partly purplish (var. *variegatum*, Engelm.).

Var. *minus*, Morong. More slender; leaves somewhat smaller (3–8' long); flowers usually smaller (sepals 12–15" long); petals spatulate; stigmas 9–13-rayed, crenately toothed, bright red or crimson; fruit 1' long, contracted above. (*N. rubrodiscum*, Morong. *N. luteum*, Man.; not Smith.)—N. Vt. to Mich. and Penn. Probably a hybrid between this and the next species.

2. *N. Kalmianum*, Ait. Very slender and with slender rootstock; submersed leaves thin, round-reniform, the floating broadly elliptical with a deep narrow sinus, 2–4' long; sepals usually 5, the flowers an inch broad or less; petals spatulate or obovate; stigmas 7–10-rayed, dark red; fruit globular with a short neck (6–9" in diameter). (*N. luteum*, var. *pumilum*, Man.)—Maine to Penn. and Minn., and northward.

3. *N. sagittifolium*, Pursh. Rootstock stout; leaves narrowly oblong to oblong-lanceolate with a short sinus, 6–15' long; flowers small (1' broad).—S. Ind. and Ill. (*Schneck*), and southward.

ORDER 7. SARRACENIACEÆ. (PITCHER-PLANTS.)

Polyandrous and hypogynous bog-plants, with hollow pitcher-form or trumpet-shaped leaves,—comprising one plant in the mountains of Guiana, another (*Darlingtonia*, Torr.) in California, and the following genus in the Atlantic United States.

1. SARRACENIA, Tourn. SIDE-SADDLE FLOWER.

Sepals 5, with 3 bractlets at the base, colored, persistent. Petals 5, oblong or obovate, incurved, deciduous. Stamens numerous, hypogynous. Ovary compound, 5-celled, globose, crowned with a short style, which is expanded at the summit into a very broad and petal-like, 5-angled, 5-rayed, umbrella-shaped body; the 5 delicate rays terminating under the angles in as many little hooked stigmas. Capsule with a granular surface, 5-celled, with many-seeded placentæ in the axis, loculicidally 5-valved. Seeds anatropous, with a small embryo at the base of fleshy albumen.—Perennials, yellowish-green and purplish; the hollow leaves all radical, with a wing on one side, and a rounded arching hood at the apex. Scape naked, 1-flowered; flower nodding. (Named by Tournefort in honor of Dr. Sarrasin of Quebec, who first sent our Northern species, and a botanical account of it, to Europe.)

1. *S. purpurea*, L. (SIDE-SADDLE FLOWER. PITCHER-PLANT. HUNTS-MAN'S CUP.) Leaves pitcher-shaped, ascending, curved, broadly winged; the hood erect, open, round heart-shaped; flower deep purple; the fiddle-shaped petals arched over the greenish-yellow style.—Varies rarely with greenish-yellow flowers, and without purple veins in the foliage.—Peat-bogs; common from N. Eng. to Minn., N. E. Iowa, and southward east of the Alleghanies. June.—The curious leaves are usually half filled with water and drowned insects. The inner face of the hood is clothed with stiff bristles pointing downward. Flower globose, nodding on a scape a foot high; it is difficult to fancy any resemblance between its shape and a side-saddle, but it is not very unlike a pillion.

2. *S. flava*, L. (TRUMPETS.) Leaves long (1–3°) and trumpet-shaped, erect, with an open mouth, the erect hood rounded, narrow at the base; wing almost none; flower yellow, the petals becoming long and drooping.—Bogs, Va. and southward. April.

ORDER 8. PAPAVERACEÆ. (POPPY FAMILY.)

Herbs with milky or colored juice, regular flowers with the parts in twos or fours, fugacious sepals, polyandrous, hypogynous, the ovary 1-celled with two or more parietal placentæ.—Sepals 2, rarely 3, falling when the flower expands. Petals 4–12, spreading, imbricated and often crumpled in the bud, early deciduous. Stamens rarely as few as 16, distinct. Fruit a dry 1-celled pod (in the Poppy imperfectly many-celled, in *Glaucium* 2-celled). Seeds numerous, anatropous, often crested, with a minute embryo at the base of fleshy and oily albumen.—Leaves alternate, without stipules. Peduncles mostly 1-flowered. Juice narcotic or acrid.

* Petals 8-12, not crumpled in the bud, white. Pod 1-celled, 2-valved.

1. *Sanguinaria*. Petals white. Leaves and 1-flowered scape from a short rootstock.

** Petals 4, crumpled in the bud. Pod 2-valved or more.

+ Pod 2-4-valved, the valves separating to the base from the placentas. Leaves pinnately parted. Flowers yellow.

2. *Stylophorum*. Pod bristly; style distinct; stigmas and placentas 3-4.

3. *Chelidonium*. Pod linear, smooth; style almost none; stigmas and placentas 2.

4. *Glaucium*. Pod rough, long-linear, 2-celled by a spongy partition; style none.

+ + Pod 4-20-valved, dehiscent only at the top or to the middle.

5. *Papaver*. Ovary incompletely many-celled; stigmas united into a radiate sessile crown.

6. *Argemone*. Stigmas (sessile) and placentas 4-6. Pod and leaves prickly.

1. *SANGUINARIA*, Dill. BLOOD-ROOT.

Sepals 2. Petals 8-12, spatulate-oblong, the inner narrower. Stamens about 24. Style short; stigma 2-grooved. Pod oblong, turgid, 1-celled, 2-valved. Seeds with a large crest. — A low perennial, with thick prostrate premorse rootstocks, surcharged with red-orange acrid juice, sending up in earliest spring a rounded palmate-lobed leaf, and a 1-flowered naked scape. Flower white, handsome, the bud erect, the petals not crumpled. (Name from the color of the juice.)

1. *S. Canadensis*, L. — Open rich woods; common. April, May.

2. *STYLOPHORUM*, Nutt. CELANDINE POPPY.

Sepals 2, hairy. Petals 4. Style distinct, columnar; stigma 2-4-lobed. Pods bristly, 2-4-valved to the base. Seeds conspicuously crested. — Perennial low herbs, with stems naked below and oppositely 2-leaved, or sometimes 1-3-leaved, and umbellately 1-few-flowered at the summit; the flower-buds and the pods nodding. Leaves pinnately parted or divided. Juice yellow. (From *στόλος*, *style*, and *φέρω*, *to bear*, one of the distinctive characters.)

1. *S. diphylum*, Nutt. Leaves pale or glaucous beneath, smoothish, deeply pinnatifid into 5 or 7 oblong sinuate-lobed divisions, and the root-leaves often with a pair of smaller and distinct leaflets; peduncles equalling the petioles; flower deep yellow (2' broad); stigmas 3 or 4; pod oval. — Damp woods, W. Penn. to Wisc. and Tenn. May. — Foliage and flower resembling Celandine.

3. *CHELIDONIUM*, L. CELANDINE.

Sepals 2. Petals 4. Stamens 16-24. Style nearly none; stigma 2-lobed. Pod linear, slender, smooth, 2-valved, the valves opening from the bottom upward. Seeds crested. — Biennial herb with brittle stems, saffron-colored acrid juice, pinnately divided or 2-pinnatifid and toothed or cut leaves, and small yellow flowers in a pedunculate umbel; buds nodding. (Ancient Greek name from *χελιδών*, the *swallow*, because its flowers appear with the swallows.)

C. majus, L. (CELANDINE.) Waste grounds near dwellings. May-Aug. (Adv. from Eu.)

4. *GLAUCIUM*, Tourn. HORN-POPPY.

Sepals 2. Petals 4. Style none; stigma 2-lobed or 2-horned. Pod very long and linear, completely 2-celled by a spongy false partition; seeds crest-

less. — Annuals or biennials, with saffron-colored juice, clasping leaves, and solitary yellow flowers. (The Greek name, *γλαύκιον*, from the glaucous foliage.)

G. luteum, Scop. Lower leaves pinnatifid; upper ones sinuate-lobed and toothed, cordate-clasping; pods rough (6-10' long). — Waste places S. E. New Eng., Md., and Va.; not common. (Adv. from Eu.)

5. *PAPAVER*, Tourn. POPPY.

Sepals mostly 2. Petals mostly 4. Stigmas united in a flat 4-20-rayed crown, resting on the summit of the ovary and capsule; the latter short and turgid, with 4-20 many-seeded placentas projecting like imperfect partitions, opening by as many pores or chinks under the edge of the stigma. — Herbs with a white juice; the flower-buds nodding. (Derivation obscure.) — Three annual species of the Old World are sparingly adventive; viz.:

P. somniferum, L. (COMMON POPPY.) Smooth, glaucous; leaves clasping, wavy, incised and toothed; pod globose; corolla mostly white or purple. — Near dwellings in some places. (Adv. from Eu.)

P. dubium, L. (SMOOTH-FRUITED CORN-POPPY.) Pinnatifid leaves and the long stalks bristly; pods club-shaped, smooth; corolla light scarlet. — Cult. grounds, Westchester, Penn., and southward; rare. (Adv. from Eu.)

P. argemone, L. (ROUGH-FRUITED C.) Smaller, with finer-cut leaves and paler flowers than the last; pods club-shaped and bristly. — Waste grounds, near Philadelphia. (Adv. from Eu.)

6. *ARGEMONE*, L. PRICKLY POPPY.

Sepals 2 or 3, often prickly. Petals 4-6. Style almost none; stigmas 3-6, radiate. Pod oblong, prickly, opening by 3-6 valves at the top. Seeds crested. — Annuals or biennials, with prickly bristles and yellow juice. Leaves sessile, sinuate-lobed, and with prickly teeth, often blotched with white. Flower-buds erect, short-peduncled. (Name from *ἄργημα*, a disease of the eye, for which the juice of a plant so called by the Greeks was a supposed remedy.)

1. *A. platyceras*, Link & Otto. Setose-hispid all over; petals white, 1½-2' long; capsule armed with stout spines. — Central Kan. and Neb., south and westward.

A. mexicana, L. (MEXICAN P.) Flowers yellow, rarely white. — Waste places, southward. July-Oct. (Adv. from trop. Amer.)

ORDER 9. *FUMARIACEÆ*. (FUMITORY FAMILY.)

Delicate smooth herbs, with watery juice, compound dissected leaves, irregular flowers, with 4 somewhat united petals, 6 diadelphous stamens, and 2-merous pods and seeds like those of the Poppy Family. — Sepals 2, small and scale-like. Corolla flattened, closed; the 4 petals in two pairs; the outer with spreading tips, and one or both of them spurred or saccate at the base; inner pair narrower, and their callous crested tips united over the stigma. Stamens in two sets of 3 each, placed opposite the larger petals, hypogynous; their filaments often united; middle anther of each set 2-celled, the lateral ones 1-celled. Pod 1-celled, either 1-seeded and indehiscent, or several-seeded with 2 parietal placentas and deciduous valves. — Leaves delicate, usually alternate, without stipules. Slightly bitter, innocent plants.