

exceeding the calyx, and the throat appendaged. (Roots perennial, long and deep, yielding a red dye.)

* Corolla-tube one half to twice longer than the calyx, not much longer than the ample limb, the lobes entire; appendages little if at all projecting.

2. *L. hirtum*, Lehm. Hispid with bristly hairs (1-2° high); stem-leaves lanceolate or linear, those of the flowering branches ovate-oblong, bristly-ciliate; corolla woolly-bearded at the base inside (limb 8-12" broad); flowers distinctly peduncled, crowded, showy; fruiting calyx (½ long) 3-4 times longer than the nutlets. — Pine barrens, etc., N. Y. to Minn., south and westward. April-June.

3. *L. canescens*, Lehm. (Puccoon of the Indians.) Softly hairy and more or less hoary (6-15' high); leaves obtuse, linear-oblong, or the upper ovate-oblong, more or less downy beneath and roughish with close appressed hairs above; flowers sessile; corolla naked at the base within; fruiting calyx (3" long) barely twice the length of the nutlets. — Plains and open woods, in sandy soil, Ont. to Va., Ala., and westward. May.

** Corolla-tube in well-developed flowers 2-4 times the length of the calyx and of its erose-toothed lobes, and the appendages conspicuous and arching; later flowers small, cleistogenous.

4. *L. angustifolium*, Michx. Erect or diffusely branched from the base, 6-18' high, minutely rough-strigose and hoary; leaves linear; flowers pedicelled, leafy-bracted, of two sorts; the earlier large and showy (corolla-tube 8-18" long), the later and those of more diffusely branching plants, with inconspicuous or small and pale corollas, without crests, and the pedicels commonly recurved in fruit; nutlets usually punctate. (*L. longiflorum*, Spreng.; the long-flowered form.) — Dry and sterile or sandy soil, Ind. and Mich. to the Dakotas and Tex., and westward.

8. ONOSMODIUM, Michx. FALSE GROMWELL.

Calyx 5-parted; the divisions linear and erect. Corolla tubular, or tubular-funnel-form, not crested (the sinuses minutely hooded-inflexed), the 5 acute lobes converging or barely spreading. Anthers oblong-linear or arrow-shaped, mucronate, inserted in the throat. Style thread-form, much exerted. Nutlets bony, ovoid, smooth, erect, fixed by the base; the scar minute, not hollowed out. — Chiefly perennial herbs, coarse and hispid, with oblong and sessile ribbed-veined leaves, and white, greenish, or yellowish flowers, in at length elongated and erect leafy raceme-like clusters; in summer. — Our species belong to true *ONOSMODIUM*, with smooth included anthers on very short filaments; the corolla rarely twice the length of the calyx. (Named from the likeness to the genus *Onosma*, which name means ass-smell.)

1. *O. Virginianum*, DC. Clothed all over with harsh and rigid appressed short bristles; stems rather slender (1-2° high); leaves narrowly oblong, or oblong-lanceolate (1-2½ long), the lower narrowed at base; lobes of the narrow corolla lance-awl-shaped, sparingly bearded outside with long bristles. — Banks and hillsides, N. Eng. to Fla., Mo., and La.

2. *O. Carolinianum*, DC. Shaggy all over with long and spreading bristly hairs; stem stout, upright (2-4° high); leaves ovate-lanceolate or

oblong-lanceolate, acute; lobes of the rather broad corolla ovate-triangular or triangular-lanceolate, thickly hirsute outside. — Alluvial grounds, W. New York to Minn., south to Ga. and Tex.

Var. *molle*, Gray. Pubescence shorter and less spreading or appressed, 1-2° high; leaves mostly smaller (2' long), when young softly strigose-canescens beneath. (*O. molle*, Michx.) — Ill. to Minn., Tex., and westward.

9. SÝMPHYTUM, Tourne. COMFREY.

Corolla oblong-tubular, inflated above, 5-toothed; the short teeth spreading; the throat closed with 5 converging linear-awl-shaped scales. Stamens included; anthers elongated. Style thread-form. Nutlets smooth, ovate, erect, fixed by the large hollowed base, which is finely toothed on its margin. — Coarse perennial herbs, with thickened bitterish mucilaginous roots; the nodding raceme-like clusters either single or in pairs. (Ancient Greek name from *συμφεῖν*, to grow together, probably for its reputed healing virtues.)

S. OFFICINALE, L. (COMMON COMFREY.) Hairy, branched, winged above by the decurrent leaves; the lower leaves ovate-lanceolate, tapering into a petiole, the upper narrower; corolla yellowish-white, rarely purplish. — Moist places; escaped from gardens. June. (Adv. from Eu.)

10. LYCÓPSIS, L. BUGLOSS.

Corolla funnel-shaped, with curved tube and slightly unequal limb; the throat closed with 5 convex obtuse bristly scales opposite the lobes. Stamens and style included. Nutlets rough-wrinkled, erect, fixed by a hollowed-out base. — Annuals. (Name from *λύκος*, a wolf, and *ὄψις*, face.)

L. ARVENSIS, L. (SMALL BUGLOSS.) Very rough-bristly (1° high); leaves lanceolate; flowers in leafy raceme-like clusters; calyx as long as the tube of the small blue corolla. — Dry or sandy fields, New Eng. to Va.; scarce. (Adv. from Eu.)

11. ÉCHIUUM, Tourne. VIPER'S BUGLOSS.

Corolla with a cylindraceous or funnel-form tube, and a more or less unequal spreading 5-lobed border; lobes rounded, the expanded throat naked. Stamens mostly exerted, unequal. Style thread-form. Nutlets roughened or wrinkled, fixed by a flat base. (A name of Dioscorides, from *ἔχis*, a viper.)

E. VULGARE, L. (BLUE-WEED.) Rough-bristly biennial; stem erect (2° high), mostly simple; stem-leaves linear-lanceolate, sessile; flowers showy, in short lateral clusters, disposed in a long and narrow thyrsus; corolla reddish-purple changing to brilliant blue (rarely pale). — Roadsides and meadows of the Middle Atlantic States. June. (Nat. from Eu.)

ORDER 73. CONVULVULACEÆ. (CONVOLVULUS FAMILY.)

Chiefly twining or trailing herbs, often with some milky juice, with alternate leaves (or scales) and regular 5-androus flowers; a calyx of 5 imbricated sepals; a 5-plaited or 5-lobed corolla convolute or twisted in the bud (imbricate in n. 6); a 2-celled (rarely 3-celled) ovary (or in one tribe 2 separate pistils), with a pair of erect ovules in each cell, the cells sometimes doubled by a false partition between the seeds, so becoming 4-celled; the embryo large, curved or coiled in mucilaginous albumen. — Fruit a globular 2-6-seeded capsule. Flowers mostly showy, on axillary peduncles; pedicels articulated, often 2-bracted. (Many are culti-

vated for ornament, and one, the Sweet Potato, for its edible farinaceous roots; those of several species are cathartic; e. g. Jalap.)

Tribe I. DICHONDREÆ. Carpels 2 or 4, distinct or nearly so; styles 2, basilar. Creeping herbs.

1. **Dichondra.** Corolla deeply 5-cleft. Pistils 2, one-seeded.

Tribe II. CONVULVULÆ. Ovary entire. Leafy plants, mostly twiners.

2. **Ipomœa.** Style undivided, with stigma capitate or 2-3-globose.

3. **Convolvulus.** Style undivided or 2-cleft only at apex; stigmas 2, linear-filiform to subulate or ovate.

4. **Breweria.** Style 2-cleft or 2-parted; the divisions simple; stigmas capitate.

5. **Evolvulus.** Styles 2, each 2-cleft; stigmas linear-filiform. Not twining.

Tribe III. CUSCUTEÆ. Ovary entire. Leafless parasitic twining herbs, never green. Embryo filiform, coiled, without cotyledons.

6. **Cuscuta.** The only genus of the group.

1. DICHONDRA, Forst.

Calyx 5-parted. Corolla broadly bell-shaped, 5-cleft. Stamens included. Styles, ovaries, and utricular 1-2-seeded capsules 2, distinct. Stigmas thick. — Small and creeping perennial herbs, soft-pubescent, with kidney-shaped entire leaves, and axillary 1-flowered bractless peduncles. Corolla small, yellowish or white. (Name from *δῖς*, double, and *χόνδρος*, a grain; from the fruit.)

1. **D. repens**, Forst. Leaves round-kidney-shaped, pubescent, green both sides; corolla not exceeding the calyx (1-1½" long). — Wet ground, Va. to Tex., near the coast.

2. IPOMŒA, L. MORNING GLORY.

Calyx not bracteate at base, but the outer sepals commonly larger. Corolla salver-form or funnel-form to nearly campanulate; the limb entire or slightly lobed. Style undivided, terminated by a single capitate or 2-3-globose stigma. Capsule globular, 4-6 (by abortion fewer)-seeded, 2-4-valved. (Name, according to Linnæus, from *ἵψ*, a Bindweed, and *μοῖος*, like; but *ἵψ* is a worm.)

§ 1. **QUAMOCLIT.** Corolla salver-form, or with somewhat funnel-form but narrow tube; stamens and style exerted; flowers red. Annual twiners.

1. **QUAMOCLIT**, L. (CYPRESS-VINE.) Leaves pinnately parted into linear-thread-shaped delicate parallel lobes; peduncles 1-flowered; corolla narrow, scarlet-red, or sometimes white. (Quamoclit vulgaris, Choisy.) — Sparingly spontaneous southward. (Trop. Amer., etc.)

1. **COCCINEA**, L. Leaves heart-shaped, acuminate, entire or angled; sepals awn-pointed; corolla light scarlet (1' long). (Quamoclit coccinea, Moench.) — River-banks, etc., Ohio to Ill., Va., and southward. (Probably indigenous in N. Mex. and Arizona.)

§ 2. **IPOMŒA** proper. Corolla funnel-form or nearly campanulate, contorted in the bud; stamens and style not exerted.

* (MORNING GLORY.) Lobes of stigma and cells 3; sepals long and narrow, attenuate upward, mostly hirsute below; corolla purple, blue, and white.

1. **hederacea**, Jacq. Stems retrorsely hairy; leaves heart-shaped, 3-lobed, the lobes acute or acuminate; peduncles short, or rather long, 1-3-flowered; calyx densely hairy below; corolla white and purple or pale blue (1-1½" long). (I. Nil. of Manual, not Roth.) — Waste and cultivated ground, Penn. to Fla., and La. (Trop. Amer.)

1. **PURPUREA**, Lam. (COMMON MORNING-GLORY.) Annual; stems retrorsely hairy; leaves heart-shaped, acuminate, entire; peduncles long, umbellately 3-5-flowered; calyx bristly-hairy below; corolla funnel-form (2' long), purple, varying to white. — Escaped in cultivated grounds. (Trop. Amer.)

* * Stigma 2-lobed or entire; cells 2, each 2-seeded; sepals broader, imbricated.

+ Leaves cordate, acuminate.

1. **I. pandurata**, Meyer. (WILD POTATO-VINE. MAN-OF-THE-EARTH.) Perennial, smooth or nearly so when old, trailing or sometimes twining; leaves occasionally contracted at the sides so as to be fiddle-shaped; peduncles longer than the petioles, 1-5-flowered; sepals smooth, ovate-oblong, very obtuse; corolla open-funnel-form (3' long), white with purple in the tube. — Dry ground, Conn. to Mich., south to Fla. and Tex. June-Aug. Stems long and stout, from a huge root, which often weighs 10-20 pounds.

2. **I. lacunosa**, L. Annual; rather smooth; stem twining and creeping, slender; leaves entire or angled-lobed; peduncles short, 1-3-flowered; sepals lance-oblong, pointed, bristly-ciliate or hairy, half the length of the sharply 5-lobed (white, ½-¾" long) corolla. — River-banks and low grounds, Penn. to Ill., south to S. C. and Tex.

+ + Leaves linear; not twining.

3. **I. leptophylla**, Torr. Perennial, very glabrous; stems erect or ascending (2-4° high), with slender recurving branches, from an immense root (weighing 10-100 pounds); leaves 2-4' long, 2-3" wide, short-petioled, acute; peduncles short, 1-2-flowered; sepals broadly ovate, very obtuse, outer ones shorter; corolla pink-purple, funnel-form, about 3' long. — Plains of Neb. to central Kan., Tex., and westward.

3. CONVULVULUS, Tourn. BINDWEED.

Corolla funnel-form to campanulate. Stamens included. Style undivided or 2-cleft only at the apex; stigmas 2, linear-filiform to subulate or ovate. Capsule globose, 2-celled, or imperfectly 4-celled by spurious partitions between the 2 seeds, or by abortion 1-celled, mostly 2-4-valved. — Herbs or somewhat shrubby plants, either twining, erect, or prostrate. (Name from *convolvere*, to entwine.)

§ 1. **CALYSTÈGIA.** Stigmas oval to oblong; calyx enclosed in 2 broad leafy bracts.

1. **C. spithameus**, L. Downy; stem low and mostly simple, upright or ascending (6-12' long); leaves oblong, with or without a heart-shaped or auricled base; corolla white (2' long); stigmas oval. (Calystegia spithamea, Pursh.) — Dry and sandy or rocky soil; not rare.

2. **C. sepium**, L. (HEDGE BINDWEED.) Glabrous, or more or less pubescent; stem twining or sometimes trailing extensively; leaves triangular-halberd-shaped or arrow-shaped, acute or pointed, the basal lobes obliquely truncate and often somewhat toothed or sinuate-lobed; peduncles 4-angled; bracts commonly acute; corolla white or tinged with rose-color (1½-2' long). (Calystegia sepium, R. Br.) — Moist alluvial soil, or along streams; N. Atlantic States and westward. (Eu., etc.)

Var. **Americanus**, Sims. Glabrous; corolla pink or rose-purple; bracts obtuse. (C. sepium of Am. authors mainly.) — Common, across the continent.

Var. *repens*, Gray. More or less pubescent; sterile and sometimes flowering stems extensively prostrate; leaves more narrowly sagittate or cordate, the basal lobes commonly obtuse or rounded and entire; corolla from almost white to rose-color; bracts very obtuse or acute. (*Calystegia sepium*, var. *pubescens*, Gray.)—Common.

§ 2. *Stigmas filiform; no bracts at or near the base of the calyx.*

C. ARVENSIS, L. (BINDWEED.) Perennial; stem procumbent or twining, and low; leaves ovate-oblong, arrow-shaped, with the lobes at the base acute; peduncles mostly 1-flowered; bracts minute, remote; corolla (9" long) white or tinged with reddish.—Old fields, N. Atlantic States. (Eu.)

4. BREWERIA, R. Br.

Styles 2, or rarely 3, simple and distinct, or else united into one below; stigmas depressed-capitate. Otherwise as *Convolvulus* and *Evolvulus*.—Perennial prostrate or diffusely spreading herbs; flowers small; in summer; corolla more or less hairy or silky outside. (Named for Samuel Brewer, an English botanist or amateur of the 18th century.)

1. **B. humistrata**, Gray. *Sparsely hairy* or nearly smooth; leaves varying from oblong with a somewhat heart-shaped base to linear, mucronate or emarginate; peduncles 1–7-flowered; bracts shorter than the pedicels; sepals pointed, glabrous or nearly so; corolla white; filaments hairy; styles united at base. (*Bonamia humistrata*, Gray.)—Dry pine barrens, Va. to La.

2. **B. aquatica**, Gray. *Minutely soft downy* and somewhat hoary; peduncles 1–3-flowered; sepals silky; corolla pink or purple; filaments smooth; styles almost distinct; otherwise nearly as n. 1. (*Bonamia aquatica*, Gray.)—Wet pine barrens and margins of ponds, N. C. to Tex., extending into Mo.

3. **B. Pickeringii**, Gray. *Soft-pubescent* or smoothish; leaves very narrowly linear or the lowest linear-spatulate, tapering to the base, nearly sessile; peduncles 1–3-flowered; bracts resembling the leaves, mostly exceeding the flowers; sepals hairy; filaments (scarcely hairy) and styles (united far above the middle) exerted from the open white corolla. (*Bonamia Pickeringii*, Gray.)—Dry pine barrens and prairies, N. J. and southward; also W. Ill.

5. EVOLVULUS, L.

Calyx of 5 sepals, naked at base. Corolla open funnel-form or almost rotate. Styles 2, each 2-cleft; stigmas obtuse. Capsule 2-celled; the cells 2-seeded.—Low and small herbs or suffrutescent plants, mostly diffuse, never twining (hence the name, from *evolvere*, to unroll, in contrast with *Convolvulus*).

1. **E. argenteus**, Pursh. Many-stemmed from a somewhat woody base, dwarf, silky-villous all over; leaves crowded, broadly lanceolate, sessile, or the lower oblong-spatulate and short-petioled, about $\frac{1}{2}$ " long; flowers almost sessile in the axils; corolla purple, 3" broad.—Sterile plains and prairies, the Dakotas and Neb. to Mo. and Tex.

6. CUSCUTA, Tourn. DODDER.

Calyx 5- (rarely 4-) cleft, or of 5 sepals. Corolla globular-urn-shaped, bell-shaped, or short-tubular, the spreading border 5- (rarely 4-) cleft, imbricate. Stamens with a scale-like often fringed appendage at base. Ovary 2-celled,

4-ovuled; styles distinct, or rarely united. Capsule mostly 4-seeded. Embryo thread-shaped, spirally coiled in the rather fleshy albumen, destitute of cotyledons, sometimes with a few alternate scales (belonging to the plumule); germination occurring in the soil.—Leafless annual herbs, with thread-like yellowish or reddish stems, bearing a few minute scales in place of leaves; on rising from the ground becoming entirely parasitic on the bark of herbs and shrubs on which they twine, and to which they adhere by means of suckers developed on the surface in contact. Flowers small, cymose-clustered, mostly white; usually produced late in summer and in autumn. (Name supposed to be of Arabic derivation.)

§ 1. *Stigmas elongated; capsule circumscissile.*

C. EPILINUM, Weihe. (FLAX DODDER.) Stems very slender, low; flowers globular, sessile in dense scattered heads; corolla 5-parted, short-cylindrical, scarcely exceeding the broadly ovate acute divisions of the calyx, persistent around the capsule; stamens included; scales short, broad, crenulate, shorter than the globose ovary.—Flax-fields; in Europe very injurious; sparingly introduced with flax-seed into the Northern States. June.

C. EPITHYMUM, Murr. Stems very slender; flowers capitate; corolla-lobes spreading, the cylindrical tube longer than the suberect acute sepals; scales large, contiguous, toothed; stamens exerted.—Occasionally found in clover fields. (Int. from Eu.)

§ 2. *Stigmas capitate; capsule indehiscent.*

* *Calyx gamosepalous; ovary and capsule depressed-globose.*

+ Flowers in dense or globular clusters; corolla with short and wide tube, persistent at the base of the capsule; styles mostly shorter than the ovary.

1. **C. chlorocarpa**, Engelm. Stems coarse, orange-colored; flowers white (1–1½" long); lobes of calyx and corolla (mostly 4) acute, often longer than the tube; scales small, 2-cleft, often reduced to a few teeth; the thin capsule pale greenish-yellow.—Wet places, from Wisc. and Minn. to Ark.; also in Penn. and Del., often on *Polygonum*.

2. **C. arvensis**, Beyrich. Stems pale and slender, low; flowers smaller (hardly 1" long); calyx-lobes (5) obtuse, mostly very broad; those of the corolla acuminate, longer than the tube, with inflexed points; scales large, deeply fringed.—Rather dry soil on various low plants, N. Y. to Fla., west to the Pacific. Very variable.

+ + Flowers in paniced often compound cymes; styles slender, mostly longer than the ovary; corolla withering on the summit of the large capsule.

3. **C. tenuiflora**, Engelm. Stems coarse and yellow, usually rather high-climbing; flowers (1" long or less) on short thick pedicels, often 4-merous; lobes of calyx and corolla oblong, obtuse, the latter mostly shorter than the slender deeply campanulate tube; scales shorter than the tube, fringed.—On tall herbs and shrubs in wet places, Penn. to Minn., and south to Tex.

* * *Calyx gamosepalous; ovary and capsule pointed, the latter enveloped or capped by the marcescent corolla; flowers in loose paniced cymes.*

+ Acute tips of the corolla-lobes inflexed.

4. **C. decora**, Engelm. Stems coarse; flowers fleshy and more or less papillose; calyx-lobes triangular, acute; those of the broadly campanulate

corolla ovate-lanceolate, minutely crenulate, spreading; scales large, deeply fringed; capsule enveloped by remains of corolla. (*C. indecora*, Choisy.) — Var. *PULCHERRIMA*, Engelm. The larger form, with coarser stems, and conspicuous flowers $1\frac{1}{2}$ – $2\frac{1}{2}$ " long and wide; anthers and stigmas yellow or deep purple. — Wet prairies, on herbs and low shrubs (principally Leguminosæ and Compositæ), from Ill. to Fla. and Tex., and westward.

5. *C. inflexa*, Engelm. Similar to the preceding; flowers of the same structure, but smaller (only 1" long), generally 4-merous; corolla deeper, with erect lobes, finally capping the capsule; scales reduced to a few teeth. — Open woods and dry prairies, on shrubs (hazels, etc.) or coarse herbs, southern N. Eng. to Neb. and Ark.

+ + Corolla-lobes obtuse, spreading.

6. *C. Gronovii*, Willd. Stems coarse, often climbing high; corolla-lobes mostly shorter than the deeply campanulate tube; scales copiously fringed; capsule globose, umbonate. — Wet shady places, Canada to Minn., south to Fla. and Tex. The commonest of our species. Flowers very variable in size and compactness of clusters. — Var. *LATIFLORA*, Engelm., is a form with flowers of more delicate texture, and shorter tube and longer lobes to the corolla. Common northward.

7. *C. rostrata*, Shuttleworth. Similar to the preceding; flowers larger (2–3" long), more delicate and whiter; lobes of corolla and calyx shorter than its tube; slender styles longer; ovary bottle-shaped; capsule long-pointed. — Shady valleys in the Alleghanies, from Md. and Va., southward; on tall herbs, rarely shrubs.

* * * Sepals 5, distinct, surrounded by 2 or more similar bracts; styles capillary; scales large, deeply fringed; capsule capped by the marcescent corolla.

8. *C. cuspidata*, Engelm. Stems slender; flowers ($1\frac{1}{2}$ – $2\frac{1}{4}$ " long) thin, on bracteolate pedicels in loose panicles; the ovate-orbicular bracts and sepals and the oblong corolla-lobes cuspidate or mucronate, rarely obtuse, shorter than the cylindrical tube; styles many times longer than the ovary, at length exserted. — Wet or dry prairies, on Ambrosia, Iva, some Leguminosæ, etc., Neb. to Tex., occasionally down the Missouri as far as St. Louis.

9. *C. compacta*, Juss. Stems coarse; flowers closely sessile in densely compact clusters; bracts (3–5) and sepals orbicular, concave, slightly crenate, appressed, nearly equalling or much shorter than the cylindrical tube of the corolla; stamens shorter than the oblong obtuse spreading lobes of the latter. — Along the west side of the Alleghanies from Ont. to Ala., west to Mo. and Tex. In damp woods, almost always on shrubs.

10. *C. glomerata*, Choisy. Flowers very densely clustered, forming knotty masses closely encircling the stem of the foster plant, much imbricated with scarious oblong bracts, their tips recurved-spreading; sepals nearly similar, shorter than the oblong-cylindrical tube of the corolla; stamens nearly as long as the oblong-lanceolate obtuse spreading or reflexed corolla-lobes; style several times longer than the ovary. — Wet prairies, Ohio to Minn., Kan., and Tex., mostly on tall Compositæ. The rope-like twists ($\frac{1}{2}$ – $\frac{3}{4}$ " thick), of white flowers with golden yellow anthers imbedded in a mass of curly bracts, have a singular appearance.

ORDER 74. SOLANACEÆ. (NIGHTSHADE FAMILY.)

Herbs (or rarely shrubs), with colorless juice and alternate leaves, regular 5-merous and 5-androus flowers, on bractless pedicels; the corolla imbricate or valvate in the bud, and mostly plaited; the fruit a 2-celled (rarely 3–5-celled) many-seeded capsule or berry. — Seeds campylotropous or amphitropous. Embryo mostly slender and curved in fleshy albumen. Calyx usually persistent. Stamens mostly equal, inserted on the corolla. Style and stigma single. Placentæ in the axis, often projecting far into the cells. (Foliage rank-scented, and with the fruits mostly narcotic, often very poisonous, while some are edible.) — A large family in the tropics, but very few indigenous in our district. It shades off into Scrophulariaceæ, from which the plaited regular corolla and 5 equal stamens generally distinguish it.

* Corolla wheel-shaped, 5-parted or 5-lobed; the lobes valvate and their margins usually turned inward in the bud. Anthers connivent. Fruit a berry.

1. *Solanum*. Anthers opening by pores or chinks at the tip.

* * Corolla various, not wheel-shaped, nor valvate in the bud. Anthers separate.

+ Fruit a berry, closely invested by an herbaceous (not angled) calyx.

2. *Chamaesaracha*. Corolla plicate, 5-angulate. Pedicels solitary, recurved in fruit.

+ + Fruit a berry, enclosed in the bladdery-inflated calyx. Corolla widely expanding.

3. *Physalis*. Calyx 5-cleft. Corolla 5-lobed or nearly entire. Berry juicy, 2-celled.

4. *Nicandra*. Calyx 5-parted. Corolla nearly entire. Berry dry, 3–5-celled.

+ + + Fruit a berry with the unaltered calyx persistent at its base.

5. *Lycium*. Corolla funnel-form or tubular, not plaited. Berry small, 2-celled.

+ + + + Fruit a capsule.

6. *Hyoscyamus*. Calyx urn-shaped, enclosing the smooth 2-celled capsule, which opens by the top falling off as a lid. Corolla and stamens somewhat irregular.

7. *Datura*. Calyx prismatic, 5-toothed. Capsule prickly, naked, more or less 4-celled, 4-valved. Corolla funnel-form.

8. *Nicotiana*. Calyx tubular-bell-shaped, 5-cleft. Capsule enclosed in the calyx, 2-celled.

1. SOLANUM, Tourn. NIGHTSHADE.

Calyx and wheel-shaped corolla 5-parted or 5-cleft (rarely 4–10-parted), the latter plaited in the bud, and valvate or induplicate. Stamens exserted; filaments very short; anthers converging around the style, opening at the tip by two pores or chinks. Berry usually 2-celled. — Herbs, or shrubs in warm climates, the larger leaves often accompanied by a smaller lateral (rameal) one; the peduncles also mostly lateral and extra-axillary. — A vast genus, chiefly in warmer regions, including the POTATO (*S. TUBEROSUM*) and the EGG-PLANT (*S. MELONGENA*); while the TOMATO (*LYCOPERSICON ESCULENTUM*) is closely related. (Name of unknown derivation.)

* Not prickly; anthers blunt; flowers and globose naked berries small.

+ Perennial, climbing or twining.

S. DULCAMARA, L. (BITTERSWEET.) More or less pubescent; leaves ovate-heart-shaped, the upper halberd-shaped, or with two ear-like lobes or leaflets at base; flowers (purple or blue) in small cymes; berries oval, red. — Moist banks and around dwellings. June–Sept. (Nat. from Eu.)

+ + Simple-leaved annuals.

1. *S. triflorum*, Nutt. Low, spreading, slightly hairy or nearly glabrous; leaves oblong, pinnatifid (7-9-lobed) with rounded sinuses; peduncles 1-3-flowered; corolla white; berries green, as large as a small cherry. — Central Kan., and westward; chiefly a weed near dwellings.

2. *S. nigrum*, L. (COMMON NIGHTSHADE.) Low, much branched and often spreading, nearly glabrous, rough on the angles; leaves ovate, wavy-toothed; flowers white, in small umbel-like lateral clusters, drooping; calyx spreading; filaments hairy; berries globular, black. — Shaded grounds and fields; common, appearing as if introduced, but a cosmopolite. July-Sept.

Var. *villosum*, Mill. Low, somewhat viscid-pubescent or villous; leaves small, conspicuously angular-dentate; filaments glabrous; berries yellow. — Established near Philadelphia, from ballast. (Adv. from Eu.)

S. gracile, Link. Cinereous-pubescent or puberulent, rather tall (2-3° high), with virgate spreading branches; leaves ovate and ovate-lanceolate, nearly entire; corolla white or bluish; calyx somewhat appressed to the black berry. — Coast of N. C., and about ballast near Philadelphia. (Adv. from S. Am.)

* * More or less prickly; anthers tapering upward; pubescence stellate.

+ Perennial; fruit naked; anthers equal; corolla violet, rarely white.

3. *S. Carolinense*, L. (HORSE-NETTLE.) Hirsute or roughish-pubescent with 4-8-rayed hairs; prickles stout, yellowish, copious (rarely scanty); leaves oblong or ovate, obtusely sinuate-toothed or lobed or sinuate-pinnatifid; racemes simple, soon lateral; calyx-lobes acuminate; berries about 6" broad. — Sandy soil and waste grounds, Conn. to Iowa, south to Fla. and Tex.

4. *S. elæagnifolium*, Cav. Silvery-canescant with dense scurf-like pubescence of many-rayed hairs; prickles small, slender, more or less copious or wanting; leaves lanceolate to oblong and linear, sinuate-repand or entire; calyx-lobes slender; berry seldom 6" in diameter. — Prairies and plains, E. Kan. to Tex., and westward.

5. *S. Torrèyi*, Gray. Cinereous with a somewhat close pubescence of about equally 9-12-rayed hairs; prickles small and stout, scanty or nearly wanting; leaves ovate with truncate or slightly cordate base, sinuately 5-7-lobed (4-6" long); calyx-lobes short-ovate, abruptly long-acuminate; berry 1" in diameter. — Prairies, etc., E. Kan. and Tex.

+ + Annual; fruit closely covered; lowest anther much the longest, corolla yellow.

6. *S. rostratum*, Dunal. Very prickly, somewhat hoary or yellowish with a copious wholly stellate pubescence (1-2° high); leaves 1-2-pinnatifid; calyx densely prickly; stamens and style much declined. — Plains of Neb. to Tex.; spreading eastward to Ill. and Tenn.

2. CHAMÆSÁRACHA, Gray.

Calyx herbaceous, closely investing the globose berry (or most of it), obscurely if at all veiny. Corolla rotate, 5-angulate, plicate in the bud. Filaments filiform; anthers separate, oblong. — Perennials, with mostly narrow entire or pinnatifid leaves tapering into margined petioles, and filiform naked pedicels solitary in the axils, refracted or recurved in fruit. (*Saracha* is a tropical American genus dedicated to Isidore Saracha, a Spanish Benedictine; the prefix *χαραλ*, on the ground.)

1. *C. sordida*, Gray. Much branched from root or base, somewhat cinereous with short viscid pubescence; leaves obovate-spatulate or cuneate-oblong to oblanceolate, repand to incisely pinnatifid; calyx when young villous-viscid; corolla pale yellow or violet-purple (6" broad); berry as large as a pea. — Dry or clayey soil, central and W. Kan. to Tex. and Arizona.

3. PHÝSALIS, L. GROUND CHERRY.

Calyx 5-cleft, reticulated and enlarging after flowering, at length much inflated and enclosing the 2-celled globular (edible) berry. Corolla between wheel-shaped and funnel-form, the very short tube marked with 5 concave spots at the base; the plaited border somewhat 5-lobed or barely 5-10-toothed. Stamens 5, erect; anthers separate, opening lengthwise. — Herbs (in this country), with the leaves often unequally in pairs, and the 1-flowered nodding peduncles extra-axillary; flowering through the summer. (Name *φυσάλις*, a bladder, from the inflated calyx.)

* Corolla large, white or tinged with blue, without dark centre, with almost entire border; pubescence simple.

1. *P. grandiflora*, Hook. Clammy-pubescent, erect; leaves lance-ovate, pointed, entire or nearly so; corolla 1-2' wide when expanded, and with a woolly ring in the throat; fruiting calyx globular, apparently nearly filled by the berry. — S. shore of L. Superior to Sask.; Providence Island, L. Champlain (Perkins).

* * Corolla lurid greenish-white or yellow, mostly with dark centre, 3-10" broad.

+ Annuals, glabrous or pubescence minute; anthers violet.

2. *P. Philadelphica*, Lam. Leaves ovate or oblong-ovate, oblique at base, entire, repand, or very sparingly angulate-toothed; corolla brownish- or violet-spotted in the centre, 7-10" broad; calyx at maturity globose and completely filled by the large reddish or purple berry and open at the mouth. — In fertile soil, Penn. to Minn. and Tex.

3. *P. angulata*, L. Much branched; leaves ovate or ovate-oblong, sharply and irregularly lacinate-toothed; peduncles filiform; corolla unspotted, very small (3-6" broad when expanded); fruiting calyx conical-ovate with a truncate or sunken base, 10-angled, loosely inflated, at length well filled by the greenish-yellow berry. — Open rich grounds, Penn. to Minn., and southward.

+ + Strong-scented, villous or pubescent with viscid or glandular simple hairs; fruiting calyx ovate-pyramidal, carinately 5-angled, closed, loosely enveloping the green or yellow berry; leaves ovate or cordate.

4. *P. pubescens*, L. Annual, diffusely much branched or at length decumbent; leaves angulate- or repand-toothed or nearly entire; corolla spotted with brown purple in the centre, 5-6" broad when expanded, obscurely 5-10-toothed; anthers violet. — Low grounds, N. Y. to Minn., south to Fla. and Tex., and westward. — A very doubtful form, found at Independence, Mo. (B. F. Bush), has the small corolla (2" broad) yellow, without a brown centre, the anthers yellow, the fruiting calyx smaller, and the berry viscid.

5. *P. Virginiana*, Mill. Perennial, diffusely much branched and widely spreading, or at first erect; leaves sometimes oblong, repand or obtusely toothed, rarely entire; corolla 9-12" broad, 5-angled or 5-10-toothed; anthers yellow.

(*P. viscosa*, Gray, Man., not *L.*)—Light or sandy soils, Ont. and Minn. to Fla. and Tex.—Var. *ambigua*, Gray, is a coarse and very villous form with violet anthers. Wisc., and westward.

— + + — Perennials, mostly low, not viscid; pubescence stellate or simple or nearly none; anthers almost always yellow.

6. *P. viscosa*, L. Cinereous or when young almost canescent with short stellate or 2-3-forked pubescence; stems ascending or spreading from slender creeping subterranean shoots; leaves ovate or oval, varying to oblong and obovate, entire or undulate; corolla greenish-yellow, with a more or less dark eye; fruiting calyx globose-ovate; berry yellow or orange.—In sands on and near the coast, Va. to N. C. and Fla.

7. *P. lanceolata*, Michx. More or less hirsute-pubescent with short stiff mostly simple hairs, varying to nearly glabrous; stems from rather stout subterranean shoots, angled, somewhat rigid; leaves oblong-ovate to narrowly lanceolate, sparingly angulate-toothed to undulate or entire; corolla ochroleucous, with a more or less dark eye; calyx commonly hirsute, in fruit pyramidal-ovate (1-1½ long); berry reddish. (*P. pennsylvanica*, Gray, Man., in part; not *L.*)—Dry open ground, Penn. to Ill., Minn., and south and westward.

Var. *laevigata*, Gray. Glabrous or almost so throughout, or with some very short hairs on young parts.—Neb. to Tex., and westward.

Var. *hirta*, Gray. A remarkable ambiguous form, with much of the hirsute-pubescent of the leaves 2-3-forked, as also are some of the abundant villous-hispid hairs of the stem.—Wet woods, Tex. to Mo., and E. Kan.

4. *NICÁNDRA*, Adans. APPLE OF PERU.

Calyx 5-parted, 5-angled, the divisions rather arrow-shaped, enlarged and bladder-like in fruit, enclosing the 3-5-celled globular dry berry. Corolla with border nearly entire. Otherwise much like *Physalis*.—An annual smooth herb (2-3° high), with ovate sinuate-toothed or angled leaves, and solitary pale blue flowers on axillary and terminal peduncles. (Named after the poet *Nicander* of Colophon.)

N. physaloides, Gaertn.—Waste grounds, near dwellings and old gardens. (Adv. from Peru.)

5. *LÝCIUM*, L. MATRIMONY-VINE.

Calyx 3-5-toothed or -cleft, not enlarging, persistent at the base of the berry. Corolla funnel-form or salver-shaped, 5-lobed, the lobes imbricated and not plaited in the bud. Stamens 5; anthers opening lengthwise. Style slender; stigma capitate. Berry small, 2-celled. Shrubby, often spiny plants, with alternate and entire small leaves, and mostly axillary small flowers. (Named from the country, *Lycia*.)

L. vulgare, Dunal. (COMMON M.) Shrub with long sarmentose recurved-drooping branches, smooth, sparingly if at all spiny; leaves oblong- or spatulate-lanceolate, often fascicled, narrowed into a short petiole; flowers on slender peduncles fascicled in the axils; corolla short funnel-form, greenish-purple; style and slender filaments equalling its lobes; berry oval, orange-red.—About dwellings, and escaped into waste grounds in Penn., etc. (Adv. from Eu.)

6. *HYOSCÝAMUS*, Tourn. HENBANE.

Calyx bell-shaped or urn-shaped, 5-lobed. Corolla funnel-form, oblique, with a 5-lobed more or less unequal plaited border. Stamens declined. Capsule

enclosed in the persistent calyx, 2-celled, opening transversely all round near the apex, which falls off like a lid.—Clammy-pubescent, fetid, narcotic herbs, with lurid flowers in the axils of angled or toothed leaves. (Name composed of *ús*, *ús*, a hog, and *kápos*, a bean; said to be poisonous to swine.)

H. niger, L. (BLACK HENBANE.) Biennial or annual; leaves clasping, sinuate-toothed and angled; flowers sessile, in one-sided leafy spikes; corolla dull yellowish, strongly reticulated with purple veins.—Escaped from gardens to roadsides. (Adv. from Eu.)

7. *DATÚRA*, L. JAMESTOWN-WEED. THORN-APPLE.

Calyx prismatic, 5-toothed, separating transversely above the base in fruit, the upper part falling away. Corolla funnel-form, with a large and spreading 5-10-toothed plaited border. Stigma 2-lipped. Capsule globular, prickly, 4-valved, 2-celled, with 2 thick placenta projected from the axis into the middle of the cells, and connected with the walls by an imperfect false partition, so that the capsule is 4-celled except near the top, the placenta as if on the middle of these false partitions. Seeds rather large, flat.—Rank weeds, narcotic-poisonous, with ovate leaves, and large showy flowers on short peduncles in the forks of the branching stem; produced all summer and autumn. (Altered from the Arabic name, *Tutorah*.)

D. stramonium, L. (COMMON STRAMONIUM or THORN APPLE.) Annual, glabrous; leaves ovate, sinuate-toothed or angled; stem green; corolla white (3' long), the border with 5 teeth; lower prickles of the capsule mostly shorter.—Waste grounds; a well-known ill-scented weed. (Adv. from Asia?)

D. tatula, L. (PURPLE T.) Mostly taller; stem purple; corolla pale violet-purple; prickles of the capsule nearly equal.—Waste grounds, in the Atlantic States. (Adv. from trop. Amer.)

8. *NICOTIÁNA*, Tourn. TOBACCO.

Calyx tubular-bell-shaped, 5-cleft. Corolla funnel-form or salver-form, usually with a long tube; the plaited border 5-lobed. Stigma capitate. Capsule 2-celled, 2-4-valved from the apex. Seeds minute.—Rank acrid-narcotic herbs, mostly clammy-pubescent, with ample entire leaves, and racemed or panicled flowers. (Named after *John Nicot*, who was thought to have introduced Tobacco (*N. tabacum*, L.) into Europe.)

N. rustica, L. (WILD TOBACCO.) Annual; leaves ovate, petioled; tube of the dull greenish-yellow corolla cylindrical, two thirds longer than the calyx, the lobes rounded.—Old fields, from N. Y. westward and southward; a relic of cultivation by the Indians. (Of unknown nativity.)

ORDER 75. SCROPHULARIACEÆ. (FIGWORT FAMILY.)

Chiefly herbs (rarely trees), with didynamous stamens (or perfect stamens often only 2, rarely 5) inserted on the tube of the 2-lipped or more or less irregular corolla, the lobes of which are imbricated in the bud; fruit a 2-celled and usually many-seeded capsule, with the placenta in the axis; seeds anatropous, or amphitropous, with a small embryo in copious albumen.—Style single; stigma entire or 2-lobed. Leaves and inflorescence various; but the flowers not terminal in any genuine representatives of the order.—A large order of bitterish plants, some of them narcotic-poisonous.

I. *ANTIRRHINIDÆ*. Upper lip or lobes of the corolla covering the lower in the bud (with occasional exceptions in *Mimulus*, etc.) Capsule usually septical.