

* 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.

- * Corolla bigibbous or 2-spurred, the 2 outer petals alike. Pod several-seeded.
1. *Adlumia*. Petals united into a spongy persistent subcordate corolla. Seeds crestless.
 2. *Dicentra*. Corolla cordate or 2-spurred at base, less united. Seeds crested.
* * Corolla with but one petal spurred at base, deciduous.
 3. *Corydalis*. Pod with few to many crested or arilled seeds.
 4. *Fumaria*. Fruit a globular 1-seeded nutlet. Seed crestless.

1. ADLUMIA, Raf. CLIMBING FUMITORY.

Petals all permanently united in a cordate-ovate corolla, becoming spongy-cellular and persistent, enclosing the small, few-seeded pod. Seeds not crested. Stigma 2-crested. Filaments monadelphous below in a tube which is adherent to the corolla, diadelphous at the summit. — A climbing biennial, with thrice-pinnate leaves, cut-lobed delicate leaflets, and ample panicles of drooping white or purplish flowers. (Dedicated by Rafinesque to *Major Adlum*.)

1. *A. cirrhosa*, Raf. — Wet woods; N. Eng. to Wisc., E. Kan., and southward. June–Oct. — A handsome vine, with delicate foliage, climbing by the slender young leaf-stalks over high bushes; often cultivated.

2. DICENTRA, Borkh. DUTCHMAN'S BREECHES.

Petals slightly cohering into a heart-shaped or 2-spurred corolla, either deciduous or withering-persistent. Stigma 2-crested and sometimes 2-horned. Filaments slightly united in two sets. Pod 10–20-seeded. Seeds crested. — Low, stemless perennials (as to our wild species) with ternately compound and dissected leaves, and racemose nodding flowers. Pedicels 2-bracted. (Name from *dis*, twice, and *κέντρον*, a spur; — accidentally printed *DIOLYTRA* in the first instance, which by an erroneous conjecture was afterwards changed into *DIOLYTRA*.)

* Raceme simple, few-flowered.

1. *D. Cucullaria*, DC. (DUTCHMAN'S BREECHES.) Scape and slender-petioled leaves from a sort of *granulate bulb*; lobes of leaves linear; corolla with 2 divergent spurs longer than the pedicel; crest of the inner petals minute. — Rich woods, especially westward. — A very delicate plant, sending up in early spring, from the cluster of grain-like tubers crowded together in the form of a scaly bulb, the finely cut leaves and the slender scape, bearing 4–10 pretty, but odd, white flowers tipped with cream-color.

2. *D. Canadensis*, DC. (SQUIRREL CORN.) Subterranean shoots bearing scattered *grain-like tubers* (resembling peas or grains of Indian corn, yellow); leaves as in n. 1; corolla merely heart-shaped; the spurs very short and rounded; crest of the inner petals conspicuous, projecting. — Rich woods, especially northward. April, May. — Flowers greenish-white tinged with rose, with the fragrance of Hyacinths.

* * Racemes compound, clustered.

3. *D. eximia*, DC. Subterranean shoots scaly; divisions and lobes of the leaves broadly oblong; corolla oblong, 2-saccate at the base; crest of the inner petals projecting. — Rocks, western N. Y., rare, and Alleghanies of Va. May–Aug. — Coarser-leaved than the others; scapes 6–10' high.

3. CORYDALIS, Vent.

Corolla 1-spurred at the base (on the upper side), deciduous. Style persistent. Pod many-seeded. Seeds crested or arilled. Flowers in racemes. Our species are biennial, leafy-stemmed, and pale or glaucous. (The ancient Greek name for the crested lark.)

* Stem strict; flowers purplish or rose-color with yellow tips.

1. *C. glauca*, Pursh. (PALE CORYDALIS.) Racemes panicled; spur of the corolla very short and rounded; pods erect, slender, elongated. — Rocky places; common; 6'–2° high. May–Aug.

* * Low, ascending; flowers yellow.

— Outer petals wing-crested on the back.

2. *C. flavula*, DC. Pedicels slender, conspicuously bracted; corolla pale yellow, 3–4" long, spur very short; tips of the outer petals pointed, longer than the inner; crest 3–4-toothed; pods torulose, pendulous or spreading; seeds acutely margined, rugose-reticulated; aril loose. — Penn. to Minn., and southward.

3. *C. micrantha*, Gray. Pedicels short and bracts small; corolla pale yellow, 4" long, with short spur and entire crest, or flowers often cleistogamous and much smaller, without spur or crest; pods ascending, torulose; seeds obtuse-margined, smooth and shining. — N. Car., Ill., Minn., and southward.

4. *C. crystallina*, Engelm. Pedicels short, erect; corolla bright yellow, 8" long, the spur nearly as long as the body; crest very broad, usually toothed; pods terete, erect, densely covered with transparent vesicles; seeds acutely margined, tuberculate. — S. W. Mo. and southward.

— Outer petals merely carinate on the back, not crested.

5. *C. aurea*, Willd. (GOLDEN C.) Corolla golden-yellow, $\frac{1}{2}$ " long, the slightly decurved spur about half as long, shorter than the pedicel; pods spreading or pendulous, becoming torulose; seeds obtuse-margined. — Rocky banks, Vt. to Penn., Mo., Minn., and westward.

Var. *occidentalis*, Engelm. Flowers rather larger, the spur nearly as long as the body; pods less torulose, on short pedicels; seeds acutish on the margin. — Neb. and Kan. to W. Tex. and westward.

4. FUMARIA, Tourn. FUMITORY.

Corolla 1-spurred at the base. Style deciduous. Fruit indehiscent, small, globular, 1-seeded. Seeds crestless. — Branched and leafy-stemmed annuals, with finely dissected compound leaves, and small flowers in dense racemes or spikes. (Name from *fumus*, smoke.)

F. officinalis, L. (COMMON FUMITORY.) Sepals ovate-lanceolate, acute, sharply toothed, narrower and shorter than the corolla (which is flesh-color tipped with crimson); fruit slightly notched. — Waste places, about dwellings. (Adv. from Eu.)

ORDER 10. CRUCIFERÆ. (MUSTARD FAMILY.)

Herbs, with a pungent watery juice and cruciform tetradynamous flowers; fruit a silique or silicle. — Sepals 4, deciduous. Petals 4, hypogynous, regular, placed opposite each other in pairs, their spreading limbs form-

ing a cross. Stamens 6, two of them inserted lower down and shorter (rarely only 4 or 2). Pod usually 2-celled by a thin partition stretched between the two marginal placentæ, from which when ripe the valves separate, either much longer than broad (a *silique*), or short (a *silicle*), sometimes indehiscent and nut-like (*nucumetaceous*), or separating across into 1-seeded joints (*lomentaceous*). Seeds campylotropous, without albumen, filled by the large embryo, which is curved or folded in various ways: i. e. the *cotyledons accumbent*, viz., their margins on one side applied to the radicle, so that the cross-section of the seed appears thus ∞ ; or else *incumbent*, viz., the back of one cotyledon applied to the radicle, thus ∞ . In these cases the cotyledons are plane; but they may be folded upon themselves and round the radicle, as in Mustard, where they are *conduplicate*, thus ∞ . In *Leavenworthia* alone the whole embryo is straight. — Leaves alternate, no stipules. Flowers in terminal racemes or corymbs; pedicels rarely bracted. — A large and very natural family, of pungent or acrid, but not poisonous plants. (The characters of the genera are taken almost wholly from the pods and seeds; the flowers being nearly alike in all.)

SERIES I. Pod 2-celled, regularly dehiscent by 2 valves.

* Pod compressed parallel to the broad partition. Seeds flat or flattish, orbicular or oval; cotyledons accumbent or nearly so.

+ Pod large, oblong-elliptical; valves nerveless. Seeds in 2 rows. Flowers yellow.

1. *Selenia*. Leaves pinnatisect. Raceme leafy-bracteate. Seeds winged.

+ + Pod linear; valves nerveless. Seeds in one row. Flowers yellow only in n. 2.

2. *Leavenworthia*. Seed winged; embryo straight or nearly so. Annual; stem often scapose, 1-few-flowered.

3. *Dentaria*. Stem naked below, 2-3-leaved. Pod coriaceous, with thick placentas, long-styled. Seeds wingless; cotyledons thick, very unequal.

4. *Cardamine*. Stem leafy. Pod coriaceous, with thick placentas. Seeds wingless; cotyledons flattened, equal.

+ + + Pod linear, or oblong, or orbicular; valves 1-nerved or nerveless. Seeds in 2 rows (except in species of n. 5).

5. *Arabis*. Pod long-linear, the flat or flattish valves more or less 1-nerved. Seeds winged or wingless. Flowers white to purple. Stems leafy, at least below.

6. *Draba*. Pod oval to narrowly oblong or lanceolate; valves flat or flattish, faintly nerved or veined. Seeds wingless, numerous.

7. *Alyssum*. Pod orbicular; valves veinless, somewhat convex with flattened margin. Seeds wingless, 2-4.

** Pod terete or turgid, or 4-angled by the prominent midnerves. Seeds wingless, more or less turgid.

+ Pods short. (See also n. 11.)

8. *Lesquerella*. Pod globular-inflated, about 4-seeded; valves nerveless. Cotyledons accumbent. Flowers yellow.

9. *Camelina*. Pod obovoid, many-seeded, valves 1-nerved; style slender. Cotyledons incumbent. Flowers yellow.

10. *Subularia*. Pod ovoid or globular, few-seeded, valves 1-nerved; style none. Cotyledons long, folded transversely. Flowers white. Dwarf stemless aquatic.

+ + Pod linear (or oblong or even globular in n. 11).

+ + Cotyledons accumbent.

11. *Nasturtium*. Pod often short; valves strongly convex, nerveless. Seeds small, in 2 rows in each cell. Flowers yellow or white.

12. *Barbarea*. Pod somewhat 4-sided; valves strongly 1-nerved. Seeds in 1 row. Flowers yellow.

+ + + Cotyledons incumbent or partially so.

13. *Hesperis*. Pod terete, elongated; stigma-lobes narrow, erect. Flowers large, purple.

14. *Erysimum*. Pod 4-sided; valves strongly 1-nerved; stigma broadly 2-lobed. Pubescence of appressed 2-3-parted hairs. Flowers yellow.

15. *Sisymbrium*. Pod angled or teretish; valves 1-3-nerved; stigma small. Flowers yellow or white, small.

16. *Thelypodium*. Pod teretish; valves 1-nerved; stigma entire. Cotyledons obliquely incumbent. Flowers rose-color. Leaves auricled.

+ + + + Cotyledons conduplicate.

17. *Brassica*. Pod beaked or pointed beyond the end of the valves, or tipped with a rigid style, nearly terete, or 4-sided. Flowers yellow or whitish.

* Pod short; the boat-shaped valves conduplicate or much flattened contrary to the narrow partition. Flowers white.

18. *Capsella*. Pod many-seeded, obovate-triangular, wingless. Cotyledons incumbent.

19. *Thlaspi*. Pod several-seeded, obovate or obovate, winged. Cotyledons accumbent.

20. *Lepidium*. Pod 2-seeded, flat, scale-shaped. Cotyledons incumbent or accumbent.

21. *Senebiera*. Pod 2-seeded, didymous; the valves rugose, separating at maturity from the little partition as 2 closed 1-seeded nutlets. Cotyledons incumbent, narrow.

SERIES II. Pods indehiscent, continuous or transversely jointed; joints 1-celled.

22. *Cakile*. Pod short, 2-jointed; joints 1-seeded. Cotyledons plane, accumbent.

23. *Raphanus*. Pod elongated, several-seeded, continuous, or constricted between the seeds and moniliform. Cotyledons conduplicate.

1. SELENIA, Nutt.

Pod large, oblong-elliptical, flat; the valves nerveless. Seeds in 2 rows in each cell, rounded, broadly winged; cotyledons accumbent; radicle short. — A low annual, with once or twice pinnatifid leaves and leafy-bracteate racemes of yellow flowers. (Name from *σελήνη*, the moon, with allusion to *Lunaria*, which it somewhat resembles in its pods.)

1. *S. aurea*, Nutt. Lobes of the simply pinnatifid leaves entire or toothed; pod $\frac{1}{2}$ long, on elongated spreading pedicels, beaked by the long slender style. — Mo. and Kan. to Tex.

2. LEAVENWORTHIA, Torr.

Pod broadly linear or oblong, flat; the valves nerveless, but minutely reticulate-veined. Seeds in a single row in each cell, flat, surrounded by a thick wing. Embryo straight! or the short radicle only slightly bent in the direction which if continued would make the orbicular cotyledons accumbent. — Little winter annuals, glabrous and often stemless, with lyrate leaves and short 1-few-flowered scape-like peduncles. (Named in honor of the late M. C. Leavenworth.)

1. *L. Michauxii*, Torr. Scapes 2-6' high; leaf-lobes usually numerous (7-15); petals purplish or nearly white with a yellowish base, obtuse;

Pods not torulose, oblong to linear (6-15" long); style short.—S. Ind. to Tenn. and Mo.

2. *L. torulosa*, Gray. Similar, but pods torulose even when young, linear; style 1-2" long; seeds acutely margined rather than winged; petals emarginate.—Parrens of Ky. and Tenn.

3. DENTARIA, Tourn. TOOTHWORT. PEPPER-ROOT.

Pod lanceolate, flat, as in Cardamine. Style elongated. Seeds in one row, wingless, the stalks broad and flat. Cotyledons petioled, thick and very unequal, their margins somewhat infolding each other.—Perennials, of damp woodlands, with long, horizontal, fleshy, sometimes interrupted, scaly or toothed rootstocks, of a pleasant pungent taste; the simple stems leafless below, bearing 2 or 3 petioled compound leaves about or above the middle, and terminated by a single corymb or short raceme of large white or purple flowers. Flowers larger, pods broader, and seeds larger than is usual in Cardamine. (Name from *dens*, a tooth.)

* Rootstock elongated; leaves 3-foliate.

1. *D. diphylla*, L. Rootstock long and continuous, often branched, toothed; stem-leaves 2, similar to the radical ones, close together; leaflets rhombic-ovate or oblong-ovate, shortly petiolate, coarsely crenate, the teeth abruptly acute; petals white.—Rich woods, Maine to Minn. and Ky. May.—Rootstocks 5-10' long, crisp, tasting like Water-Cress.

** Rootstock tuberous, more or less moniliform; leaves 3-foliate or 3-parted.

2. *D. laciniata*, Muhl. Tubers deep-seated, usually not jointed nor prominently tubercled; root-leaves often none; stem-leaves 3-parted, the lateral segments often 2-lobed, all broadly oblong to linear, more or less gash-toothed; flowers white or rose-color.—N. Eng. to Minn., Kan., and southward. April, May.—Var. *MULTIFIDA*, a slender form with the narrowly linear segments usually more or less divided into linear lobes. (*D. multifida*, Muhl.) Southward, scarcely if at all within our limits.

3. *D. heterophylla*, Nutt. Tubers near the surface, jointed, narrowly oblong or thick-clavate, prominently tubercled; leaves 3-foliate, the leaflets distinctly petiolate, oblong-lanceolate to linear, entire to rather deeply crenate, rarely lacinate or lobed; root-leaves with ovate or lanceolate and usually lobed leaflets.—Penn. to Ky. and southward. Blooming a little later than the last.

4. *D. maxima*, Nutt. Tubers jointed, strongly tubercled; stem-leaves usually alternate, 3-foliate; leaflets ovate or oblong-ovate, coarsely toothed and somewhat cleft or lobed.—Vt. to western N. Y. and Penn. May.

4. CARDAMINE, Tourn. BITTER CRESS.

Pod linear, flattened, usually opening elastically from the base; the valves nerveless and veinless, or nearly so; placentas and partition thick. Seeds in a single row in each cell, wingless; their stalks slender. Cotyledons accumbent, flattened, equal or nearly so, petiolate.—Mostly glabrous perennials, leafy-stemmed, growing along watercourses and in wet places. Flowers white or purple. (A Greek name, in Dioscorides, for some cress, from its cordial or cardiaca qualities.)

* Root perennial; leaves simple.

1. *C. rhomboidea*, DC. (SPRING CRESS.) Stems upright from a tuberous base and slender rootstock bearing small tubers, simple; root-leaves round and often heart-shaped; lower stem-leaves ovate or rhombic-oblong, somewhat petioled, the upper almost lanceolate, sessile, all often sparingly toothed; pods linear-lanceolate, pointed with a slender style tipped with a conspicuous stigma; seeds round-oval.—Wet meadows and springs; common. April-June.—Flowers large, white.

Var. *purpurea*, Torr. Lower (4-6' high), and usually slightly pubescent; flowers rose-purple, appearing earlier.—Along streams in rich soil. Western N. Y. to Md. and Wisc.

2. *C. rotundifolia*, Michx. (MOUNTAIN WATER-CRESS.) Stems branching, weak or decumbent, making long runners; root fibrous; leaves all much alike, roundish, somewhat angled, often heart-shaped at the base, petioled; pods small, linear-awl-shaped, pointed with the slender style; stigma minute; seeds oval-oblong.—Cool shaded springs, N. J. (Middletown, Willis) to Ky., and southward along the mountains. May, June.—Flowers white, smaller than in n. 1.

3. *C. bellidifolia*, L. Dwarf (2-3' high), alpine, tufted; leaves ovate, entire, or sometimes with a blunt lateral tooth (4" long), on long petioles; pods 1' long, upright, linear; style nearly none, stout.—Summits of the White Mountains and Katahdin, Maine. July.—Flowers 1-5, white. (Eu.)

** Root perennial; leaves pinnate; flowers showy.

4. *C. pratensis*, L. (CUCKOO FLOWER.) Stem ascending from a short rootstock, simple; leaflets 7-13, those of the lower leaves rounded and stalked, of the upper oblong or linear, entire, or slightly angled-toothed; petals (white or rose-color) thrice the length of the calyx; pod 9-15" long, 1" broad; style short.—Wet places and bogs, Vt. to N. J., Wisc., and northward; rare. May. (Eu.)

*** Root mostly biennial or annual; leaves pinnate; flowers small, white.

5. *C. hirsuta*, L. (SMALL BITTER CRESS.) Glabrous or beset with scattered hairs; stems (3'-2° high) erect or ascending from the spreading cluster of root-leaves; their leaflets rounded, those of the upper leaves oblong or linear and often confluent, all either toothed, angled, or entire; pods linear, very narrow, erect or ascending; style variable.—Wet places; common. May-July. The ordinary form corresponds closely to the European var. *SYLVATICA*, Gaud. The typical imperfectly developed annual form, with only 4 stamens and rather strict pods, occurs very rarely. A form answering to *C. parviflora* of Europe, with mostly linear leaflets and pods often erect on spreading pedicels, is occasionally found in drier localities. (Eu., Asia.)

5. ARABIS, L. ROCK CRESS.

Pod linear, flattened; placentas not thickened; the valves plane or convex, more or less 1-nerved in the middle, or longitudinally veiny. Seeds usually margined or winged. Cotyledons accumbent or a little oblique.—Leaves seldom divided. Flowers white or purple. (Name from the country, Arabia. See Linn. Phil. Bot. § 235.)

§ 1. *ARABIS* proper. Seeds in one row in each cell, orbicular or nearly so, more or less wing-margined; cotyledons strictly accumbent.

* Low, chiefly biennials, diffuse or spreading from the base.

1. *A. Ludoviciana*, Meyer. Nearly glabrous, often annual; leaves all pinnately parted into oblong or linear few-toothed or entire divisions, those of the lower leaves numerous; pedicels very short; flowers small, white; pods rather broadly linear, spreading, flat; seeds winged. — Open grounds, Va. to Mo., and southward.

** Erect and simple leafy-stemmed biennials, with simple leaves, white or whitish flowers, narrow but flattened ascending or erect pods, and nearly wingless seeds.

2. *A. patens*, Sulliv. Downy with spreading hairs, erect (1-2° high); stem-leaves oblong-ovate, acutish, coarsely toothed or the uppermost entire, partly clasping by the heart-shaped base; petals (bright white, 4" long) twice the length of the calyx; pedicels slender, spreading; pods spreading or ascending, tipped with a distinct style. — Penn. to central Ohio and southward; Minn. April, May.

3. *A. hirsuta*, Scop. Rough-hairy, sometimes smoothish, strictly erect (1-2° high); stem-leaves oblong or lanceolate, entire or toothed, partly clasping by a somewhat arrow-shaped or heart-shaped base; petals (greenish-white) small, but longer than the calyx; pedicels and pods strictly upright; style scarcely any; immature seeds somewhat 2-rowed. — Rocks, common, especially northward. May, June. (Eu.)

*** Erect and simple leafy-stemmed biennials (1-3° high), with small whitish flowers, recurved-spreading or pendulous flat pods (3-4' long), and broadly winged seeds, their stalks adherent to the partition; root-leaves rarely lyrate.

4. *A. lævigata*, Poir. Smooth and glaucous, upright; stem-leaves partly clasping by the arrow-shaped base, lanceolate or linear, sparingly cut-toothed or entire; petals scarcely longer than the calyx; pods long and narrow, recurved-spreading on ascending or merely spreading pedicels. — Rocky places, Maine to Minn. and southward. May.

5. *A. Canadensis*, L. (SICKLE-POD.) Stem upright, smooth above; stem-leaves pubescent, pointed at both ends, oblong-lanceolate, sessile, the lower toothed; petals twice the length of the calyx, oblong-linear; pods very flat, scythe-shaped, hanging on rough-hairy pedicels (2" wide). — Woods and ravines; not rare, especially westward. June-Aug.

§ 2. *TURRITIS*. Seeds not so broad as the partition, in two more or less distinct rows in each cell, at least when young; strict and very leafy-stemmed biennials; cauline leaves partly clasping by a sagittate base. (Our species very glabrous, except the mostly hirsute base of the stem and the lower leaves.)

6. *A. perfoliata*, Lam. (TOWER MUSTARD.) Tall (2-4° high), glaucous; stem-leaves oblong or ovate-lanceolate, entire; petals yellowish-white, little longer than the calyx; pods very narrow (3' long) and pedicels strictly erect; seeds marginless; cotyledons often oblique. — Rocks and fields, N. Eng. to Minn. (rare), north and westward. (Eu.)

7. *A. confinis*, Watson. Scarcely glaucous, 1-3° high; pubescence below finely stellate; stem-leaves lanceolate or oblong-linear, entire (1-2' long), with narrow auricles, or the lowest spatulate and toothed; petals white or rose-color, fully twice the length of the calyx; pedicels and flat pods loosely erect, or ascending, or even spreading; seeds wing-margined, when mature little narrower than the partition. (*A. Drummondii*, Man.) — From the lower St. Lawrence to Minn., south to Conn., N. Y., and Ill. — Pods 2½-3½' long, or in a var. (*T. brachycarpa*, Torr. & Gray) only 1-2' long.

§ 3. *PSEUDARABIS*. Seeds oblong or elliptical, very small, wingless, in one row; cotyledons often more or less oblique. Biennial or perennial, branching from the base.

8. *A. lyrata*, L. Mostly glabrous, except the lyrate-pinnatifid root-leaves; stem-leaves scattered, spatulate or linear with a tapering base, sparingly toothed or entire; petals white, much longer than the yellowish calyx; pods long and slender, flat, ascending or spreading. — On rocks or sandy shores, New Eng. to Ky. along the mountains, Minn., and northward. April-July. — Usually biennial, but southward in the mountains decidedly perennial.

9. *A. dentata*, Torr. & Gray. Roughish-pubescent, slender (1-2° high); leaves oblong, very obtuse, unequally and sharply toothed; those of the stem numerous, half-clasping and eared at the base, of the root broader and tapering into a short petiole; petals (whitish) scarcely exceeding the calyx; pods widely spreading, very slender, short-stalked; style scarcely any. — N. Y. to Mich., Minn., and southward. May, June.

6. *DRABA*, Dill. WHITLOW-GRASS.

Pod oval, oblong, or even linear, flat; the valves plane or slightly convex; the partition broad. Seeds several or numerous, in 2 rows in each cell, marginless. Cotyledons accumbent. Filaments not toothed. — Low herbs with entire or toothed leaves, and white or yellow flowers; pubescence often stellate. (Name from *δράβη*, applied by Dioscorides to some cress; meaning unknown.)

§ 1. *DRABÆA*. Petals not notched or cleft; perennial or biennial, leafy-stemmed; flowers white; pods twisted when ripe.

1. *D. ramosissima*, Desv. Diffusely much branched and forming many radical tufts, perennial (5-8' high), pubescent; leaves lacinate-toothed, linear-lanceolate, the lower oblanceolate; racemes corymbosely-branched; pods hairy, oval-oblong or lanceolate (2-5" long), on slender spreading pedicels, tipped with a long style. — Cliffs, Harper's Ferry, Natural Bridge, etc., Va., to Kentucky River, and southward. April, May.

2. *D. incana*, L. Hoary-pubescent, biennial or somewhat perennial, the radical tuft seldom branching; leaves oblanceolate or the cauline lanceolate to ovate, few-toothed or entire; pods oblong to lanceolate, usually acute and straight, often pubescent, on short erect pedicels; style very short or none. — Dry rocks, Willoughby Mountain, Vt.; also northward and far westward. (Eu.)

Var. *arabisans*, Watson. Caudex much branched; pod glabrous, acuminate or acute, twisted, beaked with a longer distinct style. (*D. arabisans*, Michx.) — N. Y. to western N. Y. and the shores of the upper lakes.

§ 2. **DRABÉLLA**. Winter annuals; leafy stems short; flowers white (yellow in n. 5); style none. (Leaves oblong or obovate, hairy, sessile.)

3. **D. Caroliniána**, Walt. Small (1-5' high); leaves obovate, entire; peduncles scape-like; petals usually twice the length of the calyx; raceme short or corymbose in fruit ($\frac{1}{2}$ -1' long); pods broadly linear, smooth, much longer than the ascending pedicels. — Sandy and waste fields, E. Mass. to Minn., and southward. March-May. — Petals often wanting in the later racemes, especially in the var. **MICRÁNTHA**, Gray, with minutely rough-hairy pods, which is found with the other, westward.

4. **D. cuneifolia**, Nutt. Leaves obovate, wedge-shaped, or the lowest spatulate, toothed; raceme somewhat elongated in fruit (1-3'), at length equaling the naked peduncle; petals emarginate, much longer than the calyx; pods oblong-linear, minutely hairy, longer than the horizontal pedicels. — Grassy places, Ill. to E. Kan., and southward. March, April.

5. **D. brachycarpa**, Nutt. Low (2-4' high), minutely pubescent; stems leafy to the base of the dense at length elongated raceme; leaves narrowly oblong or the lowest ovate (2-4" long), few toothed or entire; flowers small; pods smooth, narrowly oblong, acutish (2" long), about the length of the ascending or spreading pedicels. — Dry hills, Ill., Ky., Va. (*A. H. Curtiss*), and southward. April. — Petals sometimes minute, sometimes none.

6. **D. nemorosa**, L. Leaves oblong or somewhat lanceolate, more or less toothed; racemes elongated (4-8' long in fruit); petals emarginate, small; pods elliptical-oblong, half the length of the horizontal or widely-spreading pedicels, pubescent or smooth. — Fort Gratiot, Mich., N. Minn., and westward. (Eu.)

§ 3. **ERÓPHILA**. Petals 2-cleft. (Annual or biennial; flowers white.)

D. VÉRNA, L. (WHITLOW-GRASS.) Small (scapes 1-3' high); leaves all radical, oblong or lanceolate; racemes elongated in fruit; pods varying from round-oval to oblong-lanceolate, smooth, shorter than the pedicels. — Sandy waste places and roadsides. April, May. (Nat. from Eu.)

7. ALÝSSUM, Tourn.

Pod small, orbicular, with only one or two wingless seeds in a cell; valves nerveless, somewhat convex, the margin flattened. Flowers yellow or white. Filaments often toothed. Cotyledons accumbent. (Greek name of a plant reputed to check the hiccup, as the etymology denotes.)

A. MARÍTIMUM, L. (SWEET ALÝSSUM), with green or slightly hoary linear leaves, honey-scented small white flowers, and 2-seeded pods, commonly cult., begins to be spontaneous southward. (Adv. from Eu.)

A. CALYCÍNUM, L., a dwarf hoary annual, with linear-spatulate leaves, pale yellow or whitish petals little exceeding the persistent calyx, and orbicular sharp margined 4-seeded pod, the style minute, occurs occasionally in grassland. (Adv. from Eu.)

8. LESQUERÉLLA, Watson.

Pod mostly globular or inflated, with a broad orbicular to ovate hyaline partition nerved to the middle, the hemispherical or convex thin valves nerveless. Seeds few or several, in 2 rows, flat. Cotyledons accumbent. Filaments toothless. — Low herbs, hoary with stellate hairs or lepidote. Flowers mostly yellow. (Named for *Leo Lesquereux*.)

1. **L. globosa**, Watson. Minutely hoary all over; stems spreading or decumbent from an annual or biennial root; leaves oblong or lanceolate with a tapering base, repand-toothed or nearly entire; raceme at length elongated, with filiform diverging pedicels; petals light yellow; style filiform, much longer than the small globose, acutish, about 4-seeded pod; seeds marginless. (*Vesicaria Shortii*, Torr.) — Rocky banks, Ky. to Tenn. and Mo. May, June.

2. **L. gracilis**, Watson. Annual, slender; pubescence very fine; leaves narrowly oblanceolate; pods glabrous, suberect on ascending or curved pedicels, stipitate; style long. (*Vesicaria gracilis*, Hook.) — S. Kan. to Tex.

3. **L. Ludoviciána**, Watson. Biennial or perennial; pubescence compact; leaves linear-oblanceolate, mostly entire; pods pubescent, pendulous on recurved pedicels; style long. (*Vesicaria Ludoviciána*, DC.) — Minn. to Neb. and southwestward.

9. CAMÉLINA, Crantz. FALSE FLAX.

Pod obovoid or pear-shaped, pointed, flattish parallel to the broad partition; valves 1-nerved. Seeds numerous, oblong. Cotyledons incumbent. Style slender. Flowers small, yellow. (Name from *χαμάλ*, dwarf, and *λίαν*, flax.)

C. SATIVA, Crantz. Annual; leaves lanceolate and arrow-shaped; pods margined, large. A weed in flax-fields, etc. (Adv. from Eu.)

10. SUBULÁRIA, L. ARLWORT.

Pod ovoid or globular, with a broad partition; the turgid valves 1-nerved. Seeds several. Cotyledons long and narrow, incumbently folded transversely, i. e., the cleft extending to the radicular side of the curvature. Style none. — A dwarf stemless perennial, aquatic; the tufted leaves awl-shaped (whence the name). Scape naked, few-flowered, 1-3' high. Flowers minute, white.

1. **S. aquática**, L. Margin of lakes in Maine; Echo Lake, Franconia, N. H.; also in alpine regions of the western mountains. June, July. (Eu.)

11. NASTÚRTIUM, R. Br. WATER-CRESS.

Pod a short silique or a silicle, varying from oblong-linear to globular, terete or nearly so; valves strongly convex, nerveless. Seeds usually numerous, small, turgid, marginless, in 2 irregular rows in each cell (except in *N. sylvestre*). Cotyledons accumbent. — Aquatic or marsh plants, with yellow or white flowers, and commonly pinnate or pinnatifid leaves, usually glabrous. (Name from *Nasus tortus*, a convulsed nose, alluding to the effect of its pungent qualities.)

§ 1. Petals white, twice the length of the calyx; pods linear; leaves pinnate.

N. OFFICINÁLE, R. Br. (TRUE WATER-CRESS.) Perennial; stems spreading and rooting; leaflets 3-11, roundish or oblong, nearly entire; pods (6-8" long) ascending on slender widely spreading pedicels. — Brooks and ditches; escaped from cultivation. (Nat. from Eu.)

§ 2. Petals yellow or yellowish, seldom much exceeding the calyx; pods linear, oblong, or even ovoid or globular; leaves mostly pinnatifid.

* Perennial from creeping or subterranean shoots; flowers rather large, yellow.

N. SYLVESTRE, R. Br. (YELLOW CRESS.) Stems ascending; leaves pinnately parted, the divisions toothed or cut, lanceolate or linear; pods ($\frac{1}{2}$ long)

on slender pedicels, linear and narrow, bringing the seeds into one row; style very short. — Wet meadows, Mass. to Va.; rare. (Nat. from Eu.)

1. *N. sinuatum*, Nutt. Stems low, diffuse; leaves pinnately cleft, the short lobes nearly entire, linear-oblong; pods linear-oblong (4–6" long), on slender pedicels; style slender. — Banks of the Mississippi and westward. June.

* * Annual or biennial, rarely perennial (?), with simple fibrous roots; flowers small or minute, greenish or yellowish; leaves somewhat lyrate.

2. *N. sessiliflorum*, Nutt. Stems erect, rather simple; leaves obtusely incised or toothed, obovate or oblong; flowers minute, nearly sessile; pods elongated-oblong (5–6" long), thick; style very short. — W. Ill. to E. Kan., Tenn., and southward. April–June.

3. *N. obtusum*, Nutt. Stems much branched, diffusely spreading; leaves pinnately parted or divided, the divisions roundish and obtusely toothed or repand; flowers minute, short-pedicelled; pods longer than the pedicels, varying from linear-oblong to short-oval; style short. — With n. 1 and 2.

4. *N. palustre*, DC. (MARSH CRESS.) Stem erect; leaves pinnately cleft or parted, or the upper lacinate; the lobes oblong, cut-toothed; pedicels about as long as the small flowers and mostly longer than the oblong, ellipsoid, or ovoid pods; style short. — Wet places or in shallow water; common. June–Sept. — Flowers only 1–1½" long. Stems 1–3° high. — The typical form with oblong pods is rare. Short pods and hirsute stems and leaves are common. Var. *hispidum* is a form with ovoid or globular pods. (Eu.)

§ 3. Petals white, much longer than the calyx; pods ovoid or globular; leaves undivided, or the lower ones pinnatifid; root perennial.

5. *N. lacustre*, Gray. (LAKE CRESS.) Aquatic; immersed leaves 1–3-pinnately dissected into numerous capillary divisions; emerged leaves oblong, entire, serrate, or pinnatifid; pedicels widely spreading; pods ovoid, 1-celled, a little longer than the style. — Lakes and rivers, N. E. New York to N. J., Minn., and southwestward. July–Aug. — Near N. amphibium.

N. ARMORACIA, Fries. (HORSE RADISH.) Root-leaves very large, oblong, crenate, rarely pinnatifid, those of the stem lanceolate; fruiting pedicels ascending; pods globular (seldom formed); style very short. (*Cochlearia Armoracia*, L.) — Roots large and long; a well-known condiment. Escaped from cultivation into moist ground. (Adv. from Eu.)

12. BARBARÈA, R. Br. WINTER CRESS.

Pod linear, terete or somewhat 4-sided, the valves being keeled by a mid-nerve. Seeds in a single row in each cell, marginless. Cotyledons incumbent. — Mostly biennials, resembling *Nasturtium*; flowers yellow. (Anciently called the Herb of St. Barbara.)

1. *B. vulgaris*, R. Br. (COMMON WINTER CRESS. YELLOW ROCKET.) Smooth; lower leaves lyrate, the terminal division round and usually large, the lateral 1–4 pairs or rarely wanting; upper leaves obovate, cut-toothed, or pinnatifid at the base; pods erect or slightly spreading; or in var. *stricta*, appressed; in var. *arcuata*, ascending on spreading pedicels. — Low grounds and roadsides; apparently introduced, but indigenous from L. Superior northward and westward. (Eu.)

B. PRÆCOX, R. Br. (EARLY WINTER C.), with 5–8 pairs of lateral lobes to the leaves, and longer pods on very thick pedicels, — yet probably only a variety of the other, — somewhat cultivated from N. Y. southward as a winter salad, under the name of SCURVY-GRASS, — is beginning to run wild. (Eu.)

13. HÉSPERIS, Tourn. ROCKET.

Pod linear, nearly cylindrical; stigma lobed, erect. Seeds in 1 row in each cell, oblong, marginless. Cotyledons incumbent. — Biennial or perennial, with serrate sessile or petiolate leaves, and large purple flowers. (Name from *ἑσπέρα*, evening, from the evening fragrance of the flowers.)

H. MATRONALIS, L. (DAME'S VIOLET.) Tall; leaves lanceolate, acuminate, mostly petiolate; pods 2–4' long, spreading. — Sparingly naturalized. (Nat. from Eu.)

14. ERÝSIMUM, Tourn. TREACLE MUSTARD.

Pod linear, 4-sided, the valves keeled with a strong midrib; stigma broadly lobed. Seeds in 1 row in each cell, oblong, marginless. Cotyledons (often obliquely) incumbent. — Chiefly biennials, with yellow flowers; the leaves not clasping. Pubescence of appressed 2–3-parted hairs. (Name from *ἐρύσειν*, to draw blisters.)

1. *E. asperum*, DC. (WESTERN WALL-FLOWER.) Minutely roughish-hoary; stem simple, leaves lanceolate to linear, entire or somewhat toothed; pods nearly erect or widely spreading on short pedicels, elongated (3–4' long), exactly 4-sided; stigma 2-lobed. — Ohio (on limestone cliffs) to Ill., Ark., S. D., and common westward. June, July. — Plant stout, 1–2° high; the crowded bright orange-yellow flowers as large as those of the Wall-flower. Petals orbicular, on very slender claws.

2. *E. cheiranthoides*, L. (WORM-SEED MUSTARD.) Minutely roughish, branching, slender; leaves lanceolate, scarcely toothed; flowers small; pods small and short (7–12" long), very obtusely angled, ascending on slender divergent pedicels. — Banks of streams, Mass. to Penn., Minn., and northward. July. (Eu.)

3. *E. parviflorum*, Nutt. Stem erect, often simple; leaves linear-oblong, entire or the lowest coarsely toothed; flowers small (3" long); pods narrow, 1–2½' long, ascending on short pedicels. — Minn. to Kan. and westward.

15. SISÝMBRIUM, Tourn. HEDGE MUSTARD.

Pod terete, flattish or 4–6-sided, the valves 1–3-nerved; stigma small, entire. Seeds oblong, marginless, in 1 or 2 rows in each cell. Cotyledons incumbent. Calyx open. — Flowers small, white or yellow. Pubescence spreading. (An ancient Greek name for some plant of this family.) Ours are mostly annuals or biennials.

1. *S. humile*, Meyer. Perennial, branching from the base, sparingly pubescent, 6' high or less; leaves narrowly oblanceolate, mostly coarsely and sharply toothed; flowers white or rose-color; pods very narrow, subterete, 4–9" long, ascending on short pedicels, beaked with a short style, seeds 1-ranked. (*Arabis petraea*, Man., not Lam.) — Willoughby Mountain, Vt.; Canada and westward. (N. Asia.)

2. *S. canescens*, Nutt. (TANSY MUSTARD.) Leaves 2-pinnatifid, often hoary or downy, the divisions small and toothed; flowers yellowish, very small; pods in long racemes, oblong-club-shaped or oblong-linear, shorter than their mostly horizontal pedicels; seeds 2-ranked in each cell. — Penn. and N. Y. to Lake Superior, thence southward and westward. June–Aug.

S. SÓPHIA, L. A similar hoary species, with decomposed leaves; pods slender, 6–15" long, ascending; seeds 1-ranked. — Sparingly naturalized from Europe.

S. OFFICINALE, Scop. (HEDGE MUSTARD.) Leaves runcinate; flowers very small, pale yellow; pods awl-shaped, close pressed to the stem, scarcely stalked. — Waste places. May–Sept. — An unsightly branched weed, 2–3° high. (Nat. from Eu.)

S. THALIANA, Gaud. (MOUSE-EAR CRESS.) Leaves obovate or oblong, entire or barely toothed; flowers white; pods linear, somewhat 4-sided, longer than the slender spreading pedicels. — Old fields and rocks, Mass. to Kan. April, May. — A span high, slender, branched, hairy at the base. (Nat. from Eu.)

S. ALLIARIA, Scop. Stout, erect; leaves reniform to ovate-cordate, coarsely repand-dentate; flowers white; pods tapering, 1–2' long, ascending on very stout spreading pedicels. — Near Georgetown, D. C. (Nat. from Eu.)

16. THELYPÓDIUM, Endl.

Pod terete or teretish; valves 1-nerved; stigma mostly entire. Seeds in 1 row in each cell, oblong, marginless. Cotyledons obliquely incumbent. — Stout biennials or perennials, with mostly large purplish or white flowers. Leaves or petioles often auricled at base. (Name from *θηλυς*, female, and *πους*, foot, the ovary in some species being stipitate.)

1. *T. pinnatifidum*, Watson. Glabrous (1–3° high), often branched above; root-leaves round or heart-shaped, on slender petioles; stem-leaves auricled, ovate-oblong and ovate-lanceolate (2–6' long), sharply and often doubly toothed, tapering to each end, the lower into a winged petiole, rarely bearing a pair or two of small lateral lobes; flowers purplish; pods 1–1½' long, on short diverging pedicels, pointed by a short style. (*Arabis hesperidoides*, Gray.) Alluvial river-banks, W. Pa. to Minn., Mo., and southwestward. May, June.

17. BRÁSSICA (Brassica and Sinapis), Tourn.

Pod linear or oblong, nearly terete or 4-sided, with a stout 1-seeded beak or a rigid style; valves 1–5-nerved. Seeds globose, 1-rowed. Cotyledons incumbent, folded around the radicle. — Annuals or biennials, with yellow flowers. Lower leaves mostly lyrate, incised, or pinnatifid. (The Latin name of the Cabbage. Sinapis is the Greek *σίναπι*, which is said to come from the Celtic *nap*, a turnip.)

B. SINAPISTRUM, Boiss. (or *SINAPIS ARVENSIS*, L., the English CHARLOCK), with knotty pods, fully one third occupied by a stout 2-edged beak (which is either empty or 1-seeded), the upper leaves barely toothed, is a noxious weed in grain-fields, from N. Eng. to Penn. and N. Y. westward. (Adv. from Eu.)

B. (or *SINAPIS*) *ALBA*. (WHITE MUSTARD.) Pods bristly, ascending on spreading pedicels, more than half its length occupied by the sword-shaped 1-seeded beak; leaves all pinnatifid; seeds pale. (Cult. and adv. from Eu.)

B. (or *SINAPIS*) *NIGRA*, Koch. (BLACK MUSTARD.) Pods smooth (½' long), 4-cornered (the valves only 1-nerved), erect on appressed pedicels forming a slender raceme, tipped with a stout persistent style; seeds dark brown, smaller

and more pungent than in the last; lower leaves with a large terminal lobe and a few small lateral ones. — Fields and waste places. (Adv. from Eu.)

B. CAMPÉSTRIS, L., in the form of the *RUTABAGA* and the *TURNIP*, sometimes persists a year or two in neglected grounds.

18. CAPSÉLLA, Medic. SHEPHERD'S PURSE.

Pod obcordate-triangular, flattened contrary to the narrow partition; the valves boat-shaped, wingless. Seeds numerous. Cotyledons incumbent. — Annuals; flowers small, white. (Name a diminutive of *capsa*, a box.)

C. BURSA-PASTÓRIS, Moench. Root-leaves clustered, pinnatifid or toothed; stem-leaves arrow-shaped, sessile. — Waste places; the commonest of weeds. April–Sept. (Nat. from Eu.)

19. THLÁSPI, Tourn. PENNYCRESS.

Pod orbicular, obovate, or obcordate, flattened contrary to the narrow partition, the midrib or keel of the boat-shaped valves extended into a wing. Seeds 2–8 in each cell. Cotyledons accumbent. Petals equal. — Low plants, with root-leaves undivided, stem-leaves arrow-shaped and clasping, and small white or purplish flowers. (Ancient Greek name, from *θλάω*, to crush, from the flattened pod.)

T. ARVENSE, L. (FIELD P. or MITHRIDATE MUSTARD.) A smooth annual, with broadly winged pod ½' in diameter, several-seeded, deeply notched at top; style minute. — Waste places; rarely naturalized. (Nat. from Eu.)

20. LEPÍDIUM, Tourn. PEPPERWORT. PEPPERGRASS.

Pod roundish, much flattened contrary to the narrow partition; the valves boat-shaped and keeled. Seeds solitary in each cell, pendulous. Cotyledons incumbent, or in n. 1 accumbent! Flowers small, white or greenish. (Name from *λεπίδιον*, a little scale, alluding to the small flat pods.) — Ours are annuals or biennials, except the last.

* Leaves all with a tapering base, the upper linear or lanceolate and entire, the lower and often the middle ones incised or pinnatifid; pods orbicular or oval, with a small notch at the top; the style minute or none; stamens only 2.

1. *L. Virginicum*, L. (WILD PEPPERGRASS.) Cotyledons accumbent and seed minutely margined; pod marginless or obscurely margined at the top; petals present, except in some of the later flowers. — June–Sept. A common roadside weed, which has immigrated from farther south.

2. *L. intermedium*, Gray. Cotyledons incumbent as in the following; pod minutely wing-margined at the top; petals usually minute or wanting; otherwise nearly as in n. 1. — Dry places, from western N. Y. and N. Ill., north and westward.

L. RUDERALE, L. More diffuse, the smaller and oval pods and the seeds marginless; petals always wanting. — Roadsides, near Boston, Philadelphia, etc.; not common. (Adv. from Eu.)

* * Stem-leaves with a sagittate partly clasping base, rather crowded.

L. CAMPÉSTRE, Br. Minutely soft downy; leaves arrow-shaped, somewhat toothed; pods ovate, winged, rough, the style longer than the narrow notch. — Old fields, Mass. and N. Y. to Va.; rare. (Nat. from Eu.)

L. DRÁBA, L. Perennial, obscurely hoary; leaves oval or oblong, the upper with broad clasping auricles; flowers corymbose; pods heart-shaped, wingless, thickish, entire, tipped with a conspicuous style. — Astoria, near New York, D. C. Eaton. (Adv. from Eu.)

21. *SENEBIERA*, DC. WART-CRESS. SWINE-CRESS.

Pod flattened contrary to the narrow partition; the two cells indehiscent and falling away at maturity from the partition as closed nutlets, strongly wrinkled or tuberculate, 1-seeded. Cotyledons narrow and incumbently folded transversely. Low and diffuse or prostrate annuals or biennials, with minute whitish flowers. Stamens often only 2. (Dedicated to *J. Senebier*, a distinguished vegetable physiologist.)

S. DIDYMA, Pers. Leaves 1-2-pinnately parted; pods notched at the apex, rough-wrinkled. — Waste places, at ports, E. Mass. to Va., etc.; an immigrant from farther south.

S. CORONOPUS, DC. Leaves less divided, with narrower lobes; pods notched at the apex, tubercled. — At ports, R. I. to Va., etc. (Adv. from Eu.)

22. *CAKILE*, Tourm. SEA-ROCKET.

Pod short, 2-jointed across, fleshy, the upper joint separating at maturity; each indehiscent, 1-celled and 1-seeded, or the lower sometimes seedless. Seed erect in the upper, suspended in the lower joint. Cotyledons obliquely accumbent. — Seaside fleshy annuals. Flowers purplish. (An old Arabic name.)

1. *C. Americana*, Nutt. (AMERICAN SEA-ROCKET.) Leaves obovate, sinuate and toothed; lower joint of the fruit obovoid, emarginate; the upper ovate, flattish at the apex. — Coast of the Northern States and of the Great Lakes. July-Sept. — Joints nearly even and fleshy when fresh; the upper one 4-angled and appearing more beaked when dry.

23. *RAPHANUS*, Tourm. RADISH.

Pods linear or oblong, tapering upward, indehiscent, several-seeded, continuous and spongy within between the seeds, or necklace-form by constriction between the seeds, with no proper partition. Style long. Seeds spherical and cotyledons conduplicate, as in *Brassica*. — Annuals or biennials. (The ancient Greek name from *ῥα*, quickly, and *φαίω*, to appear, alluding to the rapid germination.)

R. RAPHANISTRUM, L. (WILD RADISH. JOINTED CHARLOCK.) Pods necklace-form, long-beaked; leaves lyre-shaped, rough; petals yellow, turning whitish or purplish, veiny. — A troublesome weed in fields, E. New Eng. to Penn. (Adv. from Eu.)

ORDER 11. *CAPPARIDACEÆ*. (CAPER FAMILY.)

Herbs (when in northern regions), with cruciform flowers, but 6 or more not tetradynamous stamens, a 1-celled pod with 2 parietal placentæ, and kidney-shaped seeds. — Pod as in *Cruciferae*, but with no partition; seeds similar, but the embryo coiled rather than folded. Leaves alternate, mostly palmately compound. — Often with the acrid or pungent qualities of *Cruciferae* (as in *capers*, the flower-buds of *Capparis spinosa*).

1. *Polanisia*. Stamens 8 or more. Pod many-seeded, not or scarcely stipitate.

2. *Cleome*. Stamens 6. Pod linear, many-seeded, long-stipitate.

3. *Cleomella*. Stamens 6. Pod very short, rhomboidal, few-seeded, long-stipitate.

1. *POLANISIA*, Raf.

Petals with claws, notched at the apex. Stamens 8-32, unequal. Receptacle not elongated, bearing a gland behind the base of the ovary. Pod linear

or oblong, veiny, turgid, many-seeded. — Fetid annuals, with glandular or clammy hairs. Flowers in leafy racemes. (Name from *πολύς*, many, and *ἄριστος*, unequal, points in which the genus differs in its stamens from *Cleome*.)

1. *P. graveolens*, Raf. Leaves with 3 oblong leaflets; stamens about 11, scarcely exceeding the petals; style short; pod slightly stipitate. — Gravelly shores, from Conn. and W. Vt. to Minn. and Kan. June-Aug. — Flowers small (2-3" long); calyx and filaments purplish; petals yellowish-white.

2. *P. trachysperma*, Torr. & Gray. Flowers larger (4-5" long), the stamens (12-16) long-exserted; style 2-3" long; pod sessile; seeds usually rough. — Iowa to Kan. and westward.

2. *CLEOME*, L.

Petals entire, with claws. Stamens 6. Receptacle somewhat produced between the petals and stamens, and bearing a gland behind the stipitate ovary. Pod linear to oblong, many-seeded. — Our species a glabrous annual, with 3-foliate leaves, leafy-bracteate racemes, and rose-colored or white flowers. (Name of uncertain derivation, early applied to some mustard-like plant.)

1. *C. integrifolia*, Torr. & Gray. Calyx 4-cleft; petals with very short claws, leaflets narrowly lanceolate to oblong; bracts simple; pod oblong to linear, 1-2' long, the stipe as long as the pedicel. — Minn. to Kan. and westward; N. Ill. Flowers showy; 2-3° high.

3. *CLEOMELLA*, DC.

Differing from *Cleome* in the clawless petals, glandless receptacle, and the short few-seeded pod with more or less distended or even conical valves. Flowers small, yellow. (Name a diminutive of *Cleome*.)

1. *C. angustifolia*, Torr. Glabrous, 1-2° high; leaflets (3) and simple bracts linear to linear-lanceolate, acute; pod rhomboidal, the valves very bluntly conical; stipe shorter than the pedicel. — Kan. to Tex. and westward.

ORDER 12. *RESEDACEÆ*. (MIGNONETTE FAMILY.)

Herbs, with unsymmetrical 4-7-merous small flowers, a fleshy 1-sided hypogynous disk between the petals and the (3-40) stamens, bearing the latter. Calyx not closed in the bud. Capsule 3-6-lobed, 3-6-horned, 1-celled with 3-6-parietal placentæ, opening at the top before the seeds (which are as in Order 11) are full grown. — Leaves alternate, with only glands for stipules. Flowers in terminal spikes or racemes. — A small and unimportant family, of the Old World, represented by the Mignonette (*Reseda odorata*) and the Dyer's Weed.

1. *RESEDA*, Tourm. MIGNONETTE. DYER'S ROCKET.

Petals 4-7, cleft, unequal. Stamens 12-40, on one side of the flower. (Name from *resedo*, to calm, in allusion to supposed sedative properties.)

R. LUTEOLA, L. (DYER'S WEED OR WELD.) Leaves lanceolate; calyx 4-parted; petals 4, greenish-yellow; the upper one 3-5-cleft, the two lateral 3-cleft, the lower one linear and entire; capsule depressed. — Roadsides, N. Y., etc. — Plant 2° high. Used for dyeing yellow. (Adv. from Eu.)

R. LUTEA, L. Leaves irregularly pinnately parted or bipinnatifid; sepals and petals 6, stamens 15-20. — Nantucket, Mass., and ballast-grounds.