

lanceolate pungent leaves in whorls of 4-6, and small subsessile blue or pinkish flowers surrounded by a gamophyllous involucre. (Named for *Dr. William Sherard*, patron of Dillenius.)

*S. ARVENSIS*, L. The only species; sparingly naturalized from Eu.

#### ORDER 53. VALERIANACEÆ. (VALERIAN FAMILY.)

Herbs, with opposite leaves and no stipules; the calyx-tube coherent with the ovary, which has one fertile 1-ovuled cell and two abortive or empty ones; the stamens distinct, 1-3, fewer than the lobes of the corolla, and inserted on its tube. — Corolla tubular funnel-form, often irregular, mostly 5-lobed, the lobes imbricated in the bud. Style slender; stigmas 1-3. Fruit indehiscent, 1-celled (the two empty cells of the ovary disappearing), or 3-celled, two of them empty, the other 1-seeded. Seed suspended, anatropous, with a large embryo and no albumen. — Flowers in panicle or clustered cymes. (Roots often odorous and antispasmodic.)

##### 1. VALERIANA, Tournef. VALERIAN.

Limb of the calyx of several plumose bristles (like a pappus) which are rolled up inward in flower, but unroll and spread as the seed-like 1-celled fruit matures. Corolla commonly gibbous near the base, the 5-lobed limb nearly regular. Stamens 3. — Perennial herbs, with thickened strong-scented roots, and simple or pinnate leaves. Flowers in many species imperfectly dioecious or dimorphous. (A mediæval Latin name of uncertain origin.)

\* Root spindle-shaped, large and deep (6-12' long); leaves thickish.

1. *V. edulis*, Nutt. Smooth, or minutely downy when very young; stem straight (1-4° high), few-leaved; leaves commonly minutely and densely ciliate, those of the root spatulate and lanceolate, of the stem pinnately parted into 3-7 long and narrow divisions; flowers in a long and narrow interrupted panicle, nearly dioecious; corolla whitish, obconical (2" long). — Wet plains and prairies, Ohio and Ont. to Iowa, Minn., and westward. June.

\*\* Root fibrous; leaves thin. (Stems 1-3° high.)

2. *V. sylvatica*, Banks. Smooth or minutely pubescent; root-leaves ovate or oblong, entire, rarely with 2 small lobes; stem-leaves pinnate, with 3-11 oblong-ovate or lanceolate nearly entire leaflets; cyme at first close, many-flowered; corolla inversely conical (3" long, rose-color or white). — Wet ground, Newf. to southern N. Y., N. Mich., westward and northward. June.

3. *V. pauciflora*, Michx. Smooth, slender, surculose; root-leaves ovate, heart-shaped, toothed, pointed, sometimes with 2 small lateral divisions; stem-leaves pinnate, with 3-7 ovate toothed leaflets; branches of the panicle cyme few-flowered; tube of the (pale pink) corolla long and slender (½' long). — Woods and alluvial banks, Penn. to S. Ill., Mo., and Tenn. June.

##### 2. VALERIANELLA, Tournef. CORN SALAD. LAMB-LETTUCE.

Limb of the calyx obsolete or merely toothed. Corolla funnel-form, equally or unequally 5-lobed. Stamens 3, rarely 2. Fruit 3-celled, two of the cells empty and sometimes confluent into one, the other 1-seeded. — Annuals and

biennials, usually smooth, with forking stems, tender and rather succulent leaves (entire or cut-lobed towards the base), and white or whitish cymose-clustered and bracted small flowers. — Our species all have the limb of the calyx obsolete, and are so much alike in aspect, flowers, etc., that good characters are only to be taken from the fruit. They all have a rather short corolla, the limb of which is nearly regular. (Name a diminutive of *Valeriana*.)

\* Corolla bluish; fruit with a corky mass at the back of the fertile cell.

*V. OLITORIA*, Poll. Fruit flattish, obliquely rhomboidal; empty cells as large as the fertile, contiguous, the thin partition at length breaking up. — Old fields, N. Y. to Penn. and La. (Nat. from Eu.)

\*\* Corolla white; no corky mass behind the fertile cell.

+ Fertile cell broader than the empty ones; cross-section of fruit triangular.

1. *V. chenopodiifolia*, DC. Stems with long internodes and few forks; glomerate cymes few, slender-peduncled; bracts broadly lanceolate; fruit glabrous or pubescent, 2" long. (*Fedia Fagopyrum*, Torr. & Gray.) — Moist grounds, western N. Y. to Minn., south to Va. and Ky.

+ + Fertile cell as broad as the empty ones, beaked; cross-section quadrate.

2. *V. radiata*, DuRoi. Fruit ovate-tetragonal, downy-pubescent (sometimes glabrous); empty cells as thick as the oblong-ovate fertile one, or thicker, a broad shallow groove between them. (*Fedia radiata*, Michx.) — Low grounds, Penn. to Minn., Tex., and Fla.

3. *V. stenocarpa*, Krok. Fruit oblong-tetragonal, commonly glabrous; oblong fertile cell thicker than the linear-oblong approximate empty ones. (*Fedia stenocarpa*, Engelm.) — W. Mo. and E. Kan. to Tex.

+ + + Fertile cell much the narrowest, dorsally 1-nerved; section roundish.

4. *V. Woodsiana*, Walp. Fruit 1" long or more; fertile cell ovate, tipped with a tooth; empty ones inflated, with oblong depression (sometimes an open cavity) in the middle. — Moist grounds, N. Y. and Penn. to Tex.

Var. *umbilicata*, Gray. Empty cells becoming confluent, vesicular by incurvation of the circular margin, forming a deep and round umbilication. (*Fedia umbilicata*, Sulliv.) — N. Y. to Ohio and southward.

Var. *patellaria*, Gray. Fruit saucer-shaped, emarginate at base and apex, winged by the divergent cells. (*Fedia patellaria*, Sulliv.) — Same range.

#### ORDER 54. DIPSACEÆ. (TEASEL FAMILY.)

Herbs, with opposite or whorled leaves, no stipules, and the flowers in dense heads, surrounded by an involucre, as in the Composite Family; but the stamens are distinct, and the suspended seed has albumen. — Represented by the following introduced species and by the cultivated Sweet Scabious (*Scabiosa atropurpurea*).

##### 1. DIPSACUS, Tournef. TEASEL.

Involucre many-leaved, longer than the chaffy leafy-tipped and pointed bracts among the densely capitate flowers; each flower with a 4-leaved calyx-like involucre investing the ovary and fruit (achene). Calyx-tube coherent with the ovary, the limb cup-shaped, without a pappus. Corolla nearly regular, 4-cleft. Stamens 4, inserted on the corolla. Style slender. — Stout and coarse bien-



nials, hairy or prickly, with large oblong heads. (Name from *δίψαω*, to thirst, probably because the united cup-shaped bases of the leaves in some species hold water.)

1. *D. SYLVESTRIS*, Mill. (WILD TEASEL.) Prickly; leaves lance-oblong; leaves of the involucre slender, longer than the head; bracts (chaff) tapering into a long flexible awn with a straight point. — Roadsides; rather rare. (Nat. from Eu.) Suspected to be the original of

2. *D. FULLONUM*, L., the FULLER'S TEASEL, which has a shorter involucre, and stiff chaff to the heads, with hooked points, used for raising a nap upon woollen cloth; it has escaped from cultivation in some places. (Adv. from Eu.)

#### ORDER 55. COMPÓSITÆ. (COMPOSITE FAMILY.)

Flowers in a close head (the compound flower of the older botanists), on a common receptacle, surrounded by an involucre, with 5 (rarely 4) stamens inserted on the corolla, their anthers united in a tube (syngenesious). — Calyx-tube united with the 1-celled ovary, the limb (called a pappus) crowning its summit in the form of bristles, awns, scales, teeth, etc., or cup-shaped, or else entirely absent. Corolla either strap-shaped or tubular; in the latter chiefly 5-lobed, valvate in the bud, the veins bordering the margins of the lobes. Style 2-cleft at the apex (in sterile flowers usually entire). Fruit seed-like (achene), dry, containing a single erect anatropous seed, with no albumen. — An immense family, in temperate regions chiefly herbs, without stipules, with perfect, polygamous, monoecious or dioecious flowers. The flowers with a strap-shaped (ligulate) corolla are called rays or ray-flowers; the head which presents such flowers, either throughout or at the margin, is radiate. The tubular flowers compose the disk; and a head which has no ray-flowers is said to be discoid. When the head contains two sorts of flowers it is said to be heterogamous; when only one sort, homogamous. The leaves of the involucre, of whatever form or texture, are termed scales. The bracts or scales, which often grow on the receptacle among the flowers, are called the chaff; when these are wanting, the receptacle is said to be naked. — The largest order of Phænogamous plants. The genera are divided by the corolla into three series, only two of which are represented in the Northern United States. The first is much the larger.

#### Systematic Synopsis.

##### SERIES I. TUBULIFLORÆ.

Corolla tubular in all the perfect flowers, regularly 5- (rarely 3-4-) lobed, ligulate only in the marginal or ray-flowers, which when present are either pistillate only, or neutral (with neither stamens nor pistil).

**Tribe I. VERNONIACEÆ.** Heads discoid; the flowers all alike, perfect and tubular, never yellow. Branches of the style long and slender, terete, thread-shaped, minutely bristly-hairy all over. — Leaves alternate or scattered.

1. *Elephantopus*. Heads 3-5-flowered, several crowded together into a compound head. Involucre of 8 scales. Pappus of several chaffy bristles.
2. *Vernonia*. Heads several-many-flowered, separate. Involucre of many scales. Pappus double, the inner capillary, the outer of minute chaffy bristles.

**Tribe II. EUPATORIACEÆ.** Heads discoid, the flowers all alike, perfect and tubular, never yellow. Branches of the style thickened upward or club-shaped, obtuse, very minutely and uniformly pubescent; the stigmatic lines indistinct.

- \* Pappus a row of hard scales.
- 3. *Sclerolepis*. Head many-flowered. Scales of the involucre equal. Leaves whorled.
- \*\* Pappus of slender bristles.
- + Achene 5-angled; bristles of the pappus roughish.
- 4. *Mikania*. Flowers and involucre scales only 4. Stems twining.
- 5. *Eupatorium*. Involucre of more than 4 scales and the flowers few or many. Stems not twining.

+ Achene 10-ribbed; involucre scales striate-nerved.

6. *Kuhnia*. Pappus very strongly plumose. Scales of the involucre few.
7. *Brickellia*. Involucral scales in several series. Pappus merely scabrous.
8. *Liatris*. Pappus plumose or only barbellate. Corolla red-purple, strongly 5-lobed. Heads spicate or racemose, the involucre well imbricated.
9. *Trilisa*. Pappus minutely barbellate. Corolla rose-purple. Heads corymbed or panicled, the involucre little imbricated.

**Tribe III. ASTEROIDEÆ.** Heads discoid, the flowers all alike and tubular; or else radiate, the outer ones ligulate and pistillate. Anthers not caudate at base. Branches of the style in the perfect flowers flat, smooth up to where the conspicuous marginal stigmatic lines abruptly terminate, and prolonged above this into a flattened lance-shaped or triangular appendage which is evenly hairy or pubescent outside. — Leaves alternate. Receptacle naked (destitute of chaff) in all our species.

- \* 1. Ray-flowers yellow (in one species of *Solidago* whitish), or sometimes none at all.
- + Pappus of not numerous slender bristles. Heads radiate. Involucre of firm scales with greenish tips, commonly coated with resin. West of the Mississippi.
- 10. *Gutierrezia*. Heads small, numerous. Ray and disk-flowers 3 or 4 each, all fertile. Pappus of several short chaffy scales. Suffrutescent; leaves very narrow.
- 11. *Amphichyris*. Heads small. Ray-flowers 5-10; pappus coroniform. Disk-flowers infertile; pappus of several bristle-like scales. Annual; leaves very narrow.
- 12. *Grindella*. Heads large, many-flowered. Flowers all fertile. Pappus of 2-8 rigid caducous awns. Coarse herbs with toothed leaves.
- + Pappus (at least of the disk) of copious slender or capillary bristles.
- = Pappus double.
- 13. *Heterotheca*. Resembling *Chrysopsis*, but the achenes of the ray thicker than those of the disk and without pappus or nearly so. Western.
- 14. *Chrysopsis*. Heads many-flowered; rays numerous. The outer pappus of very small chaffy bristles, much shorter than the inner of copious capillary bristles.
- = Pappus simple.

15. *Aplopappus*. Heads many-flowered, many-radiate. Involucre hemispherical. Pappus of many unequal bristles. Western.
16. *Bigelovia*. Heads 3-4-flowered; rays none. Receptacle awl-shaped. Pappus a single row of capillary bristles.
17. *Solidago*. Heads few-many-flowered; rays 1-16. Pappus of numerous slender and equal capillary bristles.
18. *Brachycheta*. Heads 8-10-flowered, clustered; rays 4 or 5. Pappus a row of minute bristles shorter than the achene.

\* 2. Ray-flowers white, blue, or purple, never yellow.

+ Pappus none or very short, with or without a few awns.

+ Receptacle conical. Awns none.

19. *Bellis*. Achenes marginless, flattened; pappus none. Involucral scales equal.
20. *Aphanostephus*. Achenes prismatic; pappus coroniform. Outer scales shorter.