

2. **C. Nuttallii**, Gray. Smaller; the flowering stems more upright (5-9' high), with narrower mostly entire leaves and fewer-flowered clusters, while sterile runners from the base bear ovate thickish leaves only 2-5" long. (*C. glabella*, var. *Nuttallii*, Gray.) — Niagara Falls to Minn., south to Mo. and Tex.

§ 2. Flowers in sessile dense many-flowered clusters, and involucre with conspicuous setaceous-subulate rigid bracts; calyx nearly naked in the throat.

3. **C. Clinopodium**, Benth. (BASIL.) Hairy, erect (1-2° high); leaves ovate, petioled, nearly entire; flowers (pale purple) in globular clusters; hairy bracts as long as the calyx. — Borders of thickets and fields, naturalized extensively, but indigenous from the Great Lakes to the Rocky Mts. (Eu., Asia.)

#### 16. MELISSA, L. BALM.

Calyx with the upper lip flattened and 3-toothed, the lower 2-cleft. Corolla with a recurved-ascending tube. Stamens 4, curved and conniving under the upper lip. Otherwise nearly as *Calamintha*. — Clusters few-flowered, loose, one-sided, with few and mostly ovate bracts resembling the leaves. (Name from μέλισσα, a bee; the flowers yielding abundance of honey.)

**M. officinalis**, L. (COMMON BALM.) Upright, branching, perennial, pubescent; leaves broadly ovate, crenate-toothed, lemon-scented; corolla nearly white. — Sparingly escaped from gardens. (Nat. from Eu.)

#### 17. HEDEOMA, Pers. MOCK PENNYROYAL.

Calyx ovoid or tubular, gibbous on the lower side near the base, 13-nerved, bearded in the throat, 2-lipped; upper lip 3-toothed, the lower 2-cleft. Corolla 2-lipped; upper lip erect, flat, notched at the apex, the lower spreading, 3-cleft. Fertile stamens 2; the upper pair reduced to sterile filaments or wanting. — Low, odorous annuals, with small leaves, and loose axillary clusters of flowers (in summer), often forming terminal leafy racemes. (Altered from ἡδύσμου, an ancient name of Mint, from its sweet scent.)

\* Sterile filaments manifest; leaves oblong-ovate, petioled, somewhat serrate.

1. **H. pulegioides**, Pers. (AMERICAN PENNYROYAL.) Erect, branching, hairy; whorls few-flowered; upper calyx-teeth triangular, the lower setaceous-subulate; corolla (bluish, pubescent) scarcely exerted (2-3" long); taste and odor nearly of the true Pennyroyal (*Mentha Pulegium*) of Europe. — Common from N. Eng. to the Dakotas, and southward.

\*\* Sterile filaments minute or obsolete; leaves narrow, entire, sessile or nearly so.

2. **H. hispida**, Pursh. Mostly low; leaves linear, crowded, almost glabrous, somewhat hispid-ciliate; bracts spreading or reflexed; upper flowers rather crowded; calyx-teeth all subulate, equalling the bluish corolla. — Plains, Minn. and Dak. to W. Ill. and La.

3. **H. Drummóndi**, Benth. Pubescent or puberulent, a span or two high; leaves oblong to linear; bracts mostly erect; calyx hirsute or hispid, its teeth at length connivent, the lower nearly twice as long as the upper. — Central Neb. and Kan. to Tex., and westward.

#### 18. SÁLVIA, L. SAGE.

Calyx 2-lipped; upper lip 3-toothed or entire, the lower 2-cleft. Corolla deeply 2-lipped, ringent; upper lip straight or scythe-shaped, entire or barely

notched, the lower spreading or pendent, 3-lobed, its middle lobe larger. Stamens 2, on short filaments, jointed with the elongated transverse connective, one end of which, ascending under the upper lip, bears a linear 1-celled (half-) anther, the other, usually descending, bears an imperfect or deformed (half-) anther or none at all. — Flowers mostly large and showy, in spiked, racemed, or paniced whorls, produced in summer. (Name from *salvo*, to save, in allusion to the reputed healing qualities of Sage.)

\* Both anther-cells polliniferous; leaves mostly lyrate-lobed or pinnatifid.

1. **S. lyrata**, L. (LYRE-LEAVED SAGE.) Low perennial (10-20' high), somewhat hairy; stem nearly simple and naked; root-leaves lyre-shaped or sinuate-pinnatifid, sometimes almost entire; those of the stem mostly a single pair, smaller and narrower; the floral oblong-linear, not longer than the calyx; whorls loose and distant, forming an interrupted raceme; upper lip of the blue-purple pubescent corolla (nearly 1' long) short, straight, not vaulted. — Woodlands and meadows, N. J. to Ill., south to Fla. and Tex.

\*\* Lower anther-cell wanting; the sterile ends of the connectives mostly united.

+ Calyx obscurely bilabiate; corolla 8-12" long, with prominently exerted tube.

2. **S. azurea**, Lam., var. **grandiflora**, Benth. Cinereous-puberulent, 1-5° high; lower leaves lanceolate or oblong, obtuse, denticulate or serrate, tapering to a short petiole; upper narrower, often linear, entire; inflorescence spike-like, tomentulose-sericeous; calyx-teeth short, the broad upper lip entire; corolla deep blue (varying to white). — E. Neb. to Miss., Tex., and Col.

+ Calyx deeply bilabiate; corolla 4-6" long, the tube hardly at all exerted.

3. **S. lanceolata**, Willd. Puberulent or nearly glabrous, 5-12' high; leaves lanceolate or linear-oblong, irregularly serrate or nearly entire, tapering to a slender petiole; inflorescence virgate-spiciform, interrupted; upper lip of calyx entire, lower 2-cleft; corolla blue, 4" long, little exerted; style glabrous or nearly so. — Plains, Iowa and Neb. to Tex. and Ariz.

4. **S. urticifolia**, L. Villous-pubescent and somewhat viscid, or glabrate, 1-2° high; leaves coarsely serrate, ovate, with truncate or cuneate base decurrent into a winged petiole; inflorescence racemose-spicate, of numerous distant clusters; calyx-lips divergent, the upper 3-toothed, lower 2-cleft; corolla blue and white, 5-6" long, twice the length of the calyx; style strongly bearded. — Woodlands, Md. to Ky., south to Ga. and La.

**S. sclarea**, L. (CLARY.) Villous-pubescent, viscid, stout, 2-3° high; leaves ample, long-petioled, ovate and cordate, crenate, rugose; the floral forming bracts of the spike, tinged with white and rose-color; corolla white and bluish, rather large, the long upper lip falcate and compressed. — Escaped from gardens, Penn. (Nat. from Eu.)

**S. verbenacea**, L. Pubescent or villous, 1-2° high; leaves ovate or oblong, often cordate at base, mostly sinuate-incised or moderately pinnatifid, the lobes crenate-toothed, rugose; the few cauline mostly sessile, the floral inconspicuous; raceme interrupted; calyx reflexed after flowering; corolla bluish, small, the upper lip nearly straight. — Sparingly seen in the Middle States. (Nat. from Eu.)

#### 19. MONÁRDA, L. HORSE-MINT.

Calyx tubular, elongated, 15-nerved, nearly equally 5-toothed, usually hairy in the throat. Corolla elongated, with a slightly expanded throat, and a



strongly 2-lipped limb; lips linear or oblong, somewhat equal, the upper erect, entire or slightly notched, the lower spreading, 3-lobed at the apex, its lateral lobes ovate and obtuse, the middle one narrower and slightly notched. Stamens 2, elongated, ascending, inserted in the throat of the corolla; anthers linear (the divaricate cells confluent at the junction). — Odeorous erect herbs, with entire or toothed leaves, and pretty large flowers in a few whorled heads, closely surrounded with bracts. (Dedicated to *Nicolas Monardes*, author of many tracts upon medicinal and other useful plants, especially those of the New World, in the latter half of the 16th century.)

\* *Stamens and style exerted beyond the linear straight acute upper lip of the corolla; heads solitary and terminal or sometimes 2 or 3; leaves acutely more or less serrate; perennials.*

+ *Leaves petioled; calyx-teeth scarcely longer than the width of the tube.*

1. *M. didyma*, L. (OSWEGO TEA. BEE-BALM.) Somewhat hairy (2° high), acutely 4-angled; leaves ovate-lanceolate, acuminate, the floral ones and the large outer bracts tinged with red; calyx smooth, incurved, nearly naked in the throat; corolla smooth (2' long), bright red, showy. — Moist woods by streams, N. Eng. to Mich., south to Ga. in the mountains. July–Aug.

2. *M. clinopodia*, L. Nearly glabrous to villous-pubescent; leaves ovate-lanceolate and ovate; bracts whitish; calyx moderately hirsute in the throat; corolla slightly pubescent (1' long), dull white or flesh-colored. — Shady places, ravines, etc., Ont. to Ill., and along the mountains to Ga.

3. *M. fistulosa*, L. (WILD BERGAMOT.) Smoothish or downy, 2–5° high; leaves ovate-lanceolate, the uppermost and outer bracts somewhat colored (whitish or purplish); calyx slightly curved, very hairy in the throat; corolla (1' long or more) purple or purplish dotted, smooth or hairy. — Dry soil, Vt. and E. Mass. to Fla., and far westward. Very variable; the following are the more marked forms. — Var. *rubra*, Gray. Corolla bright crimson or rose-red; habit of n. 1, but upper lip of corolla villous-bearded on the back at tip; throat of calyx with the outer bristly hairs widely spreading. In moist ground, Alleghany Mts. — Var. *media*, Gray. Corolla deep purple. Alleghany Mts. — Var. *mollis*, Benth. Corolla flesh-color to lilac, glandular, its upper lip hairy outside or more bearded at the tip; leaves paler, soft-pubescent beneath; throat of calyx mostly filled with dense beard, with sometimes an outer row of bristles. Extends to Minn. and westward.

+ *Leaves nearly sessile; calyx-teeth elongated, lax; head solitary.*

4. *M. Bradburiana*, Beck. Leaves clothed with long soft hairs, especially underneath; the floral and the outer bracts somewhat heart-shaped, purplish; calyx smoothish, contracted above, very hairy in the throat, with awl-shaped awned teeth; corolla smoothish, bearded at the tip of the upper lip, scarcely twice the length of the calyx, pale-purplish, the lower lip dotted with purple. — Thickets, Ind. to Tenn. and Kan.

\* *Stamens not exceeding the falcate upper lip of the short corolla; heads axillary or interrupted spicate; leaves lanceolate or oblong, sparsely serrate, tapering into the petiole.*

5. *M. punctata*, L. (HORSE-MINT.) Perennial, minutely downy (2–3° high); leaves petioled, lanceolate, narrowed at base; bracts lanceolate,

blunt, obtuse at base, sessile, yellowish and purple; teeth of the downy calyx short and awnless, rigid, soon spreading; corolla nearly smooth, yellowish, the upper lip spotted with purple, notched at the apex, the tube scarcely exceeding the calyx. — Sandy ground, N. Y. to Minn., south to Fla. and Tex.

6. *M. citriodora*, Cerv. Annual, 1–3° high; bracts narrowly oblong, their slender awned tips spreading or recurving; calyx-teeth slender, at length usually spreading; corolla white or pinkish, not spotted. — Neb. to Tex.

## 20. BLEPHILIA, Raf.

Calyx ovoid-tubular, 13-nerved, 2-lipped, naked in the throat; upper lip with 3 awned teeth, the lower with 2 nearly awnless teeth. Corolla inflated in the throat, strongly and nearly equally 2-lipped; upper lip erect, entire, the lower spreading, 3-cleft, its lateral lobes ovate and rounded, larger than the oblong and notched middle one. Stamens 2, ascending, exerted (the upper pair minute or none); anthers, etc., as in *Monarda*. — Perennial herbs, with nearly the foliage, etc., of *Monarda*; the small pale bluish purple flowers crowded in axillary and terminal globose whorls; in summer. (Name from *βλεφαρίς*, the eyelash, in reference to the hairy-fringed bracts and calyx-teeth.)

1. *B. ciliata*, Raf. Somewhat downy (1–2° high); leaves almost sessile, oblong-ovate, narrowed at base, whitish-downy underneath; outer bracts ovate, acute, colored, ciliate, as long as the calyx; corolla hairy. — Dry open places, Mass. to Minn., south to Ga. and Kan.

2. *B. hirsuta*, Benth. Taller, hairy throughout; leaves long-petioled, ovate, pointed, rounded or heart-shaped at base; the lower floral ones similar, the uppermost and the bracts linear-awl-shaped, shorter than the long-haired calyx; corolla smoothish, pale, with darker purple spots. — Moist shady places, Vt. to Minn., south to Ga. and E. Tex.

## 21. LOPHANTHUS, Benth. GIANT HYSSOP.

Calyx tubular-bell-shaped, 15-nerved, oblique, 5-toothed, the upper teeth rather longer than the others. Corolla 2-lipped; upper lip nearly erect, 2-lobed, the lower somewhat spreading, 3-cleft, with the middle lobe crenate. Stamens 4, exerted; the upper pair declined, the lower and shorter pair ascending, so that the pairs cross; anther-cells nearly parallel. — Perennial tall herbs, with petioled serrate leaves, and small flowers crowded in interrupted terminal spikes; in summer. (Name from *λόφος*, a crest, and *ἄνθος*, a flower.)

1. *L. nepetoides*, Benth. Stem stout, 2½–6° high, sharply 4-angled, smooth, or nearly so; leaves ovate, somewhat pointed, coarsely crenate-toothed (2–4' long); spikes 2–6' long, crowded with the ovate pointed bracts; calyx-teeth ovate, rather obtuse, little shorter than the pale greenish-yellow corolla. — Borders of woods, Vt. to Minn., south to N. C. and Tex.

2. *L. scrophulariæfolius*, Benth. Stem (obtusely 4-angled) and lower surface of the ovate or somewhat heart-shaped acute leaves more or less pubescent; calyx-teeth lanceolate, acute, shorter than the purplish corolla (spikes 4–15' long); otherwise like the last. — Same range.

3. *L. anisatus*, Benth. Smooth, but the ovate acute leaves glaucous white underneath with minute down; calyx-teeth lanceolate, acute. — Plains, Wisc. to Minn., Neb., and westward. — Foliage with the scent of anise.



## 22. CEDRONÉLLA, Moench.

Calyx rather obliquely 5-toothed, many-nerved. Corolla ample, expanded at the throat, 2-lipped; the upper lip flattish or concave, 2-lobed, the lower 3-cleft, spreading, the middle lobe largest. Stamens 4, ascending, the lower pair shorter; anther-cells parallel. — Sweet-scented perennials, with pale purplish flowers. (Name a diminutive of *cedrus*, the cedar-tree, from the aromatic leaves of *C. triphylla*, the *Balm-of-Gilead* of English gardens.)

1. *C. cordata*, Benth. Low, with slender runners, hairy; leaves broadly heart-shaped, crenate, petioled, the floral shorter than the calyx; whorls few-flowered, at the summit of short ascending stems; corolla hairy inside (1½' long); stamens shorter than the upper lip. — Moist shady banks, W. Penn. to Ky., south to the mountains of N. C. and Tenn.

## 23. NÉPETA, L. CAT-MINT.

Calyx tubular, often incurved, obliquely 5-toothed. Corolla dilated in the throat, 2-lipped; the upper lip erect, rather concave, notched or 2-cleft; the lower spreading, 3-cleft, the middle lobe largest, either 2-lobed or entire. Stamens 4, ascending under the upper lip, the lower pair shorter; anthers approximate in pairs, the cells divergent. — Perennial herbs. (The Latin name, thought to be derived from *Nepete*, an Etrurian city.)

§ 1. *Cymose clusters rather dense and many-flowered, forming interrupted spikes or racemes; upper floral leaves small and bract-like.*

*N. CATÁRIA*, L. (CATNIP.) Downy, erect, branched; leaves heart-shaped, oblong, deeply crenate, whitish-downy underneath; corolla whitish, dotted with purple. — Near dwellings; a very common weed. July–Sept. (Nat. from Eu.)

§ 2. *GLECHÔMA*. *Leaves all alike; the axillary clusters loosely few-flowered.*

*N. GLECHÔMA*, Benth. (GROUND IVY. GILL-OVER-THE-GROUND.) Creeping and trailing; leaves petioled, round kidney-shaped, crenate, green both sides; corolla thrice the length of the calyx, light blue. — Damp or shady places, common. (Nat. from Eu.)

## 24. DRACOCÉPHALUM, Tourn. DRAGON-HEAD.

Calyx tubular, 13–15-nerved, straight, 5-toothed; the upper tooth usually much the largest. Corolla 2-lipped; the upper lip slightly arched and notched; the lower spreading, 3-cleft, with its middle lobe largest and 2-cleft or notched at the end. Stamens 4, ascending under the upper lip, the lower pair shorter; anthers approximate by pairs, the cells divergent. — Whorls many-flowered, mostly spiked or capitate, and with awn-toothed or fringed leafy bracts. (Name from *δράκων*, a dragon, and *κεφαλή*, head, alluding to the form of the corolla in the original species.)

1. *D. parviflorum*, Nutt. Annual or biennial; stem erect, leafy (8–20' high); leaves ovate-lanceolate, sharply cut-toothed, petioled; whorls crowded in a terminal head or spike; upper tooth of the calyx ovate, nearly equalling the bluish small slender corolla. — Rocky or gravelly soil, northern N. Y. to Iowa and Minn., and westward.

## 25. SCUTELLÀRIA, L. SKULLCAP.

Calyx bell-shaped in flower, 2-lipped; the lips entire, closed in fruit, the upper with a helmet-like at length concave and enlarged appendage on the back

(the upper sepal); calyx splitting to the base at maturity, the upper lip usually falling away. Corolla with an elongated curved ascending tube, dilated at the throat, 2-lipped; the upper lip arched, entire or barely notched, the lateral lobes mostly connected with the upper rather than the lower lip; the lower lobe or lip spreading and convex, notched at the apex. Stamens 4, ascending under the upper lip; anthers approximate in pairs, ciliate or bearded, those of the lower stamens 1-celled (halved), of the upper 2-celled and heart-shaped. — Bitter perennial herbs, not aromatic, the short peduncles or pedicels chiefly opposite, 1-flowered, often 1-sided, axillary or spiked or racemed; in summer. (Name from *scutella*, a dish, in allusion to the appendage to the fruiting calyx.)

§ 1. *Nutlets wingless, mostly marginless, on a low gynobase.*

\* *Flowers small (3" long), in axillary and sometimes terminal 1-sided racemes.*

1. *S. lateriflora*, L. (MAD-DOG SKULLCAP.) Smooth; stem upright, much branched (1–2° high); leaves lanceolate-ovate or ovate-oblong, pointed, coarsely serrate, rounded at base, petioled (2–3' long), the lower floral ones similar; flowers blue, rarely white. — Wet shaded places, common.

\*\* *Flowers larger (6–12" long) in terminal single or paniced racemes, the floral leaves gradually reduced to bracts.*

+ *Stem-leaves all cordate, crenate-toothed, slender-petioled; lateral lobes of the corolla almost equalling the short upper lip.*

2. *S. versicolor*, Nutt. Soft hairy, the hairs of the inflorescence, etc., partly viscid-glandular; stem mostly erect (1–3° high); leaves ovate or round-ovate, very veiny, rugose, the floral reduced to broadly ovate entire bracts about equalling the glandular-hairy calyx; racemes mostly simple; corolla bright blue with lower side and lip whitish. — Banks of streams, Penn. to Wisc., Minn., and southward. — Var. *minor*, Chapm. Low, slender, and thin-leaved; floral leaves small. — Mountains of Va., etc.

3. *S. saxatilis*, Riddell. Glabrous or slightly hairy; stem weak, ascending (6–18' long), often producing runners, branched; leaves ovate or ovate-oblong (1–2' long), thin, obtuse; upper bracts oblong or ovate, small, entire; raceme simple, loose. — Moist shaded banks, Del. to Ohio, south in the mountains to Va. and Tenn.

+ + *Stem-leaves crenate-dentate or serrate (or nearly entire in n. 7), only the lowest if any cordate at base, more or less petioled; lateral lobes of the blue corolla shorter than the galeate upper lip.*

4. *S. serrata*, Andrews. Green and nearly glabrous; stem rather simple (1–3° high), with single loosely flowered racemes; leaves serrate, acuminate at both ends, ovate or ovate-oblong; calyx, etc., somewhat hairy; corolla 1' long, narrow, its lips equal in length. — Woods, Penn. to Ill. and N. C.

5. *S. canescens*, Nutt. Stem branched above (2–4° high), with the paniced many-flowered racemes, flowers, and the lower surface of the ovate or lance-ovate acute (at the base acute, obtuse, or cordate) crenate leaves whitish with fine soft down, often becoming rather glabrous; bracts oblong or lanceolate; corolla 8–9" long. — River-banks, Ont. and Penn. to the mountains of N. C. and N. Ala., west to Kan. and Ark.

6. *S. pilosa*, Michx. Pubescent with spreading hairs; stem nearly simple (1–3° high); leaves rather distant, crenate, oblong-ovate, obtuse, varying to



roundish-ovate, the lower abrupt or heart-shaped at base and long-petioled, the upper on short margined petioles, veiny; bracts oblong-spatulate; racemes short, often branched; corolla 6" long, rather narrow, the lower lip a little shorter. — Dry or sterile ground, southern N. Y. to Mich., south to Fla. and Tex.

Var. *hirsuta*, Gray, is a large form (sometimes 3° high), more hirsute, with larger very coarsely crenate leaves (2–3' long). — Richer soil, Ky.

Var. *ovalifolia*, Benth., is a form with shorter and finer pubescence, and narrower less veiny leaves. — N. J. to Va.

7. *S. integrifolia*, L. Downy all over with a minute hoariness; stem commonly simple (1–2° high); leaves oblong-lanceolate or linear, mostly entire, obtuse, very short-petioled; corolla 1' long, much enlarged above, the ample lips equal in length. — Dry ground, N. Eng. to Fla. and Tex.

\*\*\* Flowers solitary in the axils of the upper mostly sessile leaves, which resemble the lower ones but are occasionally reduced.

8. *S. Wrightii*, Gray. Firm and woody at base, not stoloniferous nor tuberiferous, low, many-stemmed in a tuft, minutely cinereous-puberulent, very leafy; leaves ovate or spatulate-oblong, entire, subsessile ( $\frac{1}{2}$ ' long), the upper floral shorter than the flowers; corolla pubescent ( $\frac{1}{2}$ ' long), usually violet. — Kan. to Tex.

9. *S. parvula*, Michx. Herbaceous; subterranean stolons moniliform-tuberiferous; minutely downy, dwarf (3–6' high), branched and spreading; all but the lower leaves sessile and entire, the lowest round-ovate, the others ovate or lance-ovate, slightly heart-shaped (6–8" long); corolla 2–4" long. — Sandy banks, W. New Eng. to Minn., south to Fla. and Tex. — Var. *molliis*, Gray, is more spreading, softly pubescent throughout, with larger less firm leaves. — Sandy banks, S. Ill. to Kan.

10. *S. galericulata*, L. Herbaceous; subterranean stolons not tuberiferous; smooth or a little downy, erect (1–2° high), simple; leaves ovate-lanceolate, acute, serrate, roundish and slightly heart-shaped at base (1–2' long); corolla violet-blue, 8–9" long, with slender tube, the large lower lip nearly erect. — Wet shady places; common especially northward. (Eu.)

§ 2. Nuts conspicuously winged, each raised on a slender base.

11. *S. nervosa*, Pursh. Smooth, simple or branched, slender, 10–20' high; lower leaves roundish, the middle ovate, toothed, somewhat heart-shaped (1' long), the floral ovate-lanceolate, entire; nerve-like veins prominent beneath; corolla bluish, 4" long, the lower lip exceeding the concave upper one. — Moist thickets, N. Y. to Ind., south to Va. and Mo.

## 26. BRUNÉLLA, Tourn. SELF-HEAL.

Calyx tubular-bell-shaped, somewhat 10-nerved and reticulated-veiny, flattened on the upper side, naked in the throat, closed in fruit, 2-lipped; upper lip broad and flat, truncate, with 3 short teeth, the lower 2-cleft. Corolla ascending, slightly contracted at the throat and dilated at the lower side just beneath it, 2-lipped; upper lip erect, arched, entire; the lower reflexed-spreading, 3-cleft, its lateral lobes oblong, the middle one rounded, concave, denticulate. Stamens 4, ascending under the upper lip; filaments 2-toothed at the apex, the lower tooth bearing the anther; anthers approximate in pairs,

their cells diverging. — Low perennials, with nearly simple stems, and 3-flowered clusters of flowers sessile in the axils of round and bract-like membranaceous floral leaves, imbricated in a close spike or head. (Name said to be from the German *braune*, a disease of the throat, for which this plant was a reputed remedy.)

1. *B. vulgaris*, L. (COMMON SELF-HEAL OR HEAL-ALL.) Leaves ovate-oblong, entire or toothed, petioled, hairy or smoothish; corolla (violet or flesh-color, rarely white) not twice the length of the purplish calyx. — Woods and fields, Newf. to Fla., westward across the continent. June–Sept. (Eu.)

## 27. PHYSOSTÉGIA, Benth. FALSE DRAGON-HEAD.

Calyx nearly equally 5-toothed, obscurely 10-nerved, short-tubular or bell-shaped, more or less enlarged and slightly inflated in fruit. Corolla funnel-form, with a much inflated throat, 2-lipped; upper lip erect, nearly entire; the lower 3-parted, spreading, small, its middle lobe larger, broad and rounded, notched. Stamens 4, ascending under the upper lip; anthers approximate; the cells parallel. — Smooth perennials, with upright wand-like stems, and sessile lanceolate or oblong mostly serrate leaves. Flowers large and showy, rose or flesh-color variegated with purple, opposite, crowded in simple or paniced terminal leafless spikes. (Name from *φύσα*, a bladder, and *στέρη*, a covering.)

1. *P. Virginiana*, Benth. Stem 1–4° high, terminated by a simple virgate or several paniced spikes; leaves thickish; calyx tubular-campanulate, its teeth half the length of the tube; corolla 1' long. — Wet grounds, from N. Vt. west and southward. Varies greatly. — Var. *denticulata*, Gray. Slender and commonly low, with crenulate-denticulate or obscurely serrate leaves, and slender or loosely-flowered spikes. — Middle Atlantic States.

2. *P. intermedia*, Gray. Slender, 1–3° high, remotely leaved; leaves linear-lanceolate, repand-denticulate; spikes filiform, rather remotely flowered; calyx short and broadly campanulate, its teeth about as long as the tube; corolla 5–6" long, much dilated upward. — Barrens, W. Ky. and Ark. to La. and Tex.

## 28. SYNÁNDRA, Nutt.

Calyx bell-shaped, inflated, membranaceous, irregularly veiny, almost equally 4-toothed! Corolla with a long tube, much expanded above and at the throat; the upper lip slightly arched, entire, the lower spreading and 3-cleft, with ovate lobes, the middle one broadest and notched at the end. Stamens 4, ascending; filaments hairy; anthers approximate in pairs under the upper lip; the two upper each with one fertile and one smaller sterile cell, the latter cells cohering together (whence the name; from *σύν*, together, and *άνθή*, for anther).

1. *S. grandiflora*, Nutt. Hairy biennial, 1° high; lower leaves long-petioled, broadly ovate, heart-shaped, crenate, thin, the floral sessile, gradually reduced to bracts, each with a single sessile flower; corolla  $1\frac{1}{2}$ ' long, yellowish-white. — Shady banks of streams, S. Ohio to Ill. and Tenn. In spring.

## 29. MARRŪBIUM, Tourn. HOREHOUND.

Calyx tubular, 5–10-nerved, nearly equally 5–10-toothed, the teeth more or less spiny-pointed and spreading at maturity. Upper lip of the corolla erect,



notched, the lower spreading, 3-cleft, its middle lobe broadest. Stamens 4, included in the tube of the corolla. — Whitish-woolly bitter-aromatic perennials, branched at the base, with rugose and crenate or cut leaves, and many-flowered axillary whorls. (A name of Pliny, from the Hebrew *marrob*, a bitter juice.)

**M. VULGARE, L.** (COMMON HOREHOUND.) Stems ascending; leaves round-ovate, petioled, crenate-toothed; whorls capitate; calyx with 10 recurved teeth, the alternate ones shorter; corolla small, white. — Escaped from gardens into waste places. (Nat. from Eu.)

### 30. BALLŌTA, L. FETID HOREHOUND.

Calyx nearly funnel-form; the 10-ribbed tube expanded above into a spreading regular border, with 5–10 teeth. Anthers exerted beyond the tube of the corolla, approximate in pairs. Otherwise much as in *Marrubium*. (The Greek name, of uncertain origin.)

**B. NIGRA, L.** (BLACK HOREHOUND.) More or less hairy, but green, erect; the root perennial; leaves ovate, toothed; whorls many-flowered, dense; calyx-teeth 5, longer than the tube of the purplish corolla. — Waste places, N. Eng., Penn., etc. (Nat. from Eu.)

### 31. PHLŌMIS, Tourn. JERUSALEM SAGE.

Calyx tubular, 5–10-nerved, truncate or equally 5-toothed. Upper lip of the corolla arched; the lower spreading, 3-cleft. Stamens 4, ascending and approximate in pairs under the upper lip; the filaments of the upper pair longer than the others in *P. tuberosa*, with an awl-shaped appendage at base; anther-cells divergent and confluent. — Leaves rugose. Whorls dense and many-flowered, axillary, remote, bracted. (An old Greek name of a woolly plant.)

**P. TUBEROSA, L.** Tall perennial (3–5° high), nearly smooth; leaves ovate-heart-shaped, crenate, petioled, the floral oblong-lanceolate; bracts awl-shaped, hairy; upper lip of the purple corolla densely bearded with white hairs on the inside. — S. shore of Lake Ontario, N. Y. June, July. (Nat. from Eu.)

### 32. LEONŪRUS, L. MOTHERWORT.

Calyx top-shaped, 5-nerved, with 5 nearly equal teeth which are awl-shaped, and when old rather spiny-pointed and spreading. Upper lip of the corolla oblong and entire, somewhat arched; the lower spreading, 3-lobed, its middle lobe larger, narrowly oblong-ovate, entire, the lateral ones oblong. Stamens 4, ascending under the upper lip; anthers approximate in pairs, the valves naked. Nutlets truncate and sharply 3-angled. — Upright herbs, with cut-lobed leaves, and close whorls of flowers in their axils; in summer. (Name from *λέων*, a lion, and *οὐρά*, tail, i. e. *Lion's-tail*.)

**L. CARDIACA, L.** (COMMON MOTHERWORT.) Tall perennial; leaves long-petioled, the lower rounded, palmately lobed, the floral wedge-shaped at base, 3-cleft, the lobes lanceolate; upper lip of the pale purple corolla bearded. — Waste places, around dwellings. (Nat. from Eu.)

**L. MARRUBIÁSTRUM, L.** Tall biennial, with elongated branches; stem-leaves oblong-ovate, coarsely toothed; corolla (whitish) shorter than the calyx-teeth, the tube naked within; lower lip rather erect. — Roadsides, N. J. to Del., and southward. (Adv. from Eu.)

**L. SIBÍRICUS, L.** Tall biennial; leaves 3-parted, the divisions 2–5-cleft, or deeply 3–7-cleft and incised; corolla (purplish) twice as long as the calyx, the upper lip fornicate, the lower little spreading. — Waste grounds, Penn.; also far west. (Adv. from Eu. and Asia.)

### 33. LÁMIUM, L. DEAD-NETTLE.

Calyx tubular-bell-shaped, about 5-nerved, with 5 nearly equal awl-pointed teeth. Corolla dilated at the throat; upper lip ovate or oblong, arched, nar-

rowed at the base; the middle lobe of the spreading lower lip broad, notched at the apex, contracted as if stalked at the base, the lateral ones small, at the margin of the throat. Stamens 4, ascending under the upper lip; anthers approximate in pairs, 2-celled, the cells divergent. Nutlets truncate. — Decumbent herbs, the lowest leaves small and long-petioled, the middle heart-shaped and doubly toothed, the floral subtending the whorled flower-cluster; spring to autumn. (Name from *λαμῶς*, throat, in allusion to the ringent corolla.)

\* Annuals or biennials, low; flowers small, purple, in few whorls or heads.

**L. AMPLEXICAULE, L.** Leaves rounded, deeply crenate-toothed or cut, the upper ones clasping; corolla elongated, upper lip bearded, the lower spotted; lateral lobes truncate. — Rather common. (Nat. from Eu.)

**L. PURPUREUM, L.** Leaves roundish or oblong, heart-shaped, crenate-toothed, all petioled. — N. Eng. and Penn. (Nat. from Eu.)

\* Perennial, taller; flowers larger, in several axillary whorls.

**L. ALBUM, L.** Hairy; leaves ovate, heart-shaped, petioled; calyx-teeth very slender, spreading; corolla white, the tube curved upward, obliquely contracted near the base, where there is a ring of hairs inside; lateral lobes of lower lip bearing a long slender tooth. — E. New Eng. (Nat. from Eu.)

**L. MACULÁTUM, L.** Like the last, but leaves more frequently marked with a white spot on the upper face, and flowers purplish, with the ring of hairs transverse instead of oblique. — Sparingly escaped. (Adv. from Eu.)

### 34. GALEÓPSIS, L. HEMP-NETTLE.

Calyx tubular-bell-shaped, about 5-nerved, with 5 somewhat equal and spiny-tipped teeth. Corolla dilated at the throat; upper lip ovate, arched, entire; the lower 3-cleft, spreading, the lateral lobes ovate, the middle one inversely heart-shaped; palate with 2 teeth at the sinuses. Stamens 4, ascending under the upper lip; anther-cells transversely 2-valved; the inner valve of each cell bristly-fringed, the outer one larger and naked. — Annuals, with spreading branches, and several many-flowered whorls in the axils of floral leaves which are nearly like the lower ones. (Name composed of *γαλέη*, a weasel, and *ὄψις*, resemblance, from some fancied likeness of the corolla to the head of a weasel.)

**G. TETRAHIT, L.** (COMMON HEMP-NETTLE.) Stem swollen below the joints, bristly-hairy; leaves ovate, coarsely serrate; corolla purplish or variegated, about twice the length of the calyx; or, in var. *GRANDIFLORA*, 3–4 times the length of the calyx, often yellowish with a purple spot on the lower lip. — Waste places, common. Aug., Sept. (Nat. from Eu.)

**G. LADANUM, L.** (RED H.) Stem smooth or pubescent; leaves oblong-lanceolate, more or less downy; corolla red or rose-color (often spotted with yellow), much exceeding the calyx. — E. New Eng., rare. Aug. (Adv. from Eu.)

### 35. STACHYS, Tourn. HEDGE-NETTLE.

Calyx tubular-bell-shaped, 5–10-nerved, equally 5-toothed, or the upper teeth united to form an upper lip. Corolla not dilated at the throat; upper lip erect or rather spreading, often arched, entire or nearly so; the lower usually longer and spreading, 3-lobed, with the middle lobe largest and nearly entire. Stamens 4, ascending under the upper lip (often reflexed on the throat after flowering); anthers approximate in pairs. Nutlets obtuse, not truncate. — Whorls 2–many-flowered, approximate in a terminal raceme or spike (whence the name, from *στάχυς*, a spike). Flowers purple or rose-red, in summer.

\* Root annual; stems decumbent, low.

**S. ARVENSIS, L.** (WOUNDWORT.) Hairy; leaves petioled, cordate-ovate, obtuse, crenate; whorls 4–6-flowered, distant; corolla (purplish) scarcely longer than the unarmed calyx. — Waste places, E. Mass. (Adv. from Eu.)



\* \* Root perennial; stem erect.

+ Leaves obscurely or not at all cordate, sessile or short-petioled.

1. *S. hyssopifolia*, Michx. Smooth and glabrous, or the nodes hirsute; stems slender (1° high); leaves linear-oblong or narrowly linear, sessile, obscurely toothed toward the apex; whorls 4-6-flowered, rather distant; corolla glabrous, twice or thrice the length of the triangular-awl-shaped spreading calyx-teeth. — Wet sandy places, Mass. to Mich., south to Fla. and Mo. — Var. *ambigua*, Gray, is stouter (1-2° high), sometimes with scattered retrorse bristles on the angles of the stem, and with broader (3-6") serrulate leaves. — Ill. and Ky. to Ga.

2. *S. palustris*, L. Stem 4-angled (2-3° high), leafy, hirsute with spreading or reflexed hairs, especially on the angles; leaves sessile, or the lower short-petioled, oblong- or ovate-lanceolate, crenately serrate, rounded at base, downy or hairy-pubescent, obtusish (2-4' long), the upper floral ones shorter than the nearly sessile calyx; whorls 6-10-flowered, the upper crowded into an interrupted spike; calyx hispid; the lance-subulate teeth somewhat spiny, half the length of the corolla, diverging in fruit; upper lip of corolla pubescent. — Wet ground, Newf. to Penn., westward across the continent.

3. *S. aspera*, Michx. Taller; stem more commonly smooth on the sides, the angles beset with stiff reflexed bristles; leaves hairy or smoothish, as in the last, but nearly all distinctly petioled, the lower floral as long as the flowers; spike often slender and more interrupted; calyx mostly glabrous, the tube rather narrower and the teeth more awl-shaped and spiny; corolla glabrous throughout. (*S. palustris*, var. *aspera*, Gray.) — Wet ground, common.

Var. *glabra*, Gray. More slender, smooth and glabrous throughout, or with few bristly hairs; leaves taper-pointed, more sharply toothed, mostly rounded or truncate at the base, all more conspicuously petioled. (*S. palustris*, var. *glabra*, Gray.) — Western N. Y. to Ill., and southward.

+ + Nearly all the leaves long-petioled and cordate.

4. *S. cordata*, Riddell. Rather weak, hirsute, 2-3° high; leaves all ovate- or oblong-cordate, acuminate, crenate (2-5' long), the floral mostly minute; spikes slender, of numerous few-flowered clusters; calyx only 2" long; corolla glabrous throughout (or nearly so), barely 5" long. (*S. palustris*, var. *cordata*, Gray.) — Thickets, S. Ohio to Iowa, south to Va., Tenn., and Mo.

#### ORDER 83. PLANTAGINACEÆ. (PLANTAIN FAMILY.)

Chiefly stemless herbs, with regular 4-merous spiked flowers, the stamens inserted on the tube of the dry and membranaceous veinless monopetalous corolla, alternate with its lobes; — chiefly represented by the two following genera.

##### 1. PLANTAGO, Tourn. PLANTAIN. RIBWORT.

Calyx of 4 imbricated persistent sepals, mostly with dry membranaceous margins. Corolla salver-form or rotate, withering on the pod, the border 4-parted. Stamens 4, or rarely 2, in all or some flowers with long and weak

exserted filaments, and fugacious 2-celled anthers. Ovary 2- (or in n. 5 falsely 3-4-) celled, with 1-several ovules in each cell. Style and long hairy stigma single, filiform. Capsule 2-celled, 2-several-seeded, opening transversely, so that the top falls off like a lid and the loose partition (which bears the peltate seeds) falls away. Embryo straight, in fleshy albumen. — Leaves ribbed. Flowers whitish, small, in a bracted spike or head, raised on a naked scape. (The Latin name.)

§ 1. Stamens 4; flowers all perfect; corolla not closed over the fruit.

\* Flowers protogynous, the style first projecting from the unopened corolla, the anthers long-exserted after the corolla has opened; seeds not hollowed on the face (except in *P. lanceolata*).

+ Corolla glabrous; leaves strongly ribbed; perennial.

+ + Ribs of the broad leaves rising from the midrib.

1. *P. cordata*, Lam. Tall, glabrous; leaves heart-shaped or round-ovate (3-8' long), long-petioled; spike at length loosely flowered; bracts round-ovate, fleshy; capsule 2-4-seeded. — Along streams, N. Y. to Minn., and southward.

+ + + Ribs of the leaf free to the contracted base.

2. *P. major*, L. (COMMON PLANTAIN.) Smooth or rather hairy, rarely roughish; leaves ovate, oblong, oval, or slightly heart-shaped, often toothed, abruptly narrowed into a channelled petiole; spike dense, obtuse; sepals round-ovate or obovate; capsule ovoid, circumscissile near the middle, 8-18-seeded; seeds angled, reticulated. — Waysides and near dwellings everywhere. Doubtless introduced from Eu., but native from L. Superior and N. Minn., northward.

3. *P. Rugelii*, Decaisne. Leaves as in the last, but paler and thinner; spikes long and thin, attenuate at the apex; sepals oblong, acutely carinate; capsules cylindraceous-oblong, circumscissile much below the middle, 4-9-seeded; seeds oval-oblong, not reticulated. (*P. Kamtschatica*, Gray, Man., not Cham.) — Vt. to Minn., south to Ga. and Tex.

4. *P. eriopoda*, Torr. Usually a mass of yellowish wool at the base; leaves thickish, oblanceolate to obovate, with short stout petioles; spike dense or loose; sepals and bract more or less scarious but not carinate; capsule ovoid, never over 4-seeded. — Moist and saline soil; Red River valley, Minn., and westward; also on the Lower St. Lawrence.

*P. lanceolata*, L. (RIBGRASS. RIPLEGRASS. ENGLISH PLANTAIN.) Mostly hairy; scape grooved-angled, at length much longer than the lanceolate or lance-oblong leaves, slender (9'-2° high); spike dense, at first capitate, in age cylindrical; bract and sepals scarious, brownish; seeds 2, hollowed on the face. — Very common. (Nat. from Eu.)

+ + Corolla-tube externally pubescent; leaves linear or filiform, fleshy, indistinctly ribbed; seeds 2-4; maritime, often woolly at base.

5. *P. decipiens*, Barneoud. Annual, or sometimes biennial with a stout rootstock, smooth, or the scape pubescent; leaves flat or flattish and channelled, erect, nearly as long as the scape (5-12'), acuminate; spike slender, rather loose. (*P. maritima*, var. *juncoides*, Gray, Man.) — Salt marshes, Atlantic coast, from Labrador to N. J. The characters distinguishing biennial specimens of this from the next are obscure.