

\* \* 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.



6. *P. maritima*, L. Perennial; spikes dense. — Coast of Mass.; Gulf of St. Lawrence to Lab. and Greenland. (Eu.)

\* \* Flowers of 2 sorts (as respects length of anthers and filaments) on different plants, mostly cleistogamous; corolla-lobes broad, rounded, persistently spreading; seeds 2, boat-shaped; inflorescence and narrow leaves silky-pubescent or woolly; annual.

7. *P. Patagónica*, Jacq., var. *gnaphalioides*, Gray. White with silky wool; leaves 1-3-nerved, varying from oblong-linear to filiform; spike very dense ( $\frac{1}{2}$ -4' long), woolly; bracts not exceeding the calyx; sepals very obtuse, scarious, with a thick centre. — Prairies and dry plains, Minn. to Ind., Ky., and Tex., westward to the Pacific. Very variable. — Var. *nuda*, Gray with sparse and loose pubescence, green and soon glabrate rigid leaves, and short bracts. — Var. *spinulosa*, Gray; a canescent form with aristately prolonged and rigid bracts. — Var. *aristata*, Gray; loosely hairy and green, or becoming glabrous, with narrowly linear bracts 2-3 times the length of the flowers. (Nat. on Martha's Vineyard, and about Boston.)

§ 2. Flowers subdioecious or polygamo-cleistogamous; the corolla in the fertile (or mainly fertile) plant closed over the maturing capsule and forming a kind of beak, and anthers not exerted; sterile flowers with spreading corolla and long-exserted filaments; seeds mostly flat; small annuals or biennial.

\* Leaves comparatively broad, short-petioled or subsessile; stamens 4.

8. *P. Virginica*, L. Hairy or hoary-pubescent (2-9' high); leaves oblong, varying to obovate and spatulate-lanceolate, 3-5-nerved, slightly or coarsely and sparingly toothed; spikes mostly dense (1-2' long); seeds usually 2. — Sandy grounds, S. New Eng. to S. Ill., south to Fla. and Ariz.

\* \* Leaves linear or filiform; flowers very small; stamens 2; spike slender.

9. *P. pusilla*, Nutt. Minutely pubescent (1-4' high); leaves entire; capsule short-ovoid, 4-seeded, little exceeding the calyx and bract. — Sandy soil, southern N. Y. to Va., west to the Rocky Mts. Apr. — Aug.

10. *P. heterophylla*, Nutt. Leaves rather fleshy, acute, entire, or some of them below 2-4-lobed or toothed; capsule oblong-conoidal, 10-28-seeded, nearly twice the length of the calyx and bract. — Low sandy ground, Penn. to Fla. and Tex. Apr. — June.

## 2. LITTORÉLLA, L.

Flowers monœcious; the male solitary on a mostly simple naked scape; calyx 4-parted, longer than the cylindraceous 4-cleft corolla; stamens exerted on very long capillary filaments. Female flowers usually 2, sessile at the base of the scape; calyx of 3 or 4 unequal sepals; corolla urn-shaped, with a 3-4-toothed orifice. Ovary with a single cell and ovule, tipped with a long laterally stigmatic style, maturing as an achene. (Name from *litus* or *littus*, shore, from the place of growth.)

1. *L. lacustris*, L. Stoloniferous but otherwise stemless; leaves terete, linear-subulate, 1-2' long. — In water or on gravelly shores, Nova Scotia and N. Brunswick, to L. Champlain (*Pringle*) and Ont.

## DIVISION III. APETALOUS DICOTYLEDONOUS PLANTS.

Corolla none; the floral envelopes in a single series (calyx), or sometimes wanting altogether.

## ORDER 84. NYCTAGINACEÆ. (FOUR-O'CLOCK FAMILY.)

Herbs (or in the tropics often shrubs or trees), with mostly opposite and entire leaves, stems tumid at the joints, a delicate tubular or funnel-form calyx which is colored like a corolla, its persistent base constricted above the 1-celled 1-seeded ovary, and indurated into a sort of nut-like pericarp; the stamens few, slender, and hypogynous; the embryo coiled around the outside of mealy albumen, with broad foliaceous cotyledons (in *Abronia* monocotyledonous by abortion). — Represented in our gardens by the FOUR-O'CLOCK, or MARVEL OF PERU (*MIRABILIS JALÁPA*), in which the calyx is commonly mistaken for a corolla, the cup-like involucre of each flower exactly imitating a calyx.

1. *Oxybaphus*. Involucre of united bracts. Fruit wingless. Calyx bell-shaped.
2. *Abronia*. Involucre of distinct bracts. Fruit 5-winged. Calyx salver-form.

### 1. OXYBAPHUS, Vahl.

Flowers 3-5 in the same 5-lobed membranaceous broad and open involucre, which enlarges and is thin and reticulated in fruit. Calyx with a very short tube and a bell-shaped (rose or purple) deciduous limb, plaited in the bud. Stamens mostly 3 (3-5), hypogynous. Style filiform; stigma capitate. Fruit achene-like, several-ribbed or angled (pubescent in ours). — Herbs, abounding on the western plains, with very large and thick perennial roots, opposite leaves, and mostly clustered small flowers. (Name *ὄξυβάφον*, a vinegar-saucer, or small shallow vessel; from the shape of the involucre.)

1. *O. nyctagineus*, Sweet. Nearly smooth; stem becoming repeatedly forked, 1-3° high; leaves all petioled (except the uppermost reduced ones), from broadly ovate to lanceolate, rounded or cordate or cuneate at base; inflorescence loose and but slightly pubescent, the peduncles slender (at first solitary in the axils); fruit oblong-obovate, 2' long, rather acutely angled. — Minn. and Wisc. to Tex. and La.; rare escape from gardens in E. Mass. and R. I.

2. *O. hirsutus*, Sweet. More or less glandular-hirsute, especially about the nodes and the usually contracted inflorescence, 1-3° high; leaves lanceolate to linear-lanceolate, sessile and cuneate at base or narrowed to a short petiole; stamens often 5; fruit with thickened obtuse angles. — Plains of the Sask. to Wisc., Iowa, Neb., and Tex.

3. *O. angustifolius*, Sweet. Often tall, glabrous except the more or less hirsute peduncles and involucre; leaves linear, thick and glaucous, often elongated (2-6' long); fruit as in the last. — Minn. to Tex., and westward.

### 2. ABRONIA, Juss.

Involucre of 5-15 distinct bracts, enclosing numerous sessile flowers. Calyx salver-form, with obcordate lobes. Stamens 5, included, adnate to the calyx-tube. Style included; stigma linear-clavate. Perfect fruit 3-5-winged.



Embryo monocotyledonous. — Low herbs, with thick opposite petioled unequal leaves, axillary or terminal peduncles, and showy flowers in solitary heads. (Name from *ἀβρός*, *graceful*.)

1. *A. fragrans*, Nutt. More or less viscid-pubescent, from a perennial root; leaves oblong or ovate, truncate or cuneate at base; involucre conspicuous, of broad ovate white and scarious bracts; flowers white, fragrant, 4–10" long; fruit coriaceous, obpyramidal, with narrow undulate coarsely reticulated wings. — From W. Iowa to Utah and N. Mex.

#### ORDER 85. ILLECEBRACEÆ. (KNOTWORT FAMILY.)

Herbs, with mostly opposite and entire leaves, scarious stipules (except in *Scleranthus*), a 4–5-toothed or -parted herbaceous or coriaceous persistent calyx, no petals, stamens borne on the calyx, as many as the lobes and opposite them or fewer, styles 2 and often united, and fruit a 1-seeded utricle. Seed upon a basal funicle, the embryo (in ours) surrounding the mealy albumen. — Small diffuse or tufted herbs, with small greenish or whitish flowers in clusters or dichotomous cymes.

1. *Anychia*. Stamens on the base of the 5-parted awnless calyx. Styles hardly any.
2. *Paronychia*. Stamens on the base of the 5-parted calyx; the sepals hooded at the summit and bristle-pointed. Style 1, 2-cleft at the top.
3. *Scleranthus*. Stamens borne on the throat of the indurated 5-cleft and pointless calyx. Styles 2. Stipules none.

#### 1. ANÝCHIA, Michx. FORKED CHICKWEED.

Sepals 5, scarcely concave, indistinctly mucronate on the back, greenish. Stamens 2–3, rarely 5. Stigmas 2, sessile. Utricle larger than the calyx. Radicle turned downward. — Small, many times forked annuals, with small stipules, and minute flowers in the forks, produced all summer. (Same derivation as the next genus.)

1. *A. dichótoma*, Michx. More or less pubescent, short-jointed, low and spreading; leaves somewhat petioled, mostly very narrowly lanceolate or oblanceolate; flowers nearly sessile and somewhat clustered. — Mostly in open places, N. Eng. to Fla., west to Minn. and Ark.

2. *A. capillàcea*, DC. Smooth, longer-jointed, slender and erect; leaves thinner, broader and longer (5–15" long); flowers more stalked and diffuse. (*A. dichótoma*, var. *capillàcea*, Torr.) — Dry woodlands, same range as the last, but more abundant northward.

#### 2. PARONÝCHIA, Tourn. WHITLOW-WORT.

Sepals 5, linear or oblong, concave, awned at the apex. Petals (or staminodia) bristle-form, or minute teeth, or none. Stamens 5. Style 2-cleft at the apex. Utricle enclosed in the calyx. Radicle ascending. — Tufted herbs (ours perennial), with dry and silvery stipules, and clustered flowers. (Greek name for a whitlow, and for a plant thought to cure it.)

1. *P. argyrócoma*, Nutt. Forming broad tufts, branched, spreading; leaves linear ( $\frac{1}{2}$  long); flowers densely clustered, surrounded by conspicuous large silvery bracts; calyx hairy, short-awned; petals mere teeth between the

stamens. — Bare mountain slopes of the White Mts., and in the Alleghanies from Va. to Ga.; also coast of Maine and near Newburyport, Mass. July.

2. *P. dichótoma*, Nutt. Smooth, tufted; stems (6–12' high) ascending from a rather woody base; leaves ( $\frac{1}{2}$ –1 $\frac{1}{2}$ ' long) and bracts narrowly awl-shaped; cymes open, many-times forked; sepals short-pointed; minute bristles in place of petals. — Rocks, Md. to N. C. and Tex. July–Sept.

3. *P. Jamésii*, Torr. & Gray. Subcespitose, much branched from the somewhat woody base, minutely puberulent; leaves filiform-subulate, obtuse or mucronate; forked cymes rather close; calyx narrow-campanulate with turbinate base. — Central Kan. to W. Neb., Col., and Tex.

#### 3. SCLERÁNTHUS, L. KNAWEI.

Sepals 5, united below in an indurated cup, enclosing the utricle. Stamens 10 or 5. Styles 2, distinct. — Homely little weeds, with awl-shaped leaves, obscure greenish clustered flowers, and no stipules. (Name from *σκληρός*, *hard*, and *άνθος*, *flower*, from the hardened calyx-tube.)

*S. annuus*, L. Much branched, spreading (3–5' high); flowers sessile in the forks; calyx-lobes scarcely margined. — Waste places. (Nat. from Eu.)

#### ORDER 86. AMARANTACEÆ. (AMARANTH FAMILY.)

Weedy herbs, with nearly the characters of the next family, but the flowers mostly imbricated with dry and scarious persistent bracts; these often colored, commonly 3 in number; the 1-celled ovary in our genera 1-ovuled. (The greater part of the order tropical.)

- \* Anthers 2-celled; flowers unisexual; leaves alternate.
- 1. *Amarantus*. Flowers monœcious or polygamous, all with a calyx of 3 or 5 distinct erect sepals, not falling off with the fruit.
- 2. *Acnida*. Flowers dioecious. Calyx none in the fertile flowers.
- \*\* Anthers 1-celled; flowers perfect; leaves opposite.
- 3. *Iresine*. Calyx of 5 sepals. Filaments united below into a cup. Flowers paniculate.
- 4. *Frœlichia*. Calyx 5-cleft. Filaments united into a tube. Flowers spicate.

#### 1. AMARÁNTUS, Tourn. AMARANTH.

Flowers monœcious or polygamous, 3-bracted. Calyx of 5, or sometimes 3, equal erect sepals, glabrous. Stamens 5, rarely 2 or 3, separate; anthers 2-celled. Stigmas 2 or 3. Fruit an ovoid 1-seeded utricle, 2–3-beaked at the apex, mostly longer than the calyx, opening transversely or sometimes bursting irregularly. Embryo coiled into a ring around the albumen. — Annual weeds, of coarse aspect, with alternate and entire petioled setosely tipped leaves, and small green or purplish flowers in axillary or terminal spiked clusters; in late summer and autumn. (*Ἀμάραντος*, *unfading*, because the dry calyx and bracts do not wither. The Romans, like the Greeks, wrote *Amarantus*, which the early botanists incorrectly altered to *Amaranthus*.)

§ 1. Utricle thin, circumscissile, the top falling away as a lid; flowers polygamous. \* Flowers in terminal and axillary simple or mostly panicled spikes; stem erect (1–6' high); leaves long-petioled; stamens and sepals 5.

+ RED AMARANTHS. Flowers and often leaves tinged with crimson or purple. *A. hypochondriacus*, L. Glabrous; leaves oblong-lanceolate, acute or pointed at both ends; spikes very obtuse, thick, crowded, the terminal one



elongated and interrupted; bracts long-awned; fruit 2-3-cleft at the apex, longer than the calyx. — Rarely spontaneous about gardens. (Adv. from Trop. Amer.)

**A. PANICULATUS**, L. Stem mostly pubescent; leaves oblong-ovate or ovate-lanceolate; spikes numerous and slender, panicle, erect or spreading; bracts awn-pointed; flowers small, green tinged with red, or sometimes crimson; fruit 2-3-toothed at the apex, longer than the calyx. — Roadsides, etc. (Adv. from Trop. Amer.)

— GREEN AMARANTHS, PIGWEED. Flowers green, rarely a little reddish.

**A. RETROFLÉXUS**, L. Roughish and more or less pubescent; leaves dull green, long-petioled, ovate or rhombic-ovate, undulate; the thick spikes crowded in a stiff or glomerate panicle; bracts awn-pointed, rigid, exceeding the acute or obtuse sepals. — Cultivated grounds, common; indigenous southwestward. (Adv. from Trop. Amer.)

**A. CHLOROSTACHYS**, Willd. Very similar, but smoother and deeper green, with more slender, linear-cylindric, more or less flexuous spikes, the lateral ones spreading or divaricate, and the sepals more frequently acute or acuminate. (*A. retroflexus*, var. *chlorostachys*, Gray.) — Cultivated grounds; apparently also indigenous southwestward. — Var. *HYBRIDUS*, Watson, is similar, but smooth and still more loosely panicle. (*A. retroflexus*, var. *hybridus*, Gray.) (Adv. from Trop. Amer.)

\* \* Flowers crowded in close and small axillary clusters; stems low, spreading or ascending; stamens and sepals 3, or the former only 2.

1. **A. álbus**, L. (TUMBLE WEED.) Smooth, pale green; stems whitish, erect or ascending, diffusely branched; leaves small, obovate and spatulate-oblong, very obtuse or retuse; flowers greenish; sepals acuminate, half the length of the rugose fruit, much shorter than the subulate rigid pungently pointed bracts; seed small,  $\frac{3}{8}$ " broad. — Waste grounds, common.

2. **A. blitoides**, Watson. Like the last, but prostrate or decumbent; spikelets usually contracted; bracts ovate-oblong, shortly acuminate; sepals obtuse or acute; fruit not rugose; seed about 1" broad. — From Minn. to Mo. and Tex., and westward, and introduced eastward as far as western N. Y.

**A. BLITUM**, L., resembles the last, but is usually erect, with shorter and more scarious bracts, and a smaller seed more notched at the hilum. — Near N. Y. City and Boston. (Adv. from Eu.)

§ 2. Utricle thinnish, bursting or imperfectly circumscissile; flowers monœcious.

**A. SPINOSUS**, L. (THORNY AMARANTH.) Smooth, bushy-branched; stem reddish; leaves rhombic-ovate or ovate-lanceolate, dull green, a pair of spines in their axils; upper clusters sterile, forming long and slender spikes; the fertile globular and mostly in the axils; flowers yellowish-green, small. — Waste grounds, N. Y. to E. Kan., and southward. (Nat. from Trop. Amer.)

§ 3. **EUXOLUS**. Utricle rather fleshy, remaining closed or bursting irregularly; no spines; bracts inconspicuous.

3. **A. pumilus**, Raf. Low or prostrate; leaves fleshy and obovate, emarginate, strongly nerved; flower-clusters small and axillary; stamens and sepals 5, the latter half the length of the obscurely 5-ribbed fruit. — Sandy beaches, R. I. to Va.

**A. CRISPIUS**, Braun. Very slender, procumbent, pubescent; leaves small, light green, rhombic-ovate to lanceolate, acute, the margin crisped and undulate; flowers in small axillary clusters; bracts and sepals scarious, oblanceolate, acute or obtuse; utricle about as long, roughened, not nerved nor angled. (*A. viridis*, Man.) — Streets of Albany, New York City and Brooklyn; doubtless introduced, but the native habitat unknown.

## 2. ACNIDA, Mitch. WATER-HEMP.

Characters of *Amarantus*, except that the flowers are completely diœcious and the pistillate ones without calyx. Bracts 1-3, unequal. Staminate calyx of 5 thin oblong mucronate-tipped sepals, longer than the bracts; stamens 5, the anther-cells united only at the middle. Stigmas 2-5, often long and plumose-hispid. Fruit somewhat coriaceous and indehiscent, or a thin membranous utricle dehiscing irregularly (rarely circumscissile), usually 3-5-angled. (Name from *α-privative*, and *κνίδη*, a nettle.)

§ 1. **ACNIDA** proper. Fruit indehiscent, with firm and close pericarp.

1. **A. cannábina**, L. Usually stout, 2-6° high or more, glabrous; leaves lanceolate to linear-lanceolate, acuminate, long-petioled; sepals of sterile flowers ovate-oblong, obtuse or acutish; bracts usually thin and lax, much shorter than the fruit, sometimes more rigid and longer; fruit about 1" long, obovate, the pericarp rather thin, more or less rugosely angled; seed somewhat turgid, not angled, usually less than 1" long, shining. — Salt or brackish marshes, coast of N. Eng. to Fla.

2. **A. rusocárpa**, Michx. Very similar; fruit larger,  $1\frac{1}{2}$ -2" long, the pericarp thicker, and the larger seed flattened with thick margins, usually thickest on the cotyledonar side. — N. Y. (?) and Penn. to S. Car.; apparently much less common than the last, though it is often difficult to positively distinguish the species from the immature fruit.

§ 2. **MONTÉLIA**. Fruit dehiscing irregularly, the pericarp thin, loose and usually roughened; not salt-marsh plants.

3. **A. tuberculata**, Moq. Tall and erect, or sometimes low and decumbent; leaves lanceolate, acute or acutish or sometimes obtuse; sepals of sterile flowers lanceolate, acute or acuminate; pistillate flowers closely clustered in more or less dense naked or leafy axillary and terminal spikes (or the axillary capitate); bracts rather rigid, acuminate, equalling or exceeding the fruit; utricle about  $\frac{1}{4}$ " long; seed shining,  $\frac{1}{4}$ - $\frac{1}{2}$ " in diameter. (*Montelia tamariscina*, Gray, in part.) — Ohio to S. Dak., Mo., Ala., and La.

Var. **subnuda**, Watson. Erect or often prostrate, the lower clusters at least of pistillate flowers more or less cymose and often in globose heads; bracts thinner, narrow and lax, shorter than the fruit. (*M. tamariscina*, var. *concatenata*, Gray, in part.) — W. Vt. (*Oakes*); Ont. to Minn., and southward. Often appearing quite distinct from the type, but intermediate forms are not rare.

## 3. IRESINE, P. Browne.

Flowers mostly polygamous or diœcious, 3-bracted. Calyx of 5 sepals. Stamens mostly 5; filaments slender, united into a short cup at base; anthers 1-celled, ovate. Fruit a globular utricle, not opening. — Herbs, with opposite petioled leaves, and minute scarious-white flowers, crowded into clusters or spiked and branching panicles; the calyx, etc., often bearing long wool (whence the name, from *ειρσιώρη*, a wreath or staff entwined with fillets of wool).

1. **I. celosioides**, L. Nearly glabrous, annual, erect, slender (2-4° high); leaves ovate-lanceolate; panicles very slender, often broad and diffuse, naked; bracts and calyx silvery-white, the fertile calyx twice longer than the



broad bracts and densely silky-villous at base. — Dry banks, Ohio to Kan., and far southward. Sept.

#### 4. *FRÆLÍCHIA*, Moench.

Flowers perfect, 3-bracted. Calyx tubular, 5-cleft at the summit, below 2–5-crested lengthwise, or tubercled and indurated in fruit, enclosing the indehiscent thin utricle. Filaments united into a tube, bearing 5 oblong 1-celled anthers, and as many sterile strap-shaped appendages. — Hairy or woolly herbs, with opposite sessile leaves, and spiked scarious-bracted flowers. (Named for J. A. Froelich, a German botanist of the last century.)

1. *F. Floridana*, Moquin. Root annual; stem leafless above (1–3° high); leaves lanceolate, silky-downy beneath; spikelets crowded into an interrupted spike; calyx very woolly, becoming broadly winged, the wings irregularly toothed. — Dry sandy places, S. Minn. to Ill., Col., Tex., and Fla.

2. *F. grácilis*, Moq. More slender, with narrow leaves, the spikelets smaller, and the crests of the matured calyx of nearly distinct rigid processes. — Col. to Tex., and is reported from Kansas.

#### ORDER 87. CHENOPODIACEÆ. (GOOSEFOOT FAMILY.)

*Chiefly herbs, of homely aspect, more or less succulent, with mostly alternate leaves and no stipules nor scarious bracts, minute greenish flowers, with the free calyx imbricated in the bud; the stamens as many as its lobes, or occasionally fewer, and inserted opposite them or on their base; the 1-celled ovary becoming a 1-seeded thin utricle or rarely an achene. Embryo coiled into a ring around the mealy albumen, when there is any, or else conduplicate, or spiral. — Calyx persistent, mostly enclosing the fruit. Styles or stigmas 2, rarely 3–5. (Mostly inert or innocent, weedy plants; several are pot-herbs, such as Spinach and Beet.)*

\* Embryo coiled into a ring about usually copious central albumen. Leaves flat, not spiny. Stem not jointed.

+ Flowers perfect (or stamens only occasionally wanting), clustered or paniced; calyx obvious, persistent. Seed-coat crustaceous.

1. *Cycloloma*. Calyx 5-cleft, in fruit surrounded by a horizontal continuous membranaceous wing. Seed horizontal, crustaceous. Leaves sinuate-toothed.

2. *Kochia*. Like n. 1, but wing 5-lobed and seed-coat membranaceous. Leaves entire.

3. *Chenopodium*. Calyx 3–5-parted, unchanged or becoming fleshy in fruit.

4. *Roubleva*. Calyx 3–5-toothed, becoming saccate. Leaves pinnatifid.

+ + Flowers monœcious or diœcious; the staminate in clusters, mostly spiked; the pistillate without calyx, enclosed between a pair of appressed axillary bracts

5. *Atriplex*. Fruiting bracts with margins often dilated and sides often muricate

+ + + Flowers perfect, naked or 1-sepaled, solitary in the axils of the reduced upper leaves

6. *Corispermum*. Pericarp oval, flattened, adherent to the vertical seed. Leaves linear.

\* \* Embryo narrowly horseshoe-shaped or conduplicate no albumen. Stem fleshy, jointed; leaves reduced to opposite fleshy scales or teeth. Flowers densely spiked, perfect.

7. *Salicornia*. Flowers sunk in hollows of the axis of the fleshy spike. Calyx utricle-like.

\* \* \* Embryo coiled into a spiral; albumen mostly none. Leaves fleshy, alternate.

8. *Suaeda*. Embryo flat-spiral. Calyx wingless. Leaves succulent.

9. *Salsola*. Embryo conical-spiral. Calyx in fruit horizontally winged. Leaves spinescent.

#### 1. *CYCLOLÔMA*, Moquin. WINGED FIGWEED.

Flowers perfect or pistillate, bractless. Calyx 5-cleft, with the concave lobes strongly keeled, enclosing the depressed fruit, at length appendaged with a broad and continuous horizontal scarious wing. Stamens 5. Styles 3 (rarely 2). Seed horizontal, flat; coats crustaceous. Embryo encircling the mealy albumen. — An annual and much-branched coarse herb, with alternate sinuate-toothed petioled leaves, and very small scattered sessile flowers in open panicles. (Name composed of *κύκλος*, a circle, and *λάμα*, a border, from the encircling wing of the calyx.)

1. *C. platyphýllum*, Moquin. — Diffuse (6–15' high), more or less arachnoid-pubescent or glabrate, light green or often deep purple. — Sandy soil, Minn. to W. Ill., S. Ind., Ark., and westward across the plains.

#### 2. *KÔCHIA*, Roth.

Characters nearly as in *Cycloloma*, but the seed-coat membranaceous and the albumen wanting. — Annuals or suffruticose perennials, with flat or more usually linear and terete leaves. (Named for W. D. J. Koch, a German botanist.)

K. *SCOPARIA*, Schrad. Annual, erect, puberulent or glabrate, branching; leaves narrowly lanceolate to linear; flowers in small axillary clusters, sessile, each sepal developing a thick wing. — Sparingly introduced; Vt., Ont., and Ill. (Nat. from Eu.)

#### 3. *CHENOPODIUM*, Tourn. GOOSEFOOT. FIGWEED.

Flowers perfect, all bractless. Calyx 5- (rarely 4-) parted or lobed, unchanged in fruit or becoming succulent and berry-like, more or less enveloping the depressed fruit. Stamens mostly 5; filaments filiform. Styles 2, rarely 3. Seed horizontal or vertical, lenticular; the coat crustaceous; embryo coiled partly or fully round the mealy albumen. — Weeds, usually with a white mealiness, or glandular. Flowers sessile in small clusters collected in spiked panicles. (Named from *χην*, a goose, and *πούς*, foot, in allusion to the shape of the leaves.) — Our species are mostly annuals, flowering through late summer and autumn, growing around dwellings, in manured soil, cultivated grounds, and waste places.

§ 1. Annual, more or less mealy, not glandular nor aromatic; fruiting calyx dry; seed horizontal; embryo a complete ring.

\* Pericarp very easily separated from the seed; leaves entire or rarely sinuate-dentate.

1. *C. Boscianum*, Moq. Erect, slender (2° high), loosely branched, often nearly glabrous; leaves oblong- to linear-lanceolate (1–2' long), attenuate into a slender petiole, acute, the lower sinuate-dentate or often all entire; flowers small, solitary or in small clusters upon the slender branchlets; calyx not strongly carinate. (C. album, var. *Boscianum*, Gray, Manual.) — N. Y. to Minn., south to N. C. and Tex.

2. *C. leptophýllum*, Nutt. Densely mealy or rarely nearly glabrous ( $\frac{1}{2}$ –1½° high), simple or branched, often strict; leaves linear ( $\frac{1}{2}$ –1' long), entire, rather shortly petioled; flowers closely clustered, in dense or interrupted spikelets; calyx-lobes strongly carinate. — Sea-coast, Conn. to N. J., north shore of L. Erie, and from S. Dak. to Col., N. Mex., and westward.



\*\* *Pericarp persistent upon the smooth seed; leaves more or less sinuate-dentate (except in C. polyspermum).*

**C. POLYSPERMUM**, L. Low, often spreading, green and wholly destitute of mealiness; leaves all entire, oblong or ovate and on slender petioles; flowers very small, in slender panicles in all the axils, the thin lobes of the calyx very incompletely enclosing the fruit; seed obtuse-edged. — Sparingly naturalized in the Eastern States. (Adv. from Eu.)

**C. ALBUM**, L. (LAMB'S-QUARTERS. FIGWEED.) Erect (1-4° high), more or less mealy; leaves varying from rhombic-ovate to lanceolate or the uppermost even linear, acute, all or only the lower more or less angulate-toothed; clusters spiked-panicled, mostly dense; calyx ( $\frac{3}{4}$ " wide in fruit) with strongly carinate lobes, nearly or quite covering the seed. — Introduced everywhere. (Nat. from Eu.) — Var. *viride*, Moq., more common eastward, is less mealy and with less dense inflorescence.

**C. URBICUM**, L. Rather pale or dull green, nearly destitute of mealiness, with erect branches (1-3° high); leaves triangular, acute, coarsely and sharply many-toothed; spikes erect, crowded in a long and narrow racemose panicle; calyx-lobes not keeled; seed with rounded margins. — Apparently throughout our range. (Nat. from Eu.)

**C. MURALE**, L. Resembles the preceding, but less erect, loosely branched (1-2° high); leaves rhomboid-ovate, acute, coarsely and sharply unequally toothed, thin, bright green; spikes or racemes diverging, somewhat corymbed; calyx-lobes scarcely keeled; seed sharp-edged. — From N. Eng. to Mich. and Mo. (Adv. from Eu.)

3. **C. HYBRIDUM**, L. (MAPLE-LEAVED GOOSEFOOT.) Bright green throughout; stem widely much branched (2-4° high); leaves thin (2-6' long), somewhat triangular and heart-shaped, taper-pointed, sinuate-angled, the angles extending into a few large and pointed teeth; racemes diffusely and loosely panicled, leafless; calyx not fully covering the fruit, its lobes keeled. — Indigenous from western N. Y. and Ky., westward across the continent; introduced eastward.

§ 2. Annual or perennial herbs, somewhat mealy, not glandular-pubescent: fruiting calyx dry; seed large, subglobose, vertical, exserted; embryo a complete ring.

**C. GLAUCUM**, L. (OAK-LEAVED GOOSEFOOT.) Low (5-12' high), spreading, glaucous-mealy; leaves sinuately pinnatifid-toothed, oblong, obtuse, pale green above; clusters in axillary spikes, small; seed sharp-edged. — Throughout our range and westward. (Nat. from Eu.)

**C. BONUS-HENRICUS**, L. (GOOD-KING-HENRY.) Stout, erect (1-2° high), mostly simple; leaves broadly triangular-hastate (2-3' long), obtuse or acute, subsinuate or entire; flowers somewhat densely paniculately spiked; seed with obtuse edges. (*Blitum Bonus-Henricus*, Reichenb.) — Sparingly introduced. (Adv. from Eu.)

§ 3. Annual, glabrous; calyx more or less fleshy in fruit and often colored, enclosing the utricle; seed mostly vertical; embryo a complete ring; flowers in crowded clusters, axillary or in spikes.

4. **C. RUBRUM**, L. (COAST BLITE.) Stem angled, much branched; leaves thickish, triangular-lanceolate, tapering below into a wedge-shaped base and above into a slender point, sparingly and coarsely toothed, the upper linear-lanceolate; clusters scattered in axillary leafy spikes; calyx-lobes 2-4, rather fleshy; stamens 1-2; seed shining, the margin acute. (*Blitum maritimum*, Nutt.) — Sea-coast of Northern States, and in saline places to Minn. (Eu.)

5. **C. CAPITATUM**, Watson. (STRAWBERRY BLITE.) Stem ascending, branching; leaves triangular and somewhat halberd-shaped, sinuate-toothed;

clusters simple (large), interruptedly spiked, the upper leafless; stamens 1-5; calyx berry-like in fruit; seed ovoid, flattish, smooth, with a very narrow margin. (*Blitum capitatum*, L.) — Dry rich ground, along the Great Lakes, northward and westward. The calyx becomes pulpy and bright red in fruit, when the large clusters look like strawberries. (Eu.)

§ 4. Annual, not mealy, but more or less glandular-pubescent, aromatic; calyx 2-3-parted, dry in fruit; seed often vertical; embryo not a complete ring.

**C. BOTRYS**, L. (JERUSALEM OAK. FEATHER GERANIUM.) Glandular-pubescent and viscid; leaves slender-petioled, oblong, obtuse, sinuate-pinnatifid; racemes cymose-diverging, loose, leafless; fruit not perfectly enclosed. — Widely introduced. (Nat. from Eu.)

**C. AMBROSIOIDES**, L. (MEXICAN TEA.) Smoothish; leaves slightly petioled, oblong or lanceolate, repand-toothed or nearly entire, the upper tapering to both ends; spikes densely flowered, leafy, or intermixed with leaves; fruit perfectly enclosed in the calyx. — Waste places, common throughout our range, especially southward. (Nat. from Trop. Amer.)

Var. *anthelminticum*, Gray. (WORMSEED.) Leaves more strongly toothed, the lower sometimes almost lacinate-pinnatifid; spikes more elongated, mostly leafless. — From Long Island and southward, west to Wisc. and Tex. (Nat. from Trop. Amer.)

#### 4. ROUBIËVA, Moquin.

Flowers minute, perfect or pistillate, solitary or 2-3 together in the axils. Calyx urceolate, 3-5-toothed, becoming enlarged and saccate, contracted at the apex and enclosing the fruit. Stamens 5, included; styles 3, exserted. Fruit membranaceous, compressed, glandular-dotted. Seed vertical. Embryo annular. — Perennial glandular herb, with alternate pinnatifid leaves.

**R. MULTIFIDA**, Moq. Prostrate or ascending, branching and leafy; leaves lanceolate to linear ( $\frac{1}{2}$ -1 $\frac{1}{2}$ ' long), deeply pinnatifid with narrow lobes; fruiting calyx obovate. (*Chenopodium multifidum*, L.) — Sparingly introduced in the Atlantic States. (Adv. from S. Amer.)

#### 5. ÁTRIPLEX, Tourn. ORACHE.

Flowers monœcious or diœcious; the staminate like the flowers of *Chenopodium*, but sterile by the abortion of the pistil; the fertile consisting simply of a naked pistil enclosed between a pair of appressed foliaceous bracts, which are enlarged in fruit, and sometimes united. Seed vertical. Embryo coiled into a ring around the albumen. In one section, including the Garden Orache, there are some fertile flowers with a calyx, like the staminate, but without stamens, and with horizontal seeds. — Herbs (ours annuals) usually mealy or scurfy with bran-like scales, with spiked-clustered flowers; in summer and autumn. (The ancient Latin name, a corruption of the Greek, ἀτρίφαξις.)

**A. RÔSEUM**, L. Hoary-mealy; leaves short-petioled or the upper sessile, rhombic-ovate or oblong with a wedge-shaped base, coarsely sinuate-toothed; fertile flowers mostly clustered in the axils; fruiting bracts broad, often cut-toothed and warty. — Sparingly introduced at the east. (Adv. from Eu.)

1. **A. PÁTULUM**, L. Erect or prostrate (1-4° high), dark green and glabrous or somewhat scurfy; leaves narrowly lanceolate-hastate (1-4' long), the lower sometimes opposite, entire or sparingly sinuate-dentate, petioled, the upper lanceolate to linear; flowers clustered in rather slender spikes, the two kinds together or separate; fruiting bracts ovate-triangular or rhombic-hastate, entire or toothed, often muricate on the back, united to near the



middle. — Very variable. The typical form scarcely occurs except as naturalized from Europe. — Var. *HASTATUM*, Gray. Erect or spreading, stout, at least the lower leaves broadly triangular-hastate, often coarsely and irregularly toothed. Salt and brackish places, on the coast from Can. to Va., along the Great Lakes, and far westward. — Var. *LITTORALE*, Gray. Slender; leaves linear-lanceolate to linear, rarely subhastate or toothed. Canada to N. J., and westward along the Great Lakes. — Var. *SUBSPICATUM*, Watson. A low erect and often simple form (3–12' high), usually quite scurfy; leaves lanceolate-hastate ( $\frac{1}{4}$ –1' long). Minn. to central Kan., and westward.

2. *A. arenarium*, Nutt. Silvery-mealy, diffusely spreading; leaves oblong, narrowed at base, nearly sessile; fruiting bracts broadly wedge-shaped, united, 3-nerved, 2–5-toothed at the summit, and usually strongly muricate and reticulate on the sides. — Sandy beaches, along the coast, Mass. to Fla.

3. *A. argenteum*, Nutt. Usually low, much branched, gray-scurfy, leafy; leaves deltoid or subrhombic, often subhastate; staminate flowers in terminal spikes; fruiting bracts round-rhombic, indurated, united, the free margins more or less dilated and deeply toothed, the sides variously appendaged. — Red River Valley, Minn., south and westward.

#### 6. CORISPÉRMUM, A. Juss. BUG-SEED.

Flowers perfect, single and sessile in the axils of the upper leaves reduced to bracts, usually forming a spike. Calyx of a single delicate sepal on the inner side. Stamens 1 or 2, rarely 5. Styles 2. Fruit oval, flat, with the outer face rather convex and the inner concave, sharp-margined, a *caryopsis*, i. e. the thin pericarp adherent to the vertical seed. Embryo slender, coiled around a central albumen. — Low branching annuals, with narrow linear alternate 1-nerved leaves. (Name formed of *kópis*, a bug, and *σπέρμα*, seed.)

1. *C. hyssopifolium*, L. Somewhat hairy when young, pale; floral leaves or bracts awl-shaped from a dilated base or the upper ovate and pointed, scarious-margined; fruit wing-margined. — Sandy beaches along the Great Lakes, central Neb., Tex., and westward. — Leaves usually pungent.

#### 7. SALICÓRNIA, Tourn. GLASSWORT. SAMPHIRE.

Flowers perfect, 3 together immersed in each hollow of the thickened upper joints, forming a spike; the two lateral sometimes sterile. Calyx small and bladder-like, with a toothed or torn margin, at length spongy and narrowly wing-bordered, enclosing the flattened thin utricle. Stamens 1 or 2. Styles 2, united at base. Seed vertical, without albumen. Embryo thick, the cotyledons incumbent upon the radicle. — Low saline plants, with succulent leafless jointed stems, and opposite branches; the flower-bearing branchlets forming the spikes. (Name composed of *sal*, salt, and *cornu*, a horn; saline plants with horn-like branches.)

1. *S. mucronata*, Bigel. Annual, erect, stout, naked below (2–12' high), turning red in age; spikes thick, closely jointed; scales mucronate-pointed and conspicuous, especially when dry; middle flower half higher than the lateral ones or less, occupying nearly the whole length of the joint; fruit pubescent; seed  $\frac{1}{4}$ – $\frac{1}{2}$ " long. (S. *Virginica*, Gray, Manual; not L.) — Sea-coast from N. Scotia to Va.

2. *S. herbacea*, L. Annual, erect or at length spreading (6–18' high), green; scales obscure and very blunt, making a truncate barely emarginate termination of the longer joints of the stem or elongated narrower spikes; middle flower much higher than the lateral ones, slightly shorter than the joint; fruit pubescent; seed  $\frac{3}{4}$ –1" long. — Salt marshes of the coast and interior salt springs, and alkaline localities.

3. *S. ambigua*, Michx. Numerous tufted stems (3–12' long) decumbent or ascending from a hard and rather woody creeping base or rootstock, greenish, turning lead-colored; spikes slender, short-jointed, the scales short, acutish or acute; flowers nearly equal in height and equalling the joint; seed pubescent,  $\frac{1}{4}$ " long. (S. *fruticosa*, var. *ambigua*, Gray, Manual.) — Sea-coast, Mass. to Fla. and Tex.

#### 8. SUÆDA, Forskal. SEA BLITE.

Flowers perfect, sessile in the axils of leafy bracts. Calyx 5-parted, fleshy, enclosing the fruit (utricle) and often carinate or crested. Stamens 5. Stigmas 2 or 3. Seed vertical or horizontal, with a flat-spiral embryo, dividing the scanty albumen (when there is any) into two portions. — Fleshy saline plants, with alternate nearly terete linear leaves. (An Arabic name.)

1. *S. linearis*, Moq. Annual, prostrate or usually erect, 1–2° high, branched; leaves narrow at base,  $\frac{1}{4}$ –2' long, acute; floral bracts acuminate, on slender branchlets; sepals very thick; anthers exserted; seed horizontal, round-oval, black,  $\frac{1}{4}$ " broad. (S. *maritima*, Gray; not Dumort.) — Sea-coast, N. Scotia to Fla. — A doubtful form of E. Mass. has the bracts and shorter leaves obtuse, larger flowers on less slender branchlets, and reddish seeds nearly 1" broad.

2. *S. depréssa*, Watson. Annual, decumbent or erect, branching from the base; leaves broadest at base, the cauline 3–12" long, the floral lanceolate to ovate; one or more of the calyx-lobes very strongly carinate or crested. — Saline soil, Red River Valley, Minn., to Col., and westward.

#### 9. SÁLSOLA, L. SALTWORT.

Flowers perfect, with 2 bractlets. Calyx 5-parted, persistent and enclosing the depressed fruit in its base; its divisions at length horizontally winged on the back, the wings forming a broad and circular scarious border. Stamens mostly 5. Styles 2. Seed horizontal, without albumen, filled by the embryo, which is coiled in a conical spiral (cochleate). — Herbs or slightly shrubby branching plants of the sea-shore, with fleshy and rather terete or awl-shaped leaves, and sessile axillary flowers. (Diminutive of *salsus*, salty.)

1. *S. Kali*, L. (COMMON SALTWORT.) Annual, diffusely branching, bushy, rough or smoothish; leaves all alternate, awl-shaped, prickly-pointed; flowers single; calyx with the converging lobes forming a sort of beak over the fruit, the large rose or flesh-colored wings nearly orbicular and spreading. — Sandy sea-shore, N. Eng. to Ga. Aug. (Eu.)

#### ORDER 88. PHYTOLACCACEÆ. (POKEWEED FAMILY.)

Plants with alternate entire leaves and perfect flowers, having the general characters of *Chenopodiaceæ*, but usually a several-celled ovary composed of as many carpels united in a ring, and forming a berry in fruit.