1. **P. flavéscens,** Nutt. (AMERICAN MISTLETOE.) Leaves obovate or oval, somewhat petioled, longer than the spikes, yellowish; berries white. — On various deciduous trees, N. J. to S. Ind., Mo., and southward.

2. ARCEUTHÒBIUM, Bieb.

Flowers axillary or terminal, solitary or several from the same axil. Calyx mostly compressed; the staminate usually 3-parted, the pistillate 2-toothed. Anthers a single orbicular cell, opening by a circular slit. Berry compressed, fleshy, on a short recurved pedicel. — Parasitic on Conifers, glabrous, with rectangular branches and connate scale-like leaves; flowers often crowded in apparent spikes or panicles, opening in summer or autumn and maturing fruit the next autumn. (From ἄρκευθος, *the juniper*, and βίος, *life*.)

1. **A. pusíllum,** Peck. Very dwarf, the slender scattered or clustered stems 3 – 10″ high, usually simple, olive-green to chestnut; scales obtuse; flowers solitary in most of the axils; fruit narrowly oblong, 1″ long. — On *Abies nigra;* N. New York; Hanover, N. H. (*Jesup*).; Pocono Mt., Penn.

ORDER 97. SANTALÀCEÆ. (SANDALWOOD FAMILY.)

Herbs, shrubs, or trees, with entire leaves; the 4 – 5*-cleft calyx valvate in the bud, its tube coherent with the* 1*-celled ovary, which contains* 2 – 4 *ovules suspended from the apex of a stalk-like free central placenta which rises from the base of the cell, but the* (*indehiscent*) *fruit always* 1*-seeded.* — Seed destitute of any proper seed-coat. Embryo small, at the apex of copious albumen; radicle directed upward; cotyledons cylindrical. Stamens equal in number to the lobes of the calyx, and inserted opposite them into the edge of the fleshy disk at their base. Style 1. A small order, the greater part belonging to warm regions.

1. **Comandra.** Flowers perfect, in umbel-like clusters. Low herbaceous perennials.
2. **Pyrularia.** Flowers diœcious or polygamous, in short spikes or racemes. Shrub.

1. COMÁNDRA, Nutt. BASTARD TOAD-FLAX.

Flowers perfect. Calyx bell-shaped or soon urn-shaped, lined above the ovary with an adherent disk which has a 5-lobed free border. Stamens inserted on the edge of the disk between its lobes, opposite the lobes of the calyx, to the middle of which the anthers are connected by a tuft of thread-like hairs. Fruit drupe-like or nut-like, crowned by the persistent calyx-lobes, the cavity filled by the globular seed. — Low and smooth (sometimes parasitic) perennials, with herbaceous stems from a rather woody base or root, alternate and almost sessile leaves, and greenish-white flowers in terminal or axillary small umbel-like clusters. (Name from κόμη, *hair*, and ἄνδρες, for *stamens*, in allusion to the hairs on the calyx-lobes which are attached to the anthers.)

1. **C. umbellàta,** Nutt. Stem 8 – 10′ high, branched, very leafy; leaves oblong, pale (1′ long); *peduncles* several and *corymbose-clustered at the summit, several-flowered;* calyx-tube conspicuously continued as a neck to the dry *globular-urn-shaped fruit; the lobes oblong; style slender.* — Dry ground, common. May, June. Root forming parasitic attachments to the roots of trees.

2. **C. pállida,** A. DC. *Leaves narrower, more glaucous and acuter, linear to narrowly lanceolate* (or those upon the main stem oblong), all acute or somewhat cuspidate; *fruit ovoid, larger* (3 – 4″ long), sessile or on short stout pedicels. — W. Minn. to S. W. Kan., and westward.

3. **C. lívida,** Richardson. *Peduncles* slender, *axillary,* 3 – 5*-flowered,* shorter than the oval leaves; calyx-tube not continued beyond the ovary, *the lobes ovate; style short;* fruit pulpy when ripe, red. — Newf., N. Vt., sandy shores of L. Superior, and northward.

2. PYRULÀRIA, Michx. OIL-NUT. BUFFALO-NUT.

Flowers diœcious or polygamous. Calyx 4 – 5-cleft, the lobes recurved, hairy-tufted at base in the male flowers. Stamens 4 or 5, on very short filaments, alternate with as many rounded glands. Fertile flowers with a pear-shaped ovary invested by the adherent tube of the calyx, naked at the flat summit; disk with 5 glands; style short and thick; stigma capitate-flattened. Fruit fleshy and drupe-like, pear-shaped; the globose endocarp thin. Embryo small; albumen very oily. — Shrubs or trees, with alternate short-petioled and deciduous leaves; the small greenish flowers in short and simple spikes or racemes. (Name a diminutive of *Pyrus*, from the shape of the fruit.)

1. **P. pùbera,** Michx. Shrub straggling (3 – 12° high), minutely downy when young, at length nearly glabrous; leaves obovate-oblong, acute or pointed at both ends, soft, very veiny, minutely pellucid-punctate; spike small and few-flowered, terminal; calyx 5-cleft; fruit 1′ long. (P. oleifera, *Gray.*) — Rich woods, mountains of Penn. to Ga. Whole plant, especially the fruit, imbued with an acrid oil.

ORDER 98. EUPHORBIÀCEÆ. (SPURGE FAMILY.)

Plants usually with a milky acrid juice, and monœcious or diœcious flowers, mostly apetalous, sometimes achlamydeous (*occasionally polypetalous or monopetalous*); *the ovary free and usually* 3*-celled, with a single or sometimes a pair of ovules hanging from the summit of each cell; stigmas or branches of the style as many or twice as many as the cells; fruit commonly a* 3*-lobed capsule, the lobes or carpels separating elastically from a persistent axis and elastically* 2*-valved; seed anatropous; embryo straight, almost as long as and the flat cotyledons mostly as wide as the fleshy or oily albumen.* Stipules often present. — A vast family in the warmer parts of the world; most numerously represented in northern countries by the genus Euphorbia, which has very reduced flowers within a calyx-like involucre.

* Flowers all without calyx, included in a cup-shaped calyx-like involucre, — the whole liable to be mistaken for a single flower.

1. **Euphorbia.** Involucre surrounding many staminate flowers (each of a single naked stamen) and one pistillate flower (a 3-lobed pistil).

* * Flowers with a calyx, without involucre.

+ Seeds and ovules 2 in each cell; flowers monœcious.

2. **Pachysandra.** Flowers in basal spikes. Calyx 4-parted. Stamens 4, distinct.
3. **Phyllanthus.** Flowers axillary. Stamens 3, united.

+ + Seeds and ovules 1 in each cell.

a. Flowers apetalous, in cymose panicles (2 – 3-chotomous); stamens 10, erect in the bud.

4. **Jatropha.** Calyx corolla-like, the staminate salver-form; armed with stinging hairs

b. Flowers in terminal racemes or spikes. Stamens inflexed in the bud. Stellate-downy or scurfy, or hairy and glandular; leaves mostly entire.

5. **Croton.** Flowers spiked or glomerate. Ovary and fruit 3- (rarely 2-4-) celled.

6. **Crotonopsis.** Flowers scattered on the branchlets. Ovary and fruit 1-celled.

c. Flowers in axillary spikes or racemes (except n. 9), apetalous (except n. 7). Stamens 8 or more; anthers erect in the bud.

7. **Argythamnia.** Petals and sepals 5. Stamens 10-15, united. Styles bifid, linear.

8. **Acalypha.** Calyx 4- (3-5-) parted. Stamens mostly 8. Fertile flowers in the axils of leafy bracts. Stigmas finely dissected.

9. **Ricinus.** Racemes terminal, subpanicled. Calyx 3-5-parted. Stamens very numerous; the filaments repeatedly branched. Styles 2-parted.

d. Flowers apetalous, in racemes or spikes pistillate at base. Stamens 2 or 3. Styles simple

10. **Tragia.** Flowers racemose. Calyx-lobes valvate in bud. Hirsute or pubescent.

11. **Stillingia.** Flowers spicate. Calyx-lobes imbricate in bud. Fertile bracts glanduliferous. Glabrous.

1. EUPHÓRBIA, L. Spurge.

Flowers monœcious, included in a cup-shaped 4-5-lobed involucre (*flower* of older authors) resembling a calyx or corolla, and usually bearing large thick glands (with or without petal-like margins) at its sinuses. Sterile flowers numerous and lining the base of the involucre, each from the axil of a little bract, and consisting merely of a single stamen jointed on a pedicel like the filament; anther-cells globular, separate. Fertile flower solitary in the middle of the involucre, soon protruded on a long pedicel, consisting of a 3-lobed and 3-celled ovary with no calyx, or a mere vestige. Styles 3, each 2-cleft; the stigmas therefore 6. Pod separating into 3 1-seeded carpels, which split elastically into 2 valves. Seed often caruncled (ours only in §§ 5 and 6). — Plants (herbs in the United States), with a milky acrid juice. Peduncles terminal, often umbellate-clustered; in the first section mostly appearing lateral, but not really axillary. (Named after *Euphorbus*, physician to King Juba.)

A. *Glands of the involucre with petal-like, usually white or rose-colored, margins or appendages; these almost obsolete in* n. 1.

§ 1. ANISOPHÝLLUM. *Leaves all opposite, short-petioled, small, oblique at base; stipules awl-shaped or scaly and often fringed, persistent; stems much branched, spreading or usually procumbent; involucres solitary in the forks or in terminal or pseudo-lateral clusters, small, with 4 glands; seeds ash-colored (except in* n. 10); *annuals.*

* *Seeds smooth and even; leaves entire; whole plant glabrous.*

1. **E. polygonifòlia,** L. Prostrate-spreading; *leaves oblong-linear,* obtuse, mucronate, slightly cordate or obtuse at base (4-8″ long); stipules setaceously divided; peduncles in the forks, as long as the petioles; lobes of the involucre longer than the *minute not appendaged glands;* pods obtusely angled; seeds ovate (over 1″ long, the largest of this section). — Sandy shores of the Atlantic and of the Great Lakes.

2. **E. Géyeri,** Engelm. Procumbent; *leaves oblong-ovate,* obtuse, slightly mucronate, mostly acutish at base, lowermost cordate (3-6″ long); stipules setaceously divided; peduncles as long as the petioles, at length in loose foliaceous lateral clusters; glands with *narrow white or red appendages;* pods acutely angled; seeds ovate, acute at one end (⅛″ long). — Sandy soil, Ill. to Wisc., Minn., and Kan.

3. **E. petaloidea,** Engelm. Resembling the last, but half-erect and spreading; *leaves longer, narrower, retuse or emarginate;* peduncles longer than the petioles; involucres larger, *the broadly campanulate appendages much larger and conspicuous;* pod obtusely angled; seeds nearly 1″ long. — From Iowa and Mo., westward.

4. **E. sérpens,** HBK. Stems filiform, prostrate, and often rooting; *leaves round-ovate,* obtuse or cordate at base (only ½-1½″ long); *stipules membranaceous, triangular;* peduncles much longer than the petioles, at length in loose foliaceous lateral clusters; glands of the very small involucre with *minute crenulate appendages;* pods acutely angled; seeds obtusely angled (⅛″ long or less). — Rich soil, Ill. and Iowa to Kan., and southward. Rarely adv. eastward.

* * *Seeds minutely roughened or transversely wrinkled or pitted; leaves more or less serrulate, smooth or often hairy.*

5. **E. serpyllifòlia,** Pers. Glabrous, prostrate-spreading; *leaves obovate-oblong,* narrowed at the very oblique base, sharply serrulate toward the obtuse apex (3-6″ long, often with a red spot); stipules lanceolate, fimbriate; peduncles as long as or longer than the petioles, at length in loose foliaceous lateral clusters; glands of the small involucre with narrow somewhat toothed appendages; pods sharply angled; *seeds acutely quadrangular, slightly cross-wrinkled,* often pitted (nearly ⅛″ long). — Wisc. to Mo., and westward.

6. **E. glyptospérma,** Engelm. Glabrous (or very rarely puberulent), erect-spreading; *leaves linear-oblong,* mostly falcate, very unequal at base, slightly serrulate toward the obtuse apex (2-5″ long); stipules lanceolate, setaceously divided; peduncles as long as the petioles, in dense foliaceous lateral clusters; glands of the very small involucre with narrow crenulate appendages; pods sharply angled; *seeds sharply 4-angled and with 5 or 6 sharp transverse wrinkles* (⅛″ long). — Ont. to Wisc., Ill., Mo., and westward.

7. **E. maculàta,** L. Prostrate; stems puberulent or hairy; *leaves oblong-linear,* very oblique at base, serrulate upward, more or less pubescent or sometimes smoothish (4-6″ long), usually with a brown-red spot in the centre; stipules lanceolate, fimbriate; peduncles as long as the petioles, in dense foliaceous lateral clusters; glands of the small involucre minute, with narrow slightly crenate (usually red) appendages; pods acutely angled, puberulent; *seeds ovate* (⅔″ long), *sharply 4-angled and with about 4 shallow grooves across the concave sides.* — Open places, roadsides, etc., common.

8. **E. humistràta,** Engelm. Procumbent, puberulent or hairy; *leaves elliptical or obovate,* very oblique at base, serrulate toward the apex, sparsely hairy underneath (4-9″ long, sometimes with a brown spot above); stipules lanceolate, fimbriate; peduncles rather shorter than the petioles, in dense scarcely foliaceous lateral clusters; *involucre cleft on the back,* its (red or white) appendages truncate or crenate; pods sharply angled, puberulent; *seeds ovate, obtusely angled, minutely roughened* (⅛″ long). — Rich soil, Ind. and W. Tenn. to Minn. and Kan.

9. **E. Préslii,** Guss. Smooth or with scattered hairs, ascending or erect (1-2° high); leaves oblique at the obtuse or slightly cordate base, ovate-oblong or oblong-linear, sometimes falcate, serrate (½-1½′ long), often with a

red spot or red margins; stipules triangular; peduncles longer than the petioles, collected in loose leafy terminal cymes; *appendages entire*, larger and white, or smaller and sometimes red; *pod glabrous, obtusely angled; seeds ovate, obtusely angled, wrinkled and tubercled* (½″ long), blackish. (E. hypericifolia of *Man.*, not *L.*) — Common throughout the U. S. east of the plains.

§ 2. ZYGOPHYLLÍDIUM. *Leaves opposite, on short petioles, not oblique, with stipular glands; stems dichotomously branched, erect; cymes terminal; involucres with 5 glands; seeds tuberculate.*

10. **E. hexágona,** Nutt. Somewhat hairy (1° high or more); branches striate-angled; leaves linear-lanceolate, entire; involucre hairy without and within; glands with green ovate-triangular appendages twice their length; capsule smooth; seeds ovate. — Iowa to Tex., west to Col. and Montana.

§ 3. PETALÒMA. *Uppermost leaves with conspicuous white petal-like margins, whorled or opposite, the others scattered; erect annuals, with leaves equal at base and entire, and with lanceolate deciduous stipules; involucres 5-lobed, in an umbel-like inflorescence.*

11. **E. marginàta,** Pursh. Stem stout (2–3° high), erect, hairy; leaves sessile, ovate or oblong, acute; umbel with 3 dichotomous rays; glands of the involucre with broad white appendages. — Minn. to Mo., west to Col., also spreading eastward to Ohio, and frequently escaped from gardens, where it is often cultivated for its showy broadly white-margined floral leaves.

§ 4. TITHYMALÓPSIS. *Only the uppermost leaves whorled or opposite; erect perennials, with entire leaves equal at base; stipules none; involucres mostly 5-lobed, in the forks of the branches and terminal; inflorescence umbelliform.*

12. **E. corollàta,** L. Glabrous or sometimes sparingly hairy (2–3° high); leaves ovate, lanceolate, or linear, entire, obtuse; umbel 5- (3–7-) forked, and the forks again 2–3- (or rarely 5-) forked; involucres long-peduncled, with showy white appendages (appearing like petals), the lobes minute and incurved; pod slender-pedicelled, smooth; seeds thick (1″ long or more), ash-colored, slightly uneven. — Rich or sandy soil, N. Y. and N. J. to Fla., west to Minn. and La., also adventive in Mass. July – Oct.

B. *Glands of the involucre without petaloid appendages.*

§ 5. POINSÉTTIA. *Involucres in terminal clusters, 4–5-lobed, with few (or often solitary) cup-shaped glands; erect annuals, with variable, entire, dentate, or sinuate leaves, all or only the upper ones opposite; the uppermost often colored, especially at base; stipules small and glandular.*

13. **E. dentàta,** Michx. Erect or ascending, hairy (1° high); leaves ovate, lanceolate, or linear, petioled, coarsely toothed (1–2′ long), *only the lowest alternate*, the upper often paler at base; involucres almost sessile, with 5 oblong dentate lobes, and one or sometimes more *short-stalked glands*; seeds ovate-globular, slightly tubercled. — Rich soil, Penn. to Tenn., Iowa, E. Kan., and southward. July – Sept.

14. **E. heterophýlla,** L. Erect (1–3° high), glabrous; *leaves alternate*, petioled, ovate-fiddle-shaped and sinuate-toothed, or lanceolate or linear and entire, often only those of the branches linear; the upper usually with a

red base; involucres about the length of the peduncle, with 5 ovate incised lobes and a single or few and *almost sessile glands*; seeds nearly globular, tubercled. — Slopes and rocky soil, Minn. to W. Ill., Iowa and Mo.

§ 6. TITHÝMALUS. *Involucres in a terminal dichotomous or commonly umbelliform inflorescence, 5- or usually 4-lobed, with as many flat or convex entire or crescent-shaped glands; seeds carunculate (except n. 15); ours ascending or erect, and mostly glabrous, without stipules.*

* *Perennials with entire leaves, all or only the upper opposite; involucres long-peduncled in a dichotomous inflorescence, mostly with 5 transversely oblong glands; seeds without caruncle.*

15. **E. Ipecacuánhæ,** L. Stems many from a very long perpendicular root, erect or diffusely spreading (5–10′ long), forking from near the base; leaves varying from obovate or oblong to narrowly linear, almost sessile, glabrous; peduncles elongated (½–1′ long); pod long-pedicelled, obtusely angled, nearly smooth; seed ovate, white, sparsely marked with impressed dots. — Sandy soil, near the coast; Conn. to Fla.; also barrens of S. Ind.

* * *Leaves scattered, only the floral in the umbelliform inflorescence whorled or opposite and of a different shape; glands mostly 4.*

+– *Leaves serrulate or rarely entire; glands transversely oval, obtuse.*

+– + *Seeds smooth and even; pod warty or rough.*

16. **E. Darlingtònii,** Gray. Tall *perennial* (2–4° high); *leaves entire, minutely downy beneath*; those of the stem lanceolate-oblong from a narrow base; the floral oval, very obtuse; the upper roundish-dilated with a truncate base; umbel 5–8-rayed, then simply forked; *pod minutely warty*; large globular seed with a small caruncle. — Copses, N. Y. and Penn., to the mountains of N. C. July – Sept.

17. **E. obtusàta,** Pursh. Erect *annual* (1–2° high); *leaves oblong-spatulate*, minutely serrulate, *smooth, all obtuse*; upper ones cordate at base; floral ones ovate, dilated, barely mucronate; umbel once or twice divided into 3 rays, then into 2; *involucre with naked lobes* and small stipitate glands; *styles distinct*, longer than the ovary, erect, *2-cleft to the middle*; pod beset with long warts. — Damp woods, Va. to S. C., west to Iowa and Kan. May – July.

E. PLATYPHÝLLA, L. Erect *annual* (8–18′ high); upper *stem-leaves lanceolate-oblong, acute*, cordate at base, minutely serrulate, mostly *with scattered hairs beneath*; floral ones triangular-ovate, subcordate; umbel 5-rayed; *involucre with ciliate lobes* and large sessile glands; *styles* longer than the ovary, *united at base, slightly 2-cleft*; pod covered with depressed warts. — Along the St. Lawrence and Great Lakes to Mich. June – Aug. (Adv. from Eu.)

+– + *Seeds rugose or reticulated; leaves serrulate; annuals.*

18. **E. dictyospérma,** Fischer & Meyer. Stem erect (8–18′ high); *leaves* oblong- or obovate-spatulate, smooth, all obtuse and *obtusely serrate*; upper ones cordate at base; floral ones roundish-ovate or obscurely heart-shaped, slightly mucronate; umbels once or twice 3-forked, then 2-forked; involucre with nearly naked lobes and *small almost sessile glands*; styles shorter than the ovary, spreading or recurved; *pod warty; seeds delicately reticulated.* — Prairies and roadsides, Md. to Minn., Ala., and westward. May – July.

E. Helioscòpia, L. Stems ascending (6 – 12′ high), stout; *leaves all obovate* and very rounded or retuse at the end, *finely serrate*, smooth or a little hairy, those of the stem wedge-shaped; umbel divided into 5 rays, then into 3, or at length simply forked; *glands orbicular, stalked; pods smooth and even; seeds with coarse honeycomb-like reticulations.* — Waste places, eastward and along the Great Lakes to Mich. July – Sept. (Nat. from Eu.)

+– +– *Leaves entire; glands crescent-shaped or 2-horned.*

++ *Seeds smooth and dark-colored; perennials, with running rootstocks.*

E. Ésula, L. Stems clustered (1° high); *leaves lanceolate or linear, the floral* (yellowish) *broadly heart-shaped*, mucronate; umbel divided into many rays, then forking; *glands short-horned* (brown); pods smoothish and granular. — Mass., western N. Y., and Mich.; rare. (Adv. from Eu.)

E. Cyparíssias, L. Stems densely clustered (6 – 10′ high); *stem-leaves linear, crowded, the floral heart-shaped;* umbel many-rayed; *glands crescent-shaped;* pods granular. — Escaped from gardens, common. (Nat. from Eu.)

E. Nicæénsis, All. *Stout and tall* glabrous perennial; *leaves oblong or oblong-lanceolate*, the floral broadly heart-shaped, mucronate; terminal umbel many-rayed, the rays forking; glands short-horned; *pods finely wrinkled.* — A rare escape; Binghampton, N. Y. (Adv. from Eu.)

++ ++ *Seeds sculptured, ash-colored; pod smooth; annuals or biennials.*

E. Péplus, L. Erect or ascending (5 – 10′ high); *leaves petioled*, thin, round-obovate, the upper floral ones ovate; umbel 3-rayed, then forking; glands long-horned; lobes of the *pod 2-wing-crested* on the back; *seeds 2-grooved on the inner face, pitted on the back* (scarcely over ⅛″ long). — Waste places, N. Eng. to N. J. and western N. Y. (Adv. from Eu.)

19. **E. commutàta,** Engelm. Stems branched from a commonly decumbent base (6 – 12′ high); *leaves* obovate, obtuse; the upper all *sessile*, the upper floral ones roundish-dilated, broader than long; umbel 3-forked; glands with slender horns; *capsule obtusely angled; seeds ovate, pitted all over* (1″ long). — Along streams and shady slopes, Md. to Fla., Minn., and Mo.

* * * *Glabrous annual or biennial with entire opposite and decussate leaves, an umbelliform inflorescence, and short-horned glands.*

E. Láthyris, L. Stem stout (2 – 3° high); leaves thick, linear or oblong, the floral oblong-ovate and heart-shaped; umbel 4-rayed, then forking. — Sparingly escaped from gardens, N. Eng. to N. C. (Adv. from Eu.)

2. PACHYSÁNDRA, Michx.

Flowers monœcious, in naked spikes. Calyx 4 – 5-parted. Petals none. *Ster. Fl.* Stamens 4, separate; filaments long-exserted, thick and flat; anthers oblong-linear. *Fert. Fl.* Ovary 3-celled; styles 3, thick, awl-shaped, recurved, stigmatic down their whole length inside. Ovules a pair in each cell, suspended, with the rhaphe dorsal (turned away from the placenta). Capsule deeply 3-horned, 3-celled, splitting into 3 at length 2-valved 2-seeded carpels. — Nearly glabrous, low and procumbent perennial herbs, with matted creeping rootstocks, and alternate, ovate or obovate, coarsely toothed leaves, narrowed at base into a petiole. Flowers each 1 – 3-bracted, the upper staminate, a few fertile ones at base, unpleasantly scented; sepals greenish or purplish; filaments white (their size and thickness giving the name, from *παχύς, thick*, and *ἀνήρ*, used for *stamen*).

1. **P. procúmbens,** Michx. Stems (6 – 9′ long) bearing several approximate leaves at the summit on slender petioles, and a few many-flowered spikes along the base; the intervening portion naked, or with a few small scales. — Woods, mountains of Ky., W. Va., and southward. March – May.

3. PHYLLÁNTHUS, L.

Flowers monœcious, axillary. Calyx usually 5 – 6-parted, imbricated in the bud. Petals none. Stamens mostly 3, erect in the bud, often united. Ovules 2 in each cell of the ovary. Capsule depressed; each carpel 2-valved, 2-seeded. Seeds not carunculate. — Leaves alternate, 2-ranked, with small stipules. (Name composed of *φύλλον, leaf*, and *ἄνθος, blossom*, because the flowers in a few species are borne upon leaf-like dilated branches.)

1. **P. Carolinénsis,** Walt. Annual, low and slender, branched; leaves obovate or oval, short-petioled; flowers commonly 2 in each axil, almost sessile, one staminate, the other fertile; calyx 6-parted; stamens 3; styles 3, each 2-cleft; glands of the disk in the fertile flowers united in a cup. — Gravelly banks, E. Penn. to Fla., west to S. Ind. and Ill. July – Sept.

4. JÁTROPHA, L.

Flowers monœcious, rarely diœcious, in a terminal open forking cyme; the fertile ones usually in the lower forks. Calyx corolla-like, in the staminate flowers often salver-shaped, 5-lobed; in the pistillate, 5-parted, imbricated or convolute in the bud. Corolla of 5 distinct or apparently united petals, or none. Glands of the disk opposite the calyx-lobes. Stamens 10 – 30, in 2 or more whorls; filaments monadelphous at base. Ovary mostly 3-celled; styles 3, united below, their summits once or twice forked. Capsule 3-celled, 3-seeded, separating into 3 two-valved carpels. Seed carunculate. — Perennial herbaceous or shrubby plants, chiefly tropical, with alternate mostly long-petioled palmately-veined leaves, and stipules. — Our species is of the section Cnidóscolus, with apetalous flowers, the staminate corolla salver-form, and the plants mostly armed with stinging bristles. (Name said by Linnæus to be formed of *ἰατρόν, a remedy*, and *φάγω, to eat.*)

1. **J. stimulòsa,** Michx. (Tread-softly. Spurge-Nettle.) Herbaceous, from a long perennial root, branching (6′ – 2° high); leaves roundish-heart-shaped, 3 – 5-lobed nearly to the base, on long petioles; the divisions entire or acutely toothed, cut, or even pinnatifid, often discolored; flowers white, fragrant, 9″ long or more; filaments 10, monadelphous only at the woolly base, or the outer set almost distinct. (J. urens, var. stimulosa, *J. Muell.*) — Dry sandy soil, Va. to Fla. and La. June – Sept.

5. CRÒTON, L.

Flowers monœcious, rarely diœcious, mostly in terminal spike-like racemes or spikes. *Ster. Fl.* Calyx 5- (rarely 4 – 6-) parted; the divisions lightly imbricated or nearly valvate in the bud. Petals usually present, as many, but mostly small or rudimentary, hypogynous. Glands or lobes of the disk as many as and alternate with the petals. Receptacle usually hairy. Stamens 5 or more; filaments with the anthers inflexed in the bud. *Fert. Fl.* Calyx 5 – 10-cleft or parted, nearly as in the staminate flowers; but petals none or minute rudiments. Ovary 3- (rarely 2 – 4-) celled, with a single ovule in each cell; styles as many, from once to thrice 2-cleft. Capsule separating

into as many 2-valved 1-seeded carpels. Seeds carunculate. — Stellate-downy, or scurfy, or hairy and glandular plants, mostly strong-scented; the fertile flowers usually at the base of the sterile spike or cluster. Leaves alternate, or sometimes imperfectly opposite, with or without obvious stipules. (*Κροτών*, the Greek name of the Castor-oil Plant, of this family.)

* *Sterile flowers with 4-parted calyx, as many petals, a 4-rayed disk, and 8 stamens; fertile flowers with 5-parted calyx, very minute rudimentary petals, and the 3 styles 2-cleft.*

1. **C. glandulòsus,** L. Annual, rough-hairy and glandular (1 – 2° high), somewhat umbellately branched; leaves oblong or linear-oblong, obtusely toothed, the base with a saucer-shaped gland on each side; fertile flowers capitate-clustered at the base of the sterile spike, sessile in the forks and terminal. — Open waste places, Va. to Iowa, E. Kan. and southward.

* * *Sterile flowers with 5-parted calyx, as many glands alternating with the petals, and 10 – 14 stamens; fertile flowers with 7 – 12-parted calyx, no petals, and the 3 styles twice or thrice 2-parted.*

2. **C. capitàtus,** Michx. Annual, densely soft-woolly and somewhat glandular (1 – 2° high), branched; leaves long-petioled, lance-oblong or elongated-oblong, rounded at base, entire; petals obovate-lanceolate, densely fimbriate; fertile flowers several, capitate-crowded at the base of the short terminal sterile spike. — Barrens, N. J. to Ga., west to S. Ind., Iowa, and E. Kan. July – Sept.

* * * *Sterile flowers with unequally 3 – 5-parted calyx, as many petals and scale-like glands, and 3 – 8 stamens; fertile flowers with equally 5-parted calyx, no petals, 5 glands, and 2 sessile 2-parted stigmas.*

3. **C. monanthógynus,** Michx. Annual, whitish-stellate-pubescent and rusty-glandular; stems (1 – 2° high) slender, erect, below often umbellately 3 – 4-forked, then repeatedly 2 – 3-forked or alternately branched; leaves oblong-ovate or narrowly oblong, entire, often acutish (6 – 12″ long, about twice the length of the petioles); flowers in the forks, the sterile few on the summit of a short and erect peduncle, the fertile few and clustered or mostly solitary on short recurved peduncles; ovary 2-celled; fruit often by abortion 1-celled and 1-seeded; the seed broadly oval. — Barrens and dry prairies, S. Ind. to N. C. and Fla., west to E. Kan. June – Sept.

* * * * *Diœcious; calyx equally 5-parted; petals none; stamens 10 or more; styles twice or thrice dichotomously 2-parted.*

4. **C. Texénsis,** Muell. Annual, covered with a close canescent stellate pubescence, dichotomously branched or spreading (1 – 2° high); leaves narrowly oblong-lanceolate to linear; staminate spikes or racemes very short, often sessile; capsule stellate-tomentose and somewhat muricate. — Mo. and Kan. to Ala., Tex., and westward.

6. CROTONÓPSIS, Michx.

Flowers monœcious, in very small terminal or lateral spikes or clusters, the lower fertile. *Ster. Fl.* Calyx equally 5-parted. Petals 5, spatulate. Stamens 5, opposite the petals; filaments distinct, inflexed in the bud, enlarged at the apex. *Fert. Fl.* Calyx unequally 3 – 5-parted. Petals none. Glands (petal-like scales) 5, opposite the sepals. Ovary 1-celled, simple, 1-ovuled, bearing a twice or thrice forked style. Fruit dry and indehiscent, small, 1-seeded. Seed without caruncle. — A slender low annual, with alternate or opposite short-petioled linear or elliptical-lanceolate leaves, which are green and smoothish above, but silvery hoary with starry hairs and scurfy with brownish scales underneath, as well as the branches, etc. (*Croton* and *ὄψις, appearance*, for a plant with the aspect and general character of Croton.)

1. **C. lineàris,** Michx. — Dry sandy soil, N. J. to Fla., west to Ill. and Kan. July – Sept. — Fruit about 1″ long.

7. ARGYTHÁMNIA, P. Browne.

Flowers monœcious. Calyx 5-parted, valvate in the staminate flowers, imbricate in the pistillate. Petals alternate with the calyx-lobes and with the prominent lobes of the glandular disk. Stamens 5 – 15, united into a central column in 1 – 3 whorls. Styles 1 – 3-cleft. Capsule depressed, 3-lobed. Seeds subglobose, roughened or reticulated, not carunculate. — Erect herbs or undershrubs, with purplish juice, and alternate usually stipulate leaves. (Name from *ἄργυρος, silver*, and *θάμνος, bush*, from the hoariness of the original species.)

1. **A. mercurialina,** Muell. Stem erect, nearly simple (1 – 2° high), sericeous; leaves sessile, oblong-ovate to lanceolate, entire, pubescent with appressed hairs or glabrate, somewhat rigid; raceme many-flowered, exceeding the leaves; ovary sericeous; capsule appressed-pubescent. — Kan. to Ark. and Tex.

8. ACALŸPHA, L. Three-seeded Mercury.

Flowers monœcious; the sterile very small, clustered in spikes, with the few or solitary fertile flowers at their base, or sometimes in separate spikes. Calyx of the sterile flowers 4-parted and valvate in bud; of the fertile, 3 – 5-parted. Corolla none. Stamens 8 – 16; filaments short, monadelphous at base; anther-cells separate, long, often worm-shaped, hanging from the apex of the filament. Styles 3, the upper face or stigmas cut-fringed (usually red). Capsule separating into 3 globular 2-valved carpels, rarely of only one carpel. — Herbs (ours annuals), or in the tropics often shrubs, resembling Nettles or Amaranths; the leaves alternate, petioled, with stipules. Clusters of sterile flowers with a minute bract; the fertile surrounded by a large and leaf-like cut-lobed persistent bract. (*Ἀκαλήφη*, an ancient name of the Nettle.)

* *Fruit smooth or merely pubescent; seeds nearly smooth.*

1. **A. Virgínica,** L. Smoothish or hairy (1 – 2° high), often turning purple; leaves ovate or oblong-ovate, obtusely and sparsely serrate, long-petioled; sterile spike rather few-flowered, mostly shorter than the large leaf-like palmately 5 - 9-cleft fruiting bracts; fertile flowers 1 – 3 in each axil. — Fields and open places, N. Eng. to Ont. and Minn., south to the Gulf. July – Sept.

Var. **grácilens,** Muell. Leaves lanceolate or even linear, less toothed and shorter-petioled; the slender sterile spike often 1′ long, and much surpassing the less cleft or few-toothed fruiting bracts. — Sandy dry soil, R. I. and Conn. to Fla., west to Ill., E. Kan. and Tex.

* * *Fruit echinate with soft bristly green projections; seeds rough-wrinkled.*

2. **A. Caroliniàna,** Ell. Leaves thin, ovate-cordate, sharply and closely serrate-toothed, abruptly acuminate, long-petioled; sterile spikes short, axillary; the fertile ones mostly terminal and elongated, their bracts deeply cut into many linear lobes. — N. J. to Fla., west to Ohio, Kan., and Tex.

9. RÍCINUS, Linn. Castor-oil Plant.

Flowers in racemose or panicled clusters, the fertile above, the staminate below. Calyx 5-parted. Stamens very numerous, with repeatedly branching filaments. Styles 3, united at base, each bifid, red. Capsule large, 3-lobed, with 3 large seeds. — A tall stately annual, with very large alternate peltate and palmately 7–11-cleft leaves (often 1–2° broad). (The ancient Roman name of the plant.)

R. communis, L. — Cultivated extensively for ornament, and sparingly escaped in Md., Mo., and southward. Very variable.

10. TRÀGIA, Plumier.

Flowers monœcious, in racemes, apetalous. *Ster. Fl.* Calyx 3–5- (chiefly 3-) parted, valvate in the bud. Stamens 2 or 3; filaments short; anther-cells united. *Fert. Fl.* Calyx 3–8-parted, persistent. Style 3-cleft or 3-parted; the branches 3, simple. Capsule 3-celled, 3-lobed, bristly, separating into three 2-valved 1-seeded carpels. Seeds not carunculate. — Erect or climbing plants (perennial herbs in U. S.), pubescent or hispid, sometimes stinging, with mostly alternate stipulate leaves; the small-flowered racemes terminal or opposite the leaves; the sterile flowers above, the few fertile at the base, all with small bracts. (Named for the early herbalist *Bock*, latinized *Tragus*.)

1. **T. innócua,** Walt. *Erect*, paniculate-branched, *softly hairy-pubescent* (6–12′ high); *leaves* varying from obovate-oblong to narrowly linear, *acute at base*, obtusely or sinuately few-toothed or lobed, sometimes entire, *short-petioled or sessile*, paler beneath; sterile calyx usually 4-parted; stamens 2. (T. urens, *L.*) — Dry sandy soil, E. Va. to Fla. and La. May–Aug. — Not stinging.

2. **T. nepetæfòlia,** Cav. *Erect or reclining* or slightly twining, hirsute with stinging hairs; *leaves ovate-lanceolate or triangular-lanceolate*, or the lower ovate, *all somewhat cordate or truncate at base*, coarsely cut-toothed, *short-petioled;* sterile calyx usually 3-parted and stamens 3. (T. urticæfolia, *Michx.*) — Virginia (*Pursh*), and common southward to Fla. and Tex., Mo., Kan., and westward. — T. stylàris, Muell., of the southwest, which is reported from Kan., may be distinguished by its 4–5-parted sterile calyx, 4–5 stamens, and elongated styles.

3. **T. macrocárpa,** Willd. *Twining*, somewhat hirsute; *leaves deeply cordate*, ovate, mostly narrowly acuminate, sharply serrate (3–5′ long), all but the uppermost *long-petioled;* pod ½′ broad. (T. cordàta, *Michx.*) — Ky. to Ga., Fla., and La.

11. STILLÍNGIA, Garden.

Flowers monœcious, aggregated in a terminal spike. Petals and glands of the disk none. Calyx 2–3-cleft or parted; the divisions imbricated in the bud. Stamens 2 or 3; anthers adnate, turned outward. Style thick; stigmas 3, diverging, simple. Capsule 3-celled, 3-lobed, 3-seeded. Seed carunculate. — Smooth upright plants, with the alternate leaves mostly 2-glandular at base; the fertile flowers few at the base of the dense sterile spike (rarely separate); the bract for each cluster with a large gland on each side. (Named for *Dr. B. Stillingfleet.*)

1. **S. sylvática,** L. Herbaceous (1–3° high); leaves almost sessile, oblong-lanceolate, serrulate; glands of the spike saucer-shaped. — Sandy and dry soil, Va. to Fla., west to Kan. and Tex. June–Sept.

Order 99. URTICÀCEÆ. (Nettle Family.)

Plants with stipules, and monœcious or diœcious or rarely (in the Elm Family) *perfect flowers, furnished with a regular calyx, free from the 1-celled (rarely 2-celled) ovary which forms a 1-seeded fruit; the embryo in the albumen when there is any, its radicle pointing upward; stamens as many as the lobes of the calyx and opposite them, or sometimes fewer.* Cotyledons usually broad. Stipules often deciduous. — A large order (far the greater part tropical).

Tribe I. ULMEÆ. Flowers mostly polygamous, upon the last year's branches. Anthers erect in the bud, extrorse. Styles or stigmas 2. Fruit a winged samara or nut-like. Seed suspended. Embryo straight. — Trees, with alternate serrate pinnately veined leaves and fugacious stipules.

1. **Ulmus.** Flowers preceding the leaves. Ovary 1–2-ovuled. Fruit winged all around.
2. **Planera.** Flowers appearing with the leaves. Ovule one. Fruit wingless, nut-like.

Tribe II. CELTIDEÆ. As in Tribe I., but the diœcious-polygamous flowers upon branches of the same year; anthers introrse; fruit a drupe; embryo curved.

3. **Celtis.** Ovary 1-ovuled. Flowers appearing with the leaves. Leaves 3-nerved at base.

Tribe III. CANNABINEÆ. Flowers diœcious; the sterile racemed or panicled; the fertile in clusters or catkins, the calyx of one sepal embracing the ovary. Filaments short, erect in the bud. Stigmas 2, elongated. Ovary 1-celled, with a pendulous ovule, forming a small glandular achene in fruit. Embryo curved or coiled. — Erect or climbing herbs, with watery juice, mostly opposite lobed or divided leaves, persistent stipules, and a fibrous inner bark.

4. **Cannabis.** Fertile flowers spiked-clustered. Leaves 5–7-divided. Erect.
5. **Humulus.** Fertile flowers in a short spike forming a membranaceous catkin in fruit. Leaves 3–5-lobed. Climbing.

Tribe IV. MOREÆ. Flowers unisexual, racemose, spicate or capitate; calyx becoming fleshy or juicy in fruit. Anthers inflexed in the bud. Style undivided or 2-parted, filiform; ovule pendulous; fruit an achene, embryo curved. — Trees or shrubs, with milky juice, alternate leaves, and fugacious stipules.

6. **Maclura.** Sterile flowers in loose racemes; fertile in globose heads. Leaves entire.
7. **Morus.** Fertile and sterile flowers in separate spikes. Leaves dentate, 3-nerved.

Tribe V. URTICEÆ. Flowers unisexual. Filaments inflexed in the bud. Style or stigma simple. Ovary 1-celled, with an erect ovule, forming an achene in fruit. Embryo straight. — Herbs with watery juice, tough fibrous bark, and opposite or alternate leaves; often armed with stinging hairs.

* Calyx in the fertile flowers of 2–5 separate or nearly separate sepals.

† Plant beset with stinging bristles.

8. **Urtica.** Sepals 4 in both fertile and sterile flowers. Achene straight and erect, enclosed by the 2 inner and larger sepals. Stigma capitate-tufted. Leaves opposite.