

§ 1. *Annuals; leaves mostly alternate, petiolate; receptacle flat; disk brownish.*

1. *H. annuus*, L. (COMMON SUNFLOWER.) Tall, rough; leaves triple-ribbed, ovate or the lower cordate, serrate; involucre scales broadly ovate to oblong, long-pointed, ciliate; disk usually 1' broad or more. — Minn. to Tex., and westward; long cultivated, and occasionally found in waste grounds.

2. *H. petiolaris*, Nutt. More slender, 1-3° high; leaves oblong-ovate-lanceolate, smaller (1-3' long), mostly entire; scales lanceolate or oblong-lanceolate, seldom ciliate; disk $\frac{1}{2}$ ' broad or more. — Minn. to Tex., and westward.

§ 2. *Perennials; receptacle convex or at length low-conical; lower leaves usually opposite.*

* *Involucre scales loose, becoming squarrose, narrowly lanceolate, pointed ($\frac{1}{2}$ long); disk usually purple or brownish; leaves linear, 1-nerved.*

3. *H. orgyalis*, DC. Stem glabrous, tall, very leafy; leaves mostly alternate, linear to filiform and entire, or the lowest lanceolate and serrulate; scales filiform-attenuate. — Dry plains, Mo. to Neb., south and westward.

4. *H. angustifolius*, L. Stem slender (2-6° high), usually scabrous; leaves long and linear, sessile, entire, with revolute margins; heads loosely corymbed, long-peduncled; scales acute or pointed. — Low pine barrens, N. J. to Ky., and southward.

** *Involucre scales closer, more imbricated, short, unequal and not foliaceous; leaves lanceolate to ovate, mostly opposite and 3-nerved.*

+ Disk dark.

5. *H. atrorubens*, L. Rough-hairy; stem slender (2-4° high), smooth and naked and forking above; leaves thinnish, ovate or oval to oblong-lanceolate, or the lowest heart-shaped (3-6' long), serrate, abruptly contracted into a margined petiole; heads small, corymbed; scales ovate, obtuse, ciliate, appressed; rays 10-16; pappus of 2 fringed scales. — Dry soil, Va. to Ark., and southward.

6. *H. rigidus*, Desf. Stem stout (2-6° high or more), simple or sparingly branched, rough; leaves very thick and rigid, rough both sides, oblong-lanceolate, usually pointed at both ends, nearly sessile, entire or serrate, the lowest oval; heads nearly solitary, pretty large; scales ovate or oblong, obtuse, or mostly acute, ciliate, appressed; rays 20-25; pappus of 2 large and often several small scales. — Dry prairies, Mich. to Ill., and westward.

+ + Disk yellow.

7. *H. lætiflorus*, Pers. Closely resembling the last; leaves rather thinner; heads single or corymbed; scales rather fewer (in 2 or 3 rows), narrower and acute or mostly acuminate. — Dry open places, Ohio to Wisc. and Minn., and southward. — Rays showy, 1-2' long.

8. *H. occidentalis*, Riddell. Somewhat hairy, stem slender, simple, naked above (1-3° high, sending out runners from the base), bearing 1-5 small heads on long peduncles; lowest leaves oval or lanceolate-ovate, entire or obscurely serrate, roughish-pubescent beneath, abruptly contracted into long hairy petioles; the upper small and remote; scales ovate to lanceolate, acute or pointed, sometimes ciliate. — Dry barrens, Ohio to Wisc. and Minn., and southward.

*** *Involucre looser, the scales more acuminate or elongated or foliaceous; disk yellow (anthers dark).*

+ *Leaves all opposite, sessile, serrulate; pubescence rather soft.*

9. *H. mollis*, Lam. Stem simple, leafy to the top (2-3° high); leaves ovate to lanceolate, with broad cordate clasping base, pointed; scales lanceolate, seldom exceeding the disk. — Dry barrens, Ohio to Iowa and southward.

+ + *Leaves mostly alternate and 3-nerved, soft-pubescent beneath, scabrous above; scales very long and loose, hairy; tips of chaff and corolla-lobes hirsute.*

10. *H. tomentosus*, Michx. Stem hairy, stout (4-8° high); leaves oblong-lanceolate, or the lowest ovate, tapering at both ends, obscurely serrate, large (5-12' long), somewhat petioled; disk 1' broad; rays 12-16, about 1' long. — Rich woods, Ill. (?), Va., and southward along the mountains.

+ + + *Leaves narrow, chiefly alternate, not 3-nerved, scabrous both sides; heads rather small; scales loose, attenuate.*

11. *H. grosse-serratus*, Martens. Stem smooth and glaucous, 6-10° high; leaves elongated-lanceolate or ovate-lanceolate, taper-pointed, sharply serrate or denticulate, acute or attenuate at base, petioled, often whiter and finely pubescent beneath; scales lance-awl-shaped, slightly ciliate. — Dry plains, Ohio to S. Dak., Mo., and southwestward. — Probably runs into the next.

12. *H. giganteus*, L. Stem hairy or rough (3-10° high), branched above; leaves lanceolate, pointed, minutely serrate or nearly entire, green both sides, narrowed and ciliate at base, but nearly sessile; scales long, linear-lanceolate, pointed, hairy or strongly ciliate. — Var. *ambiguus*, Torr. & Gray; leaves mostly opposite and closely sessile by an obtuse base; perhaps a hybrid with n. 17. — Low thickets and swamps; common. Heads somewhat corymbed; the pale yellow rays 15-20; roots often becoming tuber-like.

13. *H. Maximiliani*, Schrad. Resembling the last; stout, often simple, 1-10° high; leaves becoming rigid and very scabrous, entire or sparingly denticulate; heads rather large, usually short-peduncled, terminal and in the upper axils; scales longer attenuate, more rigid. — Prairies, Minn. to Tex.

+ + + + *Leaves all or most of them opposite, 3-nerved (faintly in n. 15).*

+ + Heads very small (about 4' broad); rays 5-8; scales few, short, irregularly imbricated, the outer with spreading foliaceous pointed tips; stems smooth.

14. *H. parviflorus*, Bernh. Stem 3-6° high, with numerous slender branches above; leaves thin, ovate-lanceolate, taper-pointed, somewhat serrate, petioled, rough above, pale and puberulent beneath; peduncles slender, rough; scales ovate and ovate-lanceolate, ciliate. (*H. microcephalus*, Torr. & Gray.) — Thickets, Penn. to Ill., and southward.

15. *H. lævigatus*, Torr. & Gray. Stem slender (1-6° high), simple or sparingly branched, glaucous, glabrous throughout, as well as the slightly serrate lanceolate leaves which are usually narrow and attenuate to the base. — Dry soil, Alleghany Mts., and southward.

+ + + Heads larger; rays usually over 10; spreading by creeping rootstocks.

= *Leaves sessile or subsessile to short-petiolate, serrulate or entire.*

16. *H. doricoides*, Lam. Finely pubescent and roughish, 3-7° high; leaves sessile, ovate-oblong, acute, triply-nerved above the broadly cuneate

base, serrulate; scales loose, attenuate, mostly 6-8" long, hairy. (*H. cinereus*, var. *Sullivantii*, Torr. & Gray.) — Dry ground, Ohio to Mo.

17. *H. divaricatus*, L. Stem simple or forked and corymbed at the top (1-4° high), smooth below; leaves all opposite and divaricate, ovate-lanceolate, 3-nerved from the rounded or truncate sessile base, tapering gradually to a sharp point (3-6' long), serrate, thickish, rough both sides; scales narrowly lanceolate, attenuate, ciliate, equalling the disk; rays 8-12. — Thickets and barrens; common. — Disk 6" wide; rays 1' long.

18. *H. hirsutus*, Raf. Stem simple or forked above, stout (1-4° high), bristly-hairy; leaves all shortly petioled, ovate-lanceolate, gradually pointed, slightly serrate, rounded or obtuse at the base, very rough above, usually rough-hairy beneath; scales ovate-lanceolate, pointed, equalling the disk; rays about 12. — Dry plains, Ohio to Wisc., and southward.

19. *H. strumosus*, L. Stem (3-6° high) very smooth below, often glaucous; leaves ovate-lanceolate, tapering gradually to a point, or the lower ovate and acute, abruptly contracted into short margined petioles, rough above, whitish and naked or minutely downy underneath; scales broadly lanceolate with spreading tips, ciliate, equalling the disk; rays 9-15. — Var. *MOLLIS*, Torr. & Gray, has the leaves downy underneath, often subcordate, the scales looser and more attenuate. — River-banks and low copses; common, especially westward.

20. *H. trachelifolius*, Willd. Like the last; leaves thinner and nearly equally green both sides, more sharply serrate, all distinctly petioled; scales all loose and spreading, exceeding the disk, often much elongated. — Copses, Penn. and Ohio to Minn., and southward.

= = Leaves longer-petiolate, thinnish or soft, coarsely serrate, commonly broad; scales loose, hirsute-ciliate.

21. *H. decapetalus*, L. Stem branching (2-5° high), smooth below; leaves smooth or roughish, ovate, pointed, abruptly contracted into margined petioles; scales lanceolate-linear, elongated, loosely spreading, sometimes foliaceous, the outer longer than the disk; rays about 10. — Copses and low banks of streams; N. Eng. to Minn. and southward, common.

22. *H. tuberosus*, L. (JERUSALEM ARTICHOKE.) Pubescent or hirsute, 5-10° high; leaves ovate or subcordate to oblong-lanceolate, acuminate, scabrous above, minutely pubescent or cinereous beneath; scales lanceolate, attenuate, little exceeding the disk; rays 12-20. (*H. doronicoides*, former ed.) — N. Y. to Minn., and southward; often cultivated. — Var. *SUBCANESCENS*, Gray; usually dwarf, the lower side of the leaves whitish with soft fine pubescence. Minn. to Mo.

53. VERBESINA, L. CROWNBEARD.

Heads several-many-flowered; the rays pistillate, or sometimes neutral and sterile, few, or sometimes none. Involucral scales imbricated in 2 or more rows. Receptacle rather convex (conical in n. 3); the chaff concave. Achenes flat (compressed laterally), winged or wingless, 2-awned. — Mostly perennial herbs; the toothed leaves decurrent on the stem. Flowers mostly yellow. ("Name metamorphosed from *Verbena*.")

* Heads narrow, small, cymosely paniculate; rays few, pistillate, usually fertile; involucre erect.

1. *V. occidentalis*, Walt. Stem tall, 4-winged; leaves opposite, ovate to oblong-lanceolate, triple-nerved, serrate, pointed at both ends, often pubescent beneath (large and thin); heads in compound corymbs; receptacle flatish; flowers yellow; rays 1-5, lanceolate; achenes wingless. (*V. Siegesbeckia*, Michx.) — Rich soil, S. Penn. to Ill., and southward. July.

2. *V. Virginica*, L. Stem narrowly or interruptedly winged, downy-pubescent, like the lower surface of the ovate-lanceolate feather-veined alternate leaves; heads in compound corymbs; receptacle convex; flowers white; rays 3-4, oval; achenes winged. — Dry soil, Penn. (?) to Ill., and southward. Aug.

* * Heads broader, solitary or few.

3. *V. helianthoides*, Michx. Perennial; stem hairy (1-3° high), widely winged by the ovate to the ovate-lanceolate sessile alternate leaves, which are rough above and soft-hairy beneath; involucre appressed; rays 8-15, pistillate or neutral, usually sterile; achenes winged, tipped with 2 fragile awns. (*Actinomeris helianthoides*, Nutt.) — Prairies and copses, Ohio to Iowa and southward. July.

4. *V. encelioides*, Benth. & Hook. Annual, branching, 1-2° high, cinereous; leaves alternate, ovate or cordate to deltoid-lanceolate, the petioles mostly winged and auriculate at base; involucral scales linear, equal, foliaceous, spreading; rays numerous, fertile. — Kan. to Tex., and westward.

54. ACTINOMERIS, Nutt.

Heads many-flowered; rays neutral, few or none. Involucral scales few, herbaceous, nearly equal, soon deflexed beneath the globular disk. Receptacle small, chaffy. Achenes flat, obovate, winged or wingless, at maturity spreading in all directions; pappus of 2 or 3 smooth persistent awns. — Tall branching perennials, with serrate feather-veined leaves, tapering to the base and mostly decurrent on the stem. Heads corymbed; flowers chiefly yellow. (Name from *aktis*, a ray, and *meros*, a part; alluding to the irregularity of the rays.)

1. *A. squarrosa*, Nutt. Stem somewhat hairy, usually winged above (4-8° high); leaves alternate or the lower opposite, oblong or ovate-lanceolate, pointed at both ends; rays 2-8, irregular. — Rich soil, Penn. and W. New York to Iowa, and southward. Sept.

55. COREOPSIS, L. TICKSEED.

Heads many-flowered, radiate; rays mostly 8, neutral, rarely wanting. Involucre double; each of about 8 scales, the outer rather foliaceous and somewhat spreading; the inner broader and appressed, nearly membranaceous. Receptacle flat, with membranaceous chaff deciduous with the fruit. Achenes flat, obcompressed (i. e., parallel with the scales of the involucre), often winged, not narrowed at the top, 2-toothed or 2-awned, or sometimes naked at the summit, the awns not barbed downwardly. — Herbs, generally with opposite leaves, and yellow or party-colored, rarely purple, rays. (Name from *κόπις*, a bug, and *εἶς*, resemblance; from the form of the achene.)

§ 1. *Style-tips truncate or nearly so; outer involucre small and short; rays rose-color or yellow with brown base; pappus an obscure border or none.*

1. *C. rosea*, Nutt. Perennial; stem branching, leafy, smooth (6-20' high); leaves linear, entire; heads small, somewhat corymbed, on short peduncles; rays rose-color, 3-toothed; achenes oblong, wingless. — Sandy grassy swamps, Plymouth, Mass., to N. J., and southward; rare. Aug.

2. *C. cardaminefolia*, Torr. & Gray. Annual, 6'-2° high; leaves 1-2-pinnately divided, the lobes oval to lanceolate or above linear; rays yellow with brown-purple base; achenes short, smooth or papillose, winged. — Kan. to La. and Tex.

3. *C. tinctoria*, Nutt. Annual, glabrous, 2-3° high; leaves 1-2-pinnately divided, the lobes lanceolate to linear; achenes oblong, wingless; rays yellow with more or less of crimson-brown. — Minn. to Tex., etc.; common in cultivation.

§ 2. *Style-tips abruptly cuspidate, hispid; involucre nearly equal; achenes roundish, winged, incurved, often papillose and with a callus inside at base and apex; pappus 2 small teeth or none; ray mostly yellow and palmately lobed; perennials, with long-pedunculate heads; lower leaves petiolate.*

4. *C. lanceolata*, L. Smooth or hairy (1-2° high), tufted, branched only at the base; leaves all entire (the lower rarely with a pair of small lateral lobes), lanceolate, the lowest oblanceolate or spatulate; outer scales ovate-lanceolate. — Rich or damp soil, Mich. and Ill. to Va., and southward. July. Also cultivated in gardens. Heads showy; rays 1' long. — Var. *angustifolia*, Torr. & Gray, is a low form with crowded narrow leaves and elongated peduncles. — Var. *villòsa*, Michx., is hirsute below, the leaves rather broad.

5. *C. grandiflora*, Nutt. Mostly glabrous; lower leaves lanceolate and spatulate, entire, the upper 3-5-parted with lanceolate to linear and sometimes 2-3-parted lobes; heads as in the last or larger. — S. Mo. to Tex. and Ga.

6. *C. pubescens*, Ell. More leafy, 1-4° high, pubescent or nearly glabrous; leaves thickish, oblong or the lower oval-obovate and the upper oblong-lanceolate, entire or with 2-4 small lateral lobes; heads usually smaller. — Va. to S. Ill., Mo., and southward.

7. *C. auriculata*, Linn. Pubescent or glabrous; stems 1-4° high, branching, sometimes with runners; leaves mostly petioled, the upper oblong or oval-lanceolate, entire; the lower oval or roundish, some of them variously 3-5-lobed or divided; outer scales oblong-linear or lanceolate; achenes narrowly winged and strongly involute. — Rich woods and banks, Va. to Ill., and southward. June-Sept.

§ 3. *Style-tips cuspidate; achenes oblong, nearly straight, without callus, the wing narrow or none; rays yellow, mostly entire or slightly toothed.*

* *Outer scales narrow, about the length of the inner, all more or less united at base; rays mostly entire, acute; pappus 2-toothed or none; leaves opposite, sessile, mostly 3-divided, appearing as if whorled; perennial, 1-3° high.*

← *Leaves 3-cleft, but not to the base.*

8. *C. palmata*, Nutt. Nearly smooth, simple; leaves broadly wedge-shaped, rigid; the lobes broadly linear, entire, or the middle one 3-lobed. — Prairies, Mich. to Minn., and southwestward. July.

← ← *Leaves divided to the base, uppermost and lowest sometimes simple.*

9. *C. senifolia*, Michx. Plant minutely soft-pubescent; leaves each divided into 3 sessile ovate-lanceolate entire leaflets, therefore appearing like 6 in a whorl. — Sandy woods, Va. and southward. July.

Var. *stellata*, Torr. & Gray. Glabrous, and the leaves narrower. — Va., Ky., and southward.

10. *C. delphinifolia*, Lam. Glabrous or nearly so; leaves divided into 3 sessile leaflets which are 2-5-parted, their divisions lance-linear (1-3" broad), rather rigid; disk brownish. — Pine woods, Va. and southward. July.

11. *C. verticillata*, L. Glabrous; leaves divided into 3 sessile leaflets which are 1-2-pinnately parted into narrowly linear or filiform divisions. — Damp soil, from Ont. and Mich. to Md., Ark., and southward. Cultivated in old gardens, but not showy. July-Sept.

* * *Outer scales narrow, shorter, all united at base; rays entire, obtuse; pappus none; leaves petiolate, pinnately 3-5-divided; perennial.*

12. *C. tripteris*, L. (TALL COREOPSIS.) Smooth; stem simple (4-9° high), corymbed at the top; leaflets lanceolate, acute, entire. — Penn. to Wisc., Iowa, and southward. Aug.-Sept. — Heads exhaling the odor of anise when bruised; disk turning brownish.

* * * *Scales mostly distinct, the outer leafy, reflexed or spreading; achenes flat, obovate or cuneate-oblong, 1-nerved on each face, 2-toothed or 2-awned (rarely 4-awned); leaves petiolate, usually pinnately 3-7-divided, the lobes serrate; annuals (or biennial), branching. Approaching Bidens.*

← *Rays conspicuous, golden yellow.*

← ← *Achenes cuneate, obscurely ciliate or naked; outer scales about 8.*

13. *C. aurea*, Ait. Nearly glabrous, 1-3° high; leaves variable, commonly 3-7-divided, or some or all undivided, the segments incisely serrate or lobed; achenes broadly cuneate, 1-2" long, with 2 very short blunt spreading teeth. — Wet ground, Va. to Fl.

14. *C. trichosperma*, Michx. (TICKSEED SUNFLOWER.) Smooth, branched; leaves short-petioled, nearly all 3-7-divided; leaflets lanceolate or linear, cut-toothed, or the upper leaves only 3-5-cleft and almost sessile; heads paniced-corymbose; achenes narrowly wedge-oblong or the inner ones wedge-linear, about 4" long, smooth or sparsely hairy, marginless, crowned with 2 erect triangular or awl-shaped stout teeth. — Swamps, Mass. to Va. near the coast. Also Cayuga, N. Y., to Ill., where is a var. *tenuiflora*, Gray, with shorter achenes, approaching the last. Aug.-Oct.

← ← ← *Achenes obovate, very flat, with thin ciliate margins.*

15. *C. aristosa*, Michx. Somewhat pubescent; leaves 1-2-pinnately 5-7-divided, petioled; leaflets lanceolate, cut-toothed or pinnatifid; heads paniced-corymbose; outer scales 8-10, not exceeding the inner, barely ciliate; achenes with 2 (rarely 4) long and slender diverging awns as long as the achene itself. — Swamps, Ohio to Mich., Minn., and southwestward. Aug.-Oct. — Var. *mutica* has two short divergent teeth or points in place of the awns. — W. Ill. and southwestward. Forms occur with the barbs of the awns spreading or retrorse, hybrids with *Bidens frondosa* or other species.

16. *C. involucrāta*, Nutt. Heads rather larger, the outer scales 12-20, mostly exceeding the inner, slender and hispid; achenes with 2 short acute teeth. — W. Ill. to Kan. and Tex.

+ + Rays none, or rarely rudimentary; outer scales usually 3-5, loose, leafy, commonly surpassing the short-pedunculate heads; achenes narrowly cuneate; plants glabrous, 1-3° high; leaves petiole.

17. *C. bidentoides*, Nutt. Paniculately branched; leaves undivided, lanceolate, coarsely toothed, tapering at both ends; heads 6-10" long; achenes nearly subulate, bearing a pair of very slender upwardly roughened awns surpassing the corolla (4" long), but shorter than the achene, often also 2 minute teeth alternate with the awns. — Shores of Delaware River, near Philad., and Delaware Bay, to Md. Hybridizes with *Bidens frondosa*.

18. *C. discoidea*, Torr. & Gray. Diffusely branched, 1-2° high; leaves ternately divided, slender-petioled; leaflets ovate-lanceolate, pointed, coarsely serrate; heads 2-3" long; achenes linear-wedge-shaped (2-3" long), bearing a pair of short and stout upwardly-barbed awns of the length of the corolla. — Wet banks and swamps, Conn. to Ohio, Ill., and southward. July.

56. *BIDENS*, L. BUR-MARIGOLD.

Heads many-flowered; the rays when present 3-8, neutral. Involucre double, the outer commonly large and foliaceous. Receptacle flattish; the chaff deciduous with the fruit. Achenes flattered parallel with the scales of the involucre, or slender and 4-sided, crowned with 2 or more rigid and persistent awns which are downwardly barbed. — Annual or perennial herbs, with opposite various leaves, and mostly yellow flowers. (Latin, *bidens*, two-toothed.)

* Achenes flat, not tapering at the summit; outer involucre foliaceous; annuals.

+ Heads erect, nearly rayless; leaves mostly petiole.

1. *B. frondosa*, L. (COMMON BEGGAR-TICKS. STICK-TIGHT.) Smooth or rather hairy, tall (2-6° high), branching; leaves 3-5-divided; leaflets mostly stalked, lanceolate, pointed, coarsely toothed; outer involucre much longer than the head, ciliate below; achenes wedge-obovate, 2-awned, ciliate (the bristles ascending except near the summit). — Moist waste places; a coarse troublesome weed, the achenes, as in the other species, adhering to clothing, etc., by their retrorsely barbed awns. Hybrids occur with *Coreopsis aristosa* and other species. July-Oct.

2. *B. connata*, Muhl. (SWAMP BEGGAR-TICKS.) Smooth (1-2° high); leaves lanceolate or oblong-lanceolate, pointed, sharply serrate, tapering into margined slightly united petioles; the lower often 3-divided, their lateral divisions united at the base and decurrent on the petiole; outer scales longer than the head, few, mostly obtuse; rays none; achenes narrowly wedge-form, 3- (2-4) awned, the margins minutely retrorsely ciliate. — E. New Eng. to Minn., and southward. — Var. *comosa*, Gray, is stouter, the leaves commonly all simple, upper ones nearly sessile, the heads larger and with very leafy involucre. Ill., Ky., and westward. Aug.-Oct. — Var. *pinnata*, Watson; leaves nearly all pinnately divided, the 5-7 narrow divisions sparingly incised; achenes 4-awned. Hennepin Co., Minn. (*F. L. Couillard*).

+ + Heads somewhat nodding, commonly radiate; leaves sessile, undivided.

3. *B. cernua*, L. (SMALLER BUR-MARIGOLD.) Nearly smooth (5'-3° high); leaves lanceolate, unequally serrate, scarcely connate; heads nodding, with or without (light yellow) rays; outer involucre longer than the head; achenes wedge-obovate, 4-awned, the margins downwardly barbed. — Wet places, N. Eng. to Va., Mo., Minn., and northward. July-Sept. — Rays, if any, smaller than in n. 4, and the outer involucre more leaf-like. (Eu.)

4. *B. chrysanthemoides*, Michx. (LARGER BUR-MARIGOLD.) Smooth, erect, or reclining at the base (6'-2° high); leaves lanceolate, tapering at both ends, more or less connate, regularly serrate; outer involucre mostly shorter than the showy golden-yellow (1' long) rays; achenes wedge-shaped, with almost prickly downwardly barbed margins; awns 2, 3, or 4. — Swamps; common. Aug.-Oct.

* * Achenes linear, 4-sided, the inner longer and tapering upward.

5. *B. bipinnata*, L. (SPANISH NEEDLES.) Smooth annual, branched; leaves 1-3-pinnately parted, petioled; leaflets ovate-lanceolate, mostly wedge-shaped at the base; heads small, on slender peduncles; outer involucre of linear scales equalling the short pale yellow rays; achenes 4-grooved and angled, nearly smooth, 3-4-awned. — Damp soil, R. I. to N. Y., Ill., and southward.

* * * Achenes terete, truncate at both ends, with 3-6 very long awns smooth below.

6. *B. Béckii*, Torr. (WATER MARIGOLD.) Aquatic, perhaps perennial, smooth; stems long and slender; immersed leaves crowded, capillary, many times dissected, the few emerging ones lanceolate, slightly connate, toothed; heads single, short-peduncled; involucre much shorter than the showy (golden yellow) rays; achenes thickish, smooth (½' long), the stout divergent awns (1' long) barbed only toward the apex. — Ponds and slow deep streams, Mass. to N. J., Mo., and northward. Aug.-Oct.

57. *THELESPERMA*, Less.

Heads many-flowered; rays about 8, neutral, or none. Involucre as in *Coreopsis*, the inner connate to the middle, scarious-margined. Receptacle flat, the scarious chaff falling with the nearly terete wingless and beakless achenes; pappus of 2 stout subulate retrorsely hispid awns. — Smooth herbs, with opposite dissected leaves and pedunculate heads of yellow flowers. (From *θηλέα*, a nipple, and *σπέρμα*, seed, on account of the papillose achenes.)

1. *T. gracile*, Gray. Perennial, rather rigid, 1-2° high; leaves with narrow or filiform divisions or the upper entire; outer scales very short; rays short or usually none; achenes papillose. — Kan., south and westward.

58. *BALDWINIA*, Nutt.

Heads globular, many-flowered, radiate; the long and narrowly wedge-shaped rays neutral. Involucre short, of many thickish small scales imbricated in 3 or 4 rows, the outer obovate and obtuse. Receptacle strongly convex, with deep honeycomb-like cells containing the obconical or oblong silky-villous achenes; pappus of 7-9 lance-oblong erect chaffy scales. — A perennial herb, smoothish, with slender simple stems (2-3° high), bearing alternate oblanceolate leaves,

and a large showy long-pedunculate head. Rays yellow (1' long); the disk often turning dark purple. (Named for the late *Dr. William Baldwin*.)

1. *B. uniflora*, Nutt. — Borders of swamps, Va. (?) and southward. Aug.

59. MARSHALLIA, Schreb.

Heads many-flowered; flowers all tubular and perfect, the corolla-lobes slender and spreading. Involucral scales linear-lanceolate, foliaceous, erect, in one or two rows, nearly equal. Receptacle convex or conical, with narrowly linear rigid chaff. Achenes top-shaped, 5-angled; pappus of 5 or 6 membranaceous and pointed chaffy scales. — Smooth and low perennials, with alternate entire 3-nerved leaves, and long-pedunculate heads (like those of a *Scabious*) terminating the simple stem or branches. Flowers purplish; anthers blue. (Named for *Humphrey Marshall*, of Pennsylvania, author of *Arbustum Americanum*, one of the earliest works on the trees and shrubs of this country.)

1. *M. latifolia*, Pursh. Stems leafy; leaves ovate-lanceolate, pointed, sessile. — Dry soil, Va. and southward.
2. *M. cæspitosa*, Nutt. Stem commonly leafy only at base; leaves narrowly oblanceolate to linear or the radical spatulate, obtuse. — Kan. to Tex.

60. GALINSOGA, Ruiz & Pavon.

Heads several-flowered, radiate; rays 4–5, small, roundish, pistillate. Involucre of 4 or 5 ovate thin scales. Receptacle conical, with narrow chaff. Achenes angled; pappus of small oblong cut-fringed chaffy scales (sometimes wanting). — Annual herbs, with opposite triple-nerved thin leaves, and small heads; disk yellow; rays whitish. (Named for *Galinsoga*, a Spanish botanist.)

- G. parviflora*, Cav. Smoothish (1° high); leaves ovate, acute, somewhat toothed; scales of the pappus 8–16. — Waste places, especially eastward; spreading from year to year. (Adv. from S. Amer.)

61. HYMENOPAPPUS, L'Her.

Heads many-flowered; flowers all tubular and perfect, with large revolute corolla-lobes. Involucral scales 6–12, loose and broad, thin, the upper part petal-like (usually white). Receptacle small, naked. Achenes top-shaped, with a slender base, striate; pappus of 15–20 blunt scales in a single row, very thin (whence the name of the genus, from *ὑμην*, membrane, and *πάππος*, pappus). — Biennial or perennial herbs, with alternate mostly dissected leaves, and corymbed small heads of usually whitish flowers.

* Pappus of very small roundish nerveless scales.

1. *H. scabiosæus*, L'Her. Somewhat flocculent-woolly when young, leafy to the top (1–3° high); leaves 1–2-pinnately parted into linear or oblong lobes; involucral scales roundish, mainly whitish. — Sandy barrens, Ill. and southward. May, June.

2. *H. corymbosus*, Torr. & Gray. More slender, glabrate, naked above; scales obovate-oblong, petaloid at apex. — Neb. to Ark. and Tex.

* Pappus of conspicuous spatulate 1-nerved scales; involucre greener.

3. *H. tenuifolius*, Pursh. Slightly tomentose or glabrate, leafy, 1–2° high; divisions of the leaves narrowly linear or filiform, revolute; involucral scales obovate-oblong; achenes long-villous. — Neb. to Ark. and Tex.

62. ACTINELLA, Pers., Nutt.

Heads many-flowered; rays several, wedge-oblong, 3-toothed, pistillate. Scales of the hemispherical involucre ovate or lanceolate, membranaceous or coriaceous, nearly equal, appressed in 2 or 3 ranks, little shorter than the disk. Receptacle hemispherical or conical, naked. Achenes top-shaped, densely silky-villous; pappus of 5 or more ovate or lanceolate very thin chaffy scales. — Low herbs, with narrow alternate leaves, dotted or sprinkled with resinous atoms as in the next genus and bitter-aromatic; the solitary heads terminating scapes or slender naked peduncles; flowers yellow. (Name a diminutive of *Actinea*, from *ἀκρίς*, ray.)

* Involucre of numerous distinct not rigid scales; leaves entire.

1. *A. linearifolia*, Torr. & Gray. Annual or biennial, villous or glabrate, 1° high or less, simple or branched; leaves linear; peduncles filiform. — S. Kan. to La., and Tex.

2. *A. acutis*, Nutt. Perennial, densely cespitose, the branches of the caudex short and thick, with scape-like peduncles, canescently villous or silky; leaves spatulate to linear, short. — Hills and plains bordering the Rocky Mts. and scarcely reaching our limits; the var. *GLABRA*, Gray (*A. scaposa*, var. *glabra*, Man.), a greener glabrate form, has been found on an Indian mound near Joliet, Ill. The less densely cespitose *A. SCAPOSA*, Nutt., more loosely villous and the caudex with more slender branches, is probably in S. Kan.

* Scales rigid, in 2 rows, the outer connate at base; leaves ternately parted.

3. *A. odorata*, Gray. Annual, 1–2° high, branching, leafy, somewhat floccose-woolly; heads small, scattered; leaves 1–3-pinnately divided, the lobes filiform. — Central Kan. to Tex., and westward.

63. HELENIUM, L. SNEEZE-WEED.

Heads many-flowered, radiate; rays several, wedge-shaped, 3–5-cleft, fertile or rarely sterile. Involucre small, reflexed, the scales linear or awl-shaped. Receptacle globose or oblong, naked. Achenes top-shaped, ribbed; pappus of 5–8 thin and 1-nerved chaffy scales, the nerve usually extended into a bristle or point. — Erect, branching herbs (ours perennial), with alternate leaves decurrent on the angled stem and branches, which are terminated by single or corymbed (yellow, rarely purple) heads; often sprinkled with bitter aromatic resinous globules. (The Greek name of some plant, said to be named after *Helenus*, son of *Priam*.)

1. *H. nudiflorum*, Nutt. Somewhat puberulent, 1–3° high; leaves narrowly lanceolate or oblong to linear, entire, or the radical spatulate and dentate; heads mostly small; disk brownish, globose; ray yellow or partly brown-purple, sterile (neutral or style abortive), shorter than or exceeding the disk. (*Leptopoda brachypoda*, Torr. & Gray.) — Ill. and Mo. to N. Car. and Tex.; nat. near Philadelphia. Hybridizes with the next. June–Aug.

2. *H. autumnale*, L. Nearly smooth, 1–6° high; leaves mostly toothed, lanceolate to ovate-oblong; heads larger (about 6" broad); disk yellow; ray fertile, yellow. — Alluvial river-banks and wet ground, Conn. to Minn., south and westward. Sept.

64. GAILLÁRDIA, Foug.

Heads many-flowered; rays 3-cleft or -toothed, neutral or sometimes fertile, or none. Involucral scales in 2-3 rows, the outer larger, loose and foliaceous. Receptacle convex to globose, beset with bristle-like or subulate or short and soft chaff. Achenes top-shaped, 5-costate, villous; pappus of 5-10 long thin scales, awn-tipped by the excurrent nerve. — Erect herbs with alternate leaves and large showy heads of yellow or purplish fragrant flowers on terminal or scapiform peduncles. (Named after Gaillard de Merentonneau.)

1. *G. simplex*, Scheele. Annual; leaves all radical, usually spatulate, pinnatifid to entire; head globose on a naked scape, usually rayless. — S. Kan. to Tex.

2. *G. lanceolata*, Michx. Annual, leafy-stemmed, branched, 1-2° high, finely pubescent; leaves oblanceolate to linear, mostly entire; rays rather few or none; chaff very short or obsolete. — S. Kan. to Tex. and Fla.

3. *G. aristata*, Pursh. Perennial, hirsute, often 2° high; leaves lanceolate to oblanceolate, broad or narrow, entire to coarsely pinnatifid; rays usually numerous and long; chaff bristly or subulate. — N. Dak., west and southward.

65. DYSODIA, Cav. FETID MARIGOLD.

Heads many-flowered, usually radiate; rays pistillate. Involucre of one row of scales united into a firm cup, at the base some loose bractlets. Receptacle flat, not chaffy, but beset with short chaffy bristles. Achenes slender, 4-angled; pappus a row of chaffy scales dissected into numerous rough bristles. — Herbs, mostly annuals or biennials, dotted with large pellucid glands, which give a strong odor (as in Tagetes, the FRENCH MARIGOLD of the gardens, which belongs to the same group); heads terminating the branches; flowers yellow. (Name *δυσωδία*, an ill smell, which the plants exemplify.)

1. *D. chrysanthemoides*, Lag. Nearly smooth, diffusely branched (6-18' high); leaves opposite, pinnately parted, the narrow lobes bristly-toothed or cut; rays few, scarcely exceeding the involucre. — Roadsides, and banks of rivers, Minn. to Ill., Tenn., and southwestward. Aug. - Oct.

66. ANTHEMIS, L. CHAMOMILE.

Heads many-flowered, radiate; rays pistillate or (in n. 1) neutral. Involucre hemispherical, of many small imbricated dry and scarious scales shorter than the disk. Receptacle conical, with slender chaff at least near the summit. Achenes terete or ribbed, glabrous, truncate; pappus none or a minute crown. — Branching strong-scented herbs, with finely pinnately dissected leaves and solitary terminal heads; rays white; disk yellow. (*Ἀνθεμίσ*, the ancient Greek name of the Chamomile.)

A. COTULA, DC. (MAY-WEED.) Annual, acrid; rays mostly neutral; receptacle without chaff near the margin; pappus none; leaves finely 3-pinnately dissected. (Maruta Cotula, DC.) — Common by roadsides. (Nat. from Eu.)

A. ARVENSIS, L. (CORN CHAMOMILE.) Pubescent annual or biennial, resembling May-weed, but not ill-scented; leaves less finely 1-2-pinnately parted; chaff of the receptacle lanceolate, pointed; pappus a minute border. — Waste places; rare. (Adv. from Eu.)

A. NOBILIS, L. (GARDEN CHAMOMILE.) More downy and perennial, pleasantly strong-scented; sterile shoots depressed or creeping; leaves very

finely dissected; chaff of the receptacle blunt; pappus none. — Established near Lewiston, Delaware, Nuttall. (Adv. from Eu.)

67. ACHILLEA, L. YARROW.

Heads many-flowered, radiate; the rays few, fertile. Involucral scales imbricated, with scarious margins. Receptacle chaffy, flattish. Achenes oblong, flattened, margined; pappus none. — Perennial herbs, with small corymbose heads. (So named because its virtues are said to have been discovered by Achilles.)

1. *A. Millefolium*, L. (COMMON YARROW or MILFOIL.) Stems simple; leaves twice-pinnately parted; the divisions linear, 3-5-cleft, crowded; corymb compound, flat-topped; involucre oblong; rays 4-5, short, white (sometimes rose-color). — Fields and hills; common. Green and more glabrate in fields in the Atlantic States, and perhaps in such cases introduced. Aug. (Eu.)

A. PTÁRMICA, L. (SNEEZEWORD.) Leaves simple, lance-linear, sharply serrate with appressed teeth; corymb loose; rays 8-12, much longer than the broader campanulate involucre; flowers white. — Mass., Mich., etc.; rare. Apparently indigenous on the Lower St. Lawrence. (Adv. from Eu.)

68. MATRICARIA, Tourn. WILD CHAMOMILE.

Heads many-flowered; rays pistillate, or wanting. Scales of the involucre imbricated, with scarious margins. Receptacle conical, at least in fruit, naked. Achenes 3-5-ribbed, wingless; pappus a membranaceous crown or border, or none. — Smooth and branching herbs (ours annuals or biennials) with finely divided leaves and single or corymbose heads. Rays white or none; disk yellow. (Named for reputed medicinal virtues.)

M. INODORA, L. Leaves twice-pinnately divided into fine almost filiform lobes; heads large, naked-peduncled, and with many long rays; achenes strongly 3-ribbed; pappus a short crown or border. — (Wild far northward.) Roadsides, Eastport, Maine, Prof. Verrill. Aug. (Adv. from Eu.)

M. DISCOIDEA, DC. Low (6-9' high); leaves 2-3-pinnately parted into short linear lobes; heads rayless, short-peduncled; scales oval, with broad margins, much shorter than the conical disk; achenes more terete; pappus obsolete. — Banks of the Mississippi opposite St. Louis. An immigrant from Oregon, extending eastward and becoming naturalized near railroad stations; also established in N. Europe. July - Sept.

69. CHRYSANTHEMUM, Tourn. OX-EYE DAISY.

Heads many-flowered; rays numerous, fertile. Scales of the broad and flat involucre imbricated, with scarious margins. Receptacle flat or convex, naked. Disk-corollas with a flattened tube. Achenes of disk and ray similar, striate, without pappus. — Perennial herbs, with toothed, pinnatifid, or divided leaves, and single or corymbose heads. Rays white; disk yellow. (Old Greek name, *χρυσάνθεμον*, i. e. golden flower.)

C. LEUCANTHEMUM, L. (OX-EYE or WHITE DAISY. WHITE-WEED.) Stem erect, nearly simple, naked above and bearing a single large head; root-leaves spatulate, petioled, the others partly clasping, all cut or pinnatifid-toothed; scales of the involucre with rusty-brown margins. (Leucanthemum vulgare, Lam.) — Fields and meadows; abundant eastward. June, July. A pernicious weed, with large and showy heads. It occurs with abortive, deformed, or tubular and lacinate rays. (Nat. from Eu.)

C. PARTHENIUM, Pers. (FEVERFEW.) Tall, branched, leafy; leaves twice-pinnately divided, the divisions ovate, cut; heads corymbose, rather small. (Leucanthemum Parthenium, Godron.) — Escaped from gardens in some places. (Adv. from Eu.)

70. TANACETUM, L. TANSY.

Heads many-flowered, nearly discoid; flowers all fertile, the marginal chiefly pistillate and 3-5-toothed. Involucre imbricated, dry. Receptacle convex-naked. Achenes angled or ribbed, with a large flat top; pappus a short crown. — Bitter and acrid strong-scented herbs (ours perennial), with 1-3-pinnately dissected leaves, and corymbed heads. Flowers yellow; in summer. (Name of uncertain derivation.)

T. VULGARE, L. (COMMON TANSY.) Stem (2-4° high) smooth; leaflets and the wings of the petiole cut-toothed; corymb dense; pistillate flowers terete, with oblique 3-toothed limb; pappus 5-lobed. — Var. **CRISPUM** has the leaves more cut and crisped. — Escaped from gardens to roadsides; Atlantic States. (Nat. from Eu.)

1. **T. Huronense**, Nutt. Hairy or woolly when young, stout (1-3° high); lobes of the leaves oblong; heads large ($\frac{1}{2}$ - $\frac{3}{4}$ ' wide) and usually few; pistillate flowers flattened, 3-5-cleft; pappus toothed. — St. John's River, Maine (*G. L. Goodale*), shores of the upper Great Lakes, and westward.

71. ARTEMISIA, L. WORMWOOD.

Heads discoid, few-many-flowered; flowers all tubular, the marginal ones pistillate, or sometimes all similar and perfect. Involucre imbricated, dry and scarious. Receptacle small and flattish, naked. Achenes obovoid, with a small summit and no pappus. — Herbs or shrubby plants, bitter and aromatic, with small commonly nodding heads in paniced spikes or racemes; flowering in summer. Corolla yellow or purplish. (Ancient name of the Mugwort, in memory of *Artemisia*, wife of Mausolus.)

§ 1. *Receptacle smooth; marginal flowers pistillate and fertile; disk-flowers perfect but sterile, the style mostly entire; root perennial, except in n. 1.*

* *Leaves dissected.*

1. **A. caudata**, Michx. Smooth (2-5° high); upper leaves pinnately, the lower 2-3-pinnately divided; the divisions thread-form, diverging; heads small, the racemes in a wand-like elongated panicle; root biennial. — Sandy soil, coast of N. H. to Va.; also Mich. to Minn., and southward.

2. **A. Canadensis**, Michx. Smooth, or hoary with silky down (1-2° high); lower leaves twice-pinnately divided, the upper 3-7-divided, the divisions linear, rather rigid; heads rather large, in paniced racemes. — Northern N. Eng. to the Great Lakes, Minn., and northward. (Eu.)

* * *Leaves entire or some 3-cleft.*

3. **A. dracunculoides**, Pursh. Tall (2-5°), somewhat woody at base, slightly hoary or glabrous; leaves linear and entire or the lower 3-cleft; heads small and numerous, paniced. — Sandy banks of streams, Minn. to Ill., Mo., and westward.

4. **A. glauca**, Pall. Strict, 1-2° high, somewhat woody at base, minutely silky-pubescent or glabrate; leaves linear to oblong-lanceolate; heads as in the last. — Sask. to Minn. (Sib.)

5. **A. filifolia**, Torr. Suffrutescent, finely canescent, 1-3° high; leaves all filiform, the lower commonly 3-parted; heads very small and numerous, crowded in a long leafy panicle. — Central Kan. to Neb., and southwestward.

§ 2. *Receptacle smooth; flowers all fertile, a few pistillate, the others perfect.*

Two cultivated shrubby species, from Europe, with filiformly divided leaves, have occasionally escaped from gardens and become spontaneous, viz., **A. ARROTINUM**, L. (the SOUTHERNWOOD), of strict habit, with leaves 1-2-pinnatifid and pubescent heads, and **A. PROCERA**, L., with more spreading branches, all the leaves finely 2-pinnatifid, and heads glabrous.

* *Tall (1-5°) and branching perennials, whitened with fine and close-pressed wool; heads small, in leafy panicles.*

6. **A. serrata**, Nutt. Very leafy, 6-9° high; leaves lanceolate or the upper linear, serrate, white-tomentose beneath, green above; heads greenish, oblong, 2' long or less. — Ill. to S. Dak.

7. **A. longifolia**, Nutt. Stem 2-5° high; leaves linear or linear-lanceolate, entire, usually glabrate above; heads oblong, canescent, 2-3' long — Minn. to Neb., and westward.

8. **A. Ludoviciana**, Nutt. (WESTERN MUGWORT.) Whitened woolly throughout; leaves lanceolate, the upper mostly entire, the lower usually cut-lobed, toothed or pinnatifid, the upper surface sometimes glabrate and green; heads campanulate, mostly sessile in narrow panicles. — Dry banks, Sask. to Mich., Ill., Tex., and westward. Very variable.

A. VULGARIS, L. (COMMON MUGWORT.) Leaves mostly glabrous and green above, beneath and the branches white-woolly, all pinnatifid, with the divisions often cut-lobed, linear-lanceolate; heads small in open panicles. — Waste places, near dwellings. (Adv. from Eu.)

* * *Densely white-tomentose perennial; heads large, racemose-glomerate.*

9. **A. Stelleriana**, Bess. Stout, 1-2° high, from a creeping base; leaves obovate or spatulate, pinnatifid, the lobes obtuse. — Sandy sea-beaches, E. Mass.; locally nat. from N. E. Asia?

* * * *Less branched (1-3°), biennial or annual, glabrous.*

10. **A. biennis**, Willd. Strict, 1-3° high; lower leaves twice-pinnately parted, the upper pinnatifid; lobes linear, acute, in the lower leaves cut-toothed; heads in short axillary spikes or clusters, crowded in a narrow and glomerate leafy panicle. — Gravelly banks, Ohio to Tenn., Mo., and northwestward; rapidly extending eastward by railroad to Buffalo, Philadelphia, etc.

A. ANNUA, L. Tall, much branched; leaves 2-pinnately divided, the oblong segments deeply pinnatifid; heads small, in a loose ample panicle. — Ind. to Kan. (Nat. from Old World.)

§ 3. *Receptacle hairy; flowers all fertile, the marginal ones pistillate.*

A. ABSINTHIUM, L. (WORMWOOD.) Rather shrubby (2-3° high), silky-hoary; leaves 2-3-pinnately parted, lobes lanceolate; heads hemispherical, paniced. — Roadsides, escaped from gardens. (Adv. from Eu.)

11. **A. frigida**, Willd. Low (6-20' high), in tufts, slightly woody at the base, white-silky; leaves pinnately parted and 3-5-cleft, the divisions narrow-linear; heads globose, racemose. — Dry hills and rocks, Sask. to Minn., W. Tex., and westward.

72. TUSSILAGO, Tourn. COLTSFOOT.

Head many-flowered; ray-flowers in several rows, narrowly ligulate, pistillate, fertile; disk-flowers with undivided style, sterile. Involucre nearly simple. Receptacle flat. Achenes cylindrical-oblong; pappus copious, soft and capil-

lary. — A low perennial, with horizontal creeping rootstocks, sending up simple scaly scapes in early spring, bearing a single head, and producing rounded-heart-shaped angled or toothed leaves later in the season, woolly when young. Flowers yellow. (Name from *tussis*, a cough, for which the plant is a reputed remedy.)

T. FÁRFARA, L. — Wet places, and along brooks, N. Eng., N. Y., and Penn.; thoroughly wild. (Nat. from Eu.)

73. PETASITES, Tourn. SWEET COLTSFOOT.

Heads many-flowered, somewhat dioecious; in the substerile plant with a single row of ligulate pistillate ray-flowers, and many tubular sterile ones in the disk; in the fertile plant wholly or chiefly of pistillate flowers, tubular or distinctly ligulate. Otherwise as *Tussilago*. — Perennial woolly herbs, with the leaves all from the rootstock, white-woolly beneath, the scape with sheathing scaly bracts, bearing heads of purplish or whitish fragrant flowers, in a corymb. (The Greek name for the coltsfoot, from *πέτασος*, a broad-brimmed hat, on account of its large leaves.)

* *Pistillate flowers ligulate; flowers whitish.*

1. **P. palmata, Gray.** Leaves rounded, somewhat kidney-form, palmately and deeply 5-7-lobed, the lobes toothed and cut. (*Nardosmia palmata, Hook.*) — Swamps, Maine and Mass. to Mich., Minn., and northwestward; rare. April, May. — Full-grown leaves 6-10' broad.

2. **P. sagittata, Gray.** Leaves deltoid-oblong to reniform-hastate, acute or obtuse, repand-dentate. — N. Minn. and westward.

** *Ligules none; flowers purplish.*

P. VULGARIS, Desf. Rootstock very stout: leaves round-cordate, angulate-dentate and denticulate. — About Philadelphia. (Nat. from Eu.)

74. ÁRNICA, L.

Heads many-flowered, radiate; rays pistillate. Scales of the bell-shaped involucre lanceolate, equal, somewhat in 2 rows. Receptacle flat, fimbriate. Achenes slender or spindle-shaped; pappus a single row of rather rigid and strongly roughened-denticulate bristles. — Perennial herbs, chiefly of mountains and cold northern regions, with simple stems, bearing single or corymbed large heads and opposite leaves. Flowers yellow. (Name thought to be a corruption of *Parmica*.)

1. **A. Chamissonis, Less.** Soft-hairy; stem leafy (1-2° high), bearing 1 to 5 heads; leaves thin, veiny, smoothish when old, toothed; the upper ovate-lanceolate, closely sessile, the lower narrower, tapering to a margined petiole; scales pointed; pappus almost plumose. (*A. mollis, Hook.*) — N. Maine, mountains of N. H. and northern N. Y., shores of L. Superior, and westward. July.

2. **A. nudicaulis, Nutt.** Hairy and rather glandular (1-3° high); leaves thickish, 3-5-nerved, ovate or oblong, all sessile, mostly entire and near the root, the cauline small and only one or two pairs; heads several, corymbed, showy. — Damp pine barrens, S. Penn. and southward. April, May.

75. SENECIO, Tourn. GROUNDSEL.

Heads many-flowered; rays pistillate, or none; involucre cylindrical to bell-shaped, simple or with a few bractlets at the base, the scales erect-connivent.

Receptacle flat, naked. Pappus of numerous very soft and slender capillary bristles. — Herbs, in the United States, with alternate leaves and solitary or corymbed heads. Flowers chiefly yellow. (Name from *senex*, an old man, alluding to the hoariness of many species, or to the white hairs of the pappus.)

* *Root annual or in n. 3 biennial; heads several or many in a corymb; herbage glabrous or soon becoming so.*

+ *Rays none or minute.*

S. VULGARIS, L. (COMMON GROUNDSEL.) Low, corymbosely branched, glabrate; leaves pinnatifid and toothed; clasping tips of involucre scales blackish; rays none. — Waste grounds. July-Sept. (Adv. from Eu.)

S. viscosus, L. Coarser, viscid-pubescent and strong-scented; leaves 2-pinnatifid; scales not black-tipped; rays minute. — Waste grounds, coast of N. Eng. (Nat. from Eu.)

+ + *Heads conspicuously radiate.*

1. **S. lobatus, Pers. (BUTTER-WEED.)** Rather tall; leaves somewhat fleshy, lyrate or pinnate, the divisions or leaflets crenate or cut-lobed, variable; heads small in a naked corymb; rays 6-12, conspicuous. — Wet grounds, N. Car. to S. Ill., Mo., and southward. April-July.

2. **S. palustris, Hook.** Annual or biennial, loosely woolly or glabrate; stem stout, 6'-2° high; leaves oblong-lanceolate, irregularly toothed or lacinate, the upper with a heart-shaped clasping base; rays 20 or more, short, pale yellow; pappus copious and becoming very long. — Wet ground, Iowa to N. Wisc., Minn., and northward. June. (Eu.)

** *Root perennial; heads small or middle-sized, in a naked corymb.*

3. **S. aureus, L. (GOLDEN RAGWORT. SQUAW-WEED.)** Smooth, or floccose-woolly when young (1-3° high); leaves thin, the radical simple and rounded, the larger ones mostly heart-shaped, crenate-toothed, long-petioled; lower stem-leaves lyrate; upper ones lanceolate, cut-pinnatifid, sessile or partly clasping; corymb umbel-like; rays 8-12. — Common everywhere. May, June. Varies greatly.

Var. obovatus, Torr. & Gray. Root-leaves thicker, round-obovate with a cuneate or truncate base, or the earliest almost sessile in rosulate tufts. (*S. Elliottii, Torr. & Gray.*) — Open grounds, Can. to Ind. and Ga.

Var. Balsamitæ, Torr. & Gray. Less glabrate; root-leaves oblong, spatulate, or lanceolate, narrowed to the petiole, serrate, the upper lyrate-pinnatifid; heads rather small and numerous. — Common.

4. **S. tomentosus, Michx.** (WOOLLY RAGWORT.) Clothed with scarcely deciduous hoary wool (1-2° high); root-leaves oblong, obtuse, crenate or entire, often large, on elongated stout petioles; the upper sessile, similar or lyrate-pinnatifid; corymb flat-topped; rays 12-15. — Del. and mountains of Penn. (*Pursh.*), to Fla. and Ark. May.

5. **S. canus, Hook.** Usually low, persistently tomentose, rarely at all glabrate; leaves much smaller, spatulate to oblong, all entire or some cut-toothed or pinnatifid; achenes glabrous. — N. Minn., N. Dak., and westward.

6. **S. integerrimus, Nutt.** Woolly pubescent when young, soon glabrate and green; leaves oblong-lanceolate or oblong, entire or denticulate, the upper bract-like, attenuate from a broad base; heads rather large (6" high), with green-tipped scales. — Sask. to Minn., and westward.