17. The Compositae, Sunflower Family

PLANTS DIVERSE in vegetative characters. Leaves alternate unless otherwise noted. Flowers small, aggregated in heads which frequently appear like large individual flowers. Heads surrounded by rows of small bracts, termed involucral bracts.

Flowers of three types: (1) apetalous flowers without a corolla, (2) tubular flowers with a regular, gamopetalous 5-lobed corolla, (3) ligulate flowers with an irregular corolla drawn out into a single, strap-shaped lobe.

These flowers may be arranged in four kinds of heads: (1) all flowers without petals, e.g. ragweeds *(Ambrosia)*, (2) flowers all ligulate, e.g. dandelion *(Taraxacum)*, (3) flowers all tubular, e.g. thistles *(Cirsium)*, (4) marginal flowers ligulate and appearing like petals; the central ones tubular; these two kinds often of contrasting colors, e.g. oxeye daisy *(Chrysanthemum)*. Those members of the Compositae family which have heads composed exclusively of ligulate flowers (second group above) possess a milky juice. The sap is not milky in the remaining members of the family.

In heads possessing both kinds of petaliferous flowers, the marginal ligulate ones are often called ray flowers or rays. The central portion of the head is frequently termed a disk, and the flowers disk flowers. This terminology is sometimes also extended to heads possessing only one flower type.

Fruit a seed-like achene, generally oblong in shape, usually bearing an apical crown of bristles or scales, the pappus. The pappus of weed seeds processed with agricultural seeds is generally destroyed.

The Compositae is the largest family of flowering plants on the basis of number of species. It possibly contains more weedy kinds than any other family group. On the other hand, it possesses few plants of real economic value other than ornamentals. Garden lettuce and endive are members of this family. Ornamentals belonging to the Compositae include chrysanthemums, cosmos, coreopsis, daisy, calendula, marigolds and zinnias.

The genera following are grouped according to type of flower head as categorized above.

FLOWER HEADS GREENISH WITHOUT PETALS

Ambrosia, Ragweed. Plants annual, erect, branched. Flowers much reduced, unisexual, the pistillate and staminate in separate heads. Pistillate heads in small clusters in axils of upper leaves, reduced to a single flower surrounded by involucral bracts. Staminate heads many-flowered, in long terminal spikes. "Seed" consisting of the achene surrounded by the hardened, persistent involucre, irregularly obovoid with three or four points at the apex. Pappus absent.

Ambrosia elatior (A. artemisiifolia), Common ragweed, Small ragweed. Plants annual, to 1 m. in height, but usually considerably smaller. Leaves irregularly pinnately dissected, the lower opposite, upper alternate. Seeds brown in color, 3-4 mm. long. Abundant, usually grasses and legumes, grain stubble, pastures, waste ground in both rural and urban areas, successful in dry soil. Late summer and fall. Seeds common in legume seed, occasional in oats and soybeans; when subjected to the action of cleaning machinery the outer involucre is sometimes stripped off exposing the brown, somewhat shiny, obovoid achene. p176

Common ragweed is the most important late summer hay fever plant.

Ambrosia trifida, Giant ragweed, Horseweed. Plants annual, often 2-3 m. in height. Leaves opposite, 3-lobed. Seed brown in color, 6-9 mm. in length. Abundant in rich, usually moist soil; gardens, roadsides, waste ground, river bottoms. Late summer. Also a source of hay fever but less important than above. p177

Ambrosia psilostachya, Perennial ragweed. Plants perennial from creeping roots, usually not more than 5 dm. tall and occurring in clusters or patches. Leaves similar to those of common ragweed but less finely divided. Western. A variety of habitats. p177

Ambrosia bidentata, Lance-leaved ragweed. Annual, usually small. Leaves lanceolate, with a pair of conspicuous lobes or teeth at base. Extreme southern. Pastures and uncultivated soil. p177

Franseria. Franseria discolor, Bur ragweed. Plants perennial from creeping roots. Leaves pinnately dissected. Flower heads similar to those of ragweeds, without petals; staminate and pistillate flowers in separate heads. Pistillate heads in axils of upper leaves, enclosing 2 to 3 seeds, the entire structure becoming a spiny bur at maturity. Western in diverse habitats. p178

Iva. Lower leaves opposite. Flower heads small, greenish, somewhat similar in appearance to those of ragweeds, but pistillate and staminate flowers in some heads. Petals not present. Achenes obovoid, without a pappus.

Iva axillaris, Poverty-weed. Low perennial from creeping p179

roots. Leaves sessile, oblong, entire. Heads hanging from upper leaf axils. Western. Cultivated and untilled soils.

p179 *Iva xanthifolia*, Marsh-elder. A tall annual with long petioled, broad, irregularly toothed leaves. Heads in terminal panicles. Central and western; usually moist, bottom soil, roadsides, about dwellings and feed lots, locally conspicuous.

p180 *Xanthium*, Cocklebur. Plants annual, erect or spreading. Leaves cordate, toothed or lobed, rough in texture. Flowers and heads unisexual, greenish, without petals. Pistillate head 2-flowered; involucral bracts fused and forming the well-known 2-seeded bur. Seeds (rarely seen separate from bur) flattened, fragile, brownish in color. Common, cultivated fields, oat stubble, around feed lots and buildings, waste areas, river bottoms. Late summer and fall. The seedlings are poisonous to hogs.

FLOWER HEADS ENTIRELY OF LIGULATE FLOWERS; JUICE MILKY

p181 *Cichorium*. *Cichorium intybus*, Chicory. Perennial from a taproot. Juice milky. Leaves mostly basal, resembling those of dandelion. Stems nearly naked with a few reduced, often nearly entire leaves. Flower heads with blue, ligulate flowers. Achenes finely granular, somewhat brick-shaped, with a very short pappus. Roadsides (often conspicuous), pastures, grassland. Central and eastern.

p182 *Hieracium*. *Hieracium aurantiacum*. Orange hawkweed. Plants perennial with basal rosettes and stolons and with a milky juice. Erect stem scapose, bearing only a cluster of orange flower heads at apex. Flowers all ligulate; corolla toothed at apex. Achenes cylindrical, black, longitudinally ribbed, with a pappus of stiff bristles. Northeastern. Noncultivated areas. A yellow-flowered hawkweed *(H. pratense)* is sometimes found in similar areas.

Lactuca, Lettuce. Plants with milky juice. Leaves entire to irregularly pinnatifid, frequently prickly-toothed along margins. Heads entirely of ligulate flowers, yellow or blue. Pappus of fine bristles, often borne above achene on a beak or stalk.

p183 *Lactuca scariola*, Prickly lettuce. Plants annual or winter annual. Leaves alternate, usually pinnatifid, prickly along the margins and the back of the midrib, those on the stem twisted into a vertical position. Heads panicled, small. Flowers pale yellow. Seeds about 3 mm. in length, flattened, longitudinally ribbed, brown in color, tipped by a long beak which bears the pappus at apex. Common, gardens, roadsides, and fields. Summer. Seeds occasional in legume and grass seed.

Lactuca spp., Wild lettuce. Several species, perennial or annual, with blue or yellow flowers. One kind has black achenes with a sessile pappus. These species are less frequent in

cultivated soil than prickly lettuce. None have the conspicuously prickly midrib of *L. scariola* or the characteristic vertical positioning of the stem leaves.

Sonchus, Sowthistles. Plants erect, mostly glabrous, with milky juice. Leaves irregularly lobed or toothed, soft-prickly. Flowers all ligulate, yellow. Seeds reddish-brown, roughened by closely crowded longitudinal ridges, and cross wrinkles; pappus of fine bristles.

Sonchus arvensis, Perennial sowthistle. Plants perennial from creeping roots. Leaves rather evenly prickly-toothed. Heads nearly the size of those of dandelions. Seeds oblong; longitudinal ribs regular, easy to count. Primary noxious or prohibited in all states except the southern; of major importance only in northern areas. Cultivated and uncultivated ground. Summer. p184

Before flowering, this plant is easily confused with prickly lettuce and annual sowthistle. Note that leaves of the lettuce are prickly on lower midrib and are held in a vertical plane. The two sowthistles can most easily be distinguished in early stages of growth by the shallow, annual taproot, and irregularly prickly leaves of the annual sowthistle.

Sonchus oleraceus, Annual sowthistle. Plant annual. Leaves irregularly pinnatifid and spinulose toothed. Flower heads much smaller than that of a dandelion. Achenes broadening to top with irregular (difficult to count) ribs. Waste areas, about buildings, usually not abundant but widely distributed. Summer and fall. p185

Taraxacum. *Taraxacum officinale*, Dandelion. Plants perennial, with a rosette of pinnatifid leaves, and hollow leafless stalks each bearing a single, large, yellow head of ligulate flowers. Seeds oblong, longitudinally ribbed, barbed near apex, brownish, apically tapering into a long beak which bears the feathery pappus. Abundant, lawns, pastures, and meadows. Spring. Seeds common in lawn grass mixtures; occasional in forage grass seed. p186

Tragopogon, Goat's-beard, Salsify. Plants biennial, erect, with milky juice. Leaves alternate, linear-lanceolate, entire, fleshy, somewhat grass-like in appearance. Heads solitary at stem tips, large, 4-5 cm. in diameter, of yellow (rarely purple) ligulate flowers. Seeds 10-13 mm. in length, narrowly oblong, beaked, bearing a bristly pappus. Common, roadsides, fence rows. Early summer. p186

FLOWER HEADS ENTIRELY OF TUBULAR FLOWERS

Antennaria, Pussy's-toes, Ladies'-tobacco. Creeping or low white-woolly plants with spatulate leaves. Flower heads in small clusters at tip of erect stems. Flowers white, all tubular. Primarily southeast. Flowering in spring but growth continues during summer. Eroded or sterile, noncultivated soil. p187

p187 *Arctium. Arctium minus*, Burdock. Plants biennial with a rosette of large, petioled, usually cordate blades. Heads bur-like; involucral bracts reduced to hooked bristles. Flowers tubular, red to pink. Central and eastern, rich uncultivated soil.

p188 *Artemisia*, Wormwood. Several species, annuals or perennials, usually with pinnately compound or dissected leaves, frequently densely gray-hairy, usually strong-scented. Heads small, in diffuse branched inflorescences or in axils of reduced upper leaves, without ligulate flowers, yellowish to green. Roadsides, pastures, locally common. The sagebrush of arid ranges, deserts and mountains is a shrubby species of *Artemisia*.

p193 *Carduus. Carduus nutans*, Musk thistle. Plants biennial with a leaf rosette the first year, producing a stem the second season. Leaves and stems spiny, the leaf divisions contacted into intricate patterns. Heads solitary, long stalked above the leaves, larger than those of any other thistles, up to 5 cm. in width, often bent over or recurved. Pastures and waste areas, of sporadic occurrence, but apparently becoming more abundant. Flowering in late June. Aside from its weedy characters, this thistle is a very striking and interesting plant.

Centaurea, Star thistles, Knapweeds. Plants usually gray-pubescent with cobwebby hairs. Lower leaves often pinnatifid; upper toothed or entire. Heads entirely of tubular flowers, lavender to purple, less frequently yellow.

p189 *Centaurea maculosa*, Spotted knapweed. Plants biennial. Involucral bracts toothed at top. Achenes dark in color, with a basal notch; pappus present and conspicuous. Occasional in much of range, more common northeast, uncultivated soil.

Several species of *Centaurea* are sporadic in the North Central States. Most of them are similar to *C. maculosa* with respect to the description above and contrast with *C. repens* (below). One species, *C. solstitialis*, has yellow flowers and spiny heads.

p189 *Centaurea repens*, Russian knapweed. Plants perennial from creeping roots. Involucral bracts nearly entire. Achenes without a basal notch, plump, smooth or slightly longitudinally ridged, gray-white. Pappus not present on mature seeds. Primary noxious or prohibited in all states but of significant abundance only in extreme western areas. Extremely persistent in both cultivated and noncultivated soil in arid areas.

Cirsium, Thistles. Plants erect. Stems and leaves spiny. Heads (in our species) lavender or purple, consisting entirely of tubular flowers. Seeds smooth, slightly flattened, with a very conspicuous pappus of fine bristles.

p190 *Cirsium altissimum*, Field thistle, Tall thistle. Plants biennial; stem developing from a leaf rosette, becoming 1.5-3 m. tall. Leaves irregularly divided into toothed lobes or nearly entire,

whitish-hairy beneath, not extended downwards on stem. Heads purple, 3-4 cm. across, upper bracts not spiny-tipped. Seeds 5-6 mm. long, brownish streaked or blotched on a light background, with a wide yellow rim at the apex. Abundant, fields, pastures, waste places. Summer.

Cirsium arvense, Canadian thistle. Plants perennial from creeping roots, not rosette forming, usually not exceeding 1 m. in height. Leaves irregularly lobed or toothed. Heads lavender, smaller than those of other thistles, 1-2 cm. across. Seeds about 3 mm. long, yellowish-brown, with an inconspicuous yellow rim at apex. Primary noxious or prohibited in all states but of principal significance in northern section. Nearly all habitats, cultivated and uncultivated areas alike, usually fertile soil. Seeds occasional in legume, grass and small grain seed. p191

Much of the Canadian thistle never produces seed. The species is dioecious; some plants are entirely pistillate, and others staminate. The plants in a given patch or even an extensive area are frequently all descended from the root system of the same individual, hence are all of the same sex. Seed will not be set unless both staminate and pistillate plants are in the same vicinity.

Cirsium vulgare (C. lanceolatum), Bull thistle. Plants biennial, 1-2 m. tall. Leaves pinnately lobed, mostly divided into oblong-lanceolate untoothed divisions, not white-woolly beneath; narrow sections of blades frequently extend downwards on the stem below node. Heads 3-4 cm. across; involucral bracts all prickly. Flowers purple. Seeds 4-5 mm. long, black-streaked or blotched upon an ivory background with a narrow yellow rim at the apex. Abundant, central and eastern; pastures, roadsides, waste places. Middle and late summer. Seeds occasional in legume and grass seed. p190, p192

Eupatorium, Boneset, Thoroughwort, Joe-Pye weed. Several perennial species with toothed, opposite or whorled leaves. Heads relatively small, of tubular flowers, white to purple. Achenes small, black, longitudinally ridged, with a pappus of numerous fine hairs. Primarily pasture weeds, most common in South and East. One species *(E. rugosum*, white snakeroot) generally grows in woodlands and is poisonous. p194

Gnaphalium. *Gnaphalium obtusifolium*, Cudweed. Annual or biennial. Plant white from dense mottled pubescence. Stem leaves sessile, narrowly oblong, entire. Heads numerous, small, of white tubular flowers. Achenes minute. Pastures and waste areas. Eastern. p195

Vernonia, Ironweeds. Plants tall. Leaves lanceolate, serrate. Heads numerous, at the end of branched stems, red-purple. Flowers all tubular. Achenes black, longitudinally ribbed, with a pappus of short bristles or scales. Southern portion; pastures. Summer. p196

FLOWER HEADS WITH MARGINAL LIGULATE FLOWERS AND A CENTRAL DISK OF TUBULAR FLOWERS

Achillea. Achillea millefolium, Yarrow. Plants perennial from creeping rootstocks, erect, or when occurring as a weed in lawns, prostrate. Leaves dissected into fine divisions, fern-like. Heads small, 3-4 mm. across, whitish; ligulate and tubular flowers both present. Seeds small, 2-3 mm. long, with longitudinal white and black lines; pappus inconspicuous. Relatively common, more abundant eastward. Pastures, grassland, roadsides, yards. Summer. Seeds common in agricultural seed of timothy and redtop.

p197

Anthemis. Anthemis cotula, Mayweed, Dog-fennel, Stinkweed. Plant annual, erect, strong-scented. Leaves pinnately dissected. Heads solitary at stem apices, with white, ligulate flowers and yellow tubular flowers. Achenes about 2 mm. long, thick, longitudinally ribbed and warty, light brown in color; pappus not present. Locally common, legumes, roadsides, pastures, around buildings and feed lots. Summer. Seeds common in forage grass seed and legumes.

p197

Aster, Asters. Plants perennial, usually from rootstocks. Leaves petioled or sessile, toothed; in some species the lower ones cordate. Tufts of crowded secondary leaves are often present in axils of main stem leaves. Heads numerous, in diffuse, terminal inflorescences, with yellow tubular flowers and blue to white ligulate flowers. Achenes very small with a pappus of thread-like bristles. Several species, on uncultivated soil or prairie remnants, not important as weeds, but frequently conspicuous in fall. Central and east.

p198

Bidens, Spanish needles, Beggar's-ticks. Plants annual. Leaves opposite, simple or pinnately dissected or compound. Heads with yellow tubular and ligulate flowers or sometimes ligulate portion absent. Achenes flattened or quadrangular; pappus of 2 to 4 stiff awns with fine, recurved bristles, these readily adhering to clothing or the hair of animals. Mostly eastern, locally abundant. Pastures, uncultivated areas. Several species.

p199

Chrysanthemum. Chrysanthemum leucanthemum, Oxeye daisy. Perennial. Leaves pinnatifid or toothed. Heads solitary at stem tips, large, with white ligulate flowers and a disk of yellow tubular flowers. Achenes dark with lighter longitudinal ridges. Northeast. Pastures and uncultivated areas, locally very abundant. The seeds occur in those of various forage grasses.

p199

Coreopsis. Coreopsis tinctoria, Tickseed. Annual. Leaves pinnately compound or pinnatifid with slender, linear segments. Ligulate flowers orange-yellow; tubular flowers purple-brown. Southwestern, in uncultivated areas, locally abundant. Summer.

Erigeron. Annuals or biennials. Lower leaves toothed or lobed, upper usually nearly entire. Heads of both ligulate and tubular flowers; the former white; the latter yellow.

p200

Erigeron canadensis, Horseweed. Plants annual, erect, up to 2 m. in height, unbranched below inflorescence. Stems densely leafy, the blades sessile and entire. Heads small, 4-5 mm. across, panicled, whitish; ligulate flowers inconspicuous. Seeds very small, 1 mm. in length, light brown with a pappus of fine bristles. Abundant, fields, pastures, roadsides. Late summer. Occasional in grass seed. p200

Erigeron spp., Daisy fleabane. Several species (*E. annuus* perhaps the most common) which contrast with the above in usually being branched, and having conspicuous aster-like heads, i.e. white rays and a yellow center. They may be distinguished from asters in that they are not perennial and lack the axillary leaf tufts usually characteristic of the latter. Pastures and roadsides, thickets, waste areas in towns. Summer. p201

Grindelia. Grindelia squarrosa, Gumweed, Tarweed. Short-lived perennial. Entire plant sticky or gummy. Leaves sessile and somewhat clasping, oblong, serrate. Heads with yellow ligulate and tubular flowers. Achenes yellowish, angular, somewhat curved; pappus of a few, quickly lost bristles. Western, mostly uncultivated soil, a variety of habitats. p201

Helenium, Sneezeweed, Bitterweed. Ligulate flowers yellow, toothed at tip. Tubular flowers forming a conspicuous brown or yellow disk. Achenes with hairy ribs; pappus of a few bristle-tipped scales.

Helenium autumnale, Sneezeweed. Leaves toothed. Heads large and conspicuous. Rays drooping. Disk hemispheric, greenish-yellow. Mostly sporadic in occurrence, wet areas in pastures and along ditches. Poisonous. p202

Helenium tenuifolium, Bitterweed. Stems densely leafy with sessile linear-filiform blades. Heads yellow. Southern only. Pastures, waste areas, around buildings. When eaten by cattle, the plant taints the milk with a disagreeable taste. Summer. p203

Helianthus, Sunflowers. Annuals or perennials, usually tall, coarse plants. Leaves opposite or alternate, ovate to lanceolate, entire or toothed. Heads large, with both ligulate and tubular flowers, the former yellow, the latter yellow or brown. Achenes oblong to obovate, often longitudinally striate; pappus of inconspicuous, quickly dehiscent scales. p204

Sunflowers of diverse kinds occur throughout the North Central States, and are often sufficiently abundant to contribute materially to the characteristic late summer landscape. Some are locally important weeds in cultivated soil, but for the most part they occur along roadsides, ditches, railroad rights-of-way, untilled waste areas, and prairie remnants.

Solidago, Goldenrod. Plants perennial. Heads numerous, small, often mostly borne only on one side of flowering stalks. Both ligulate and tubular flowers present, yellow. Achenes small, with numerous capillary bristles. Roadsides, pastures, prairie remnants, scarcely weedy but frequently very conspicuous in the fall. p204

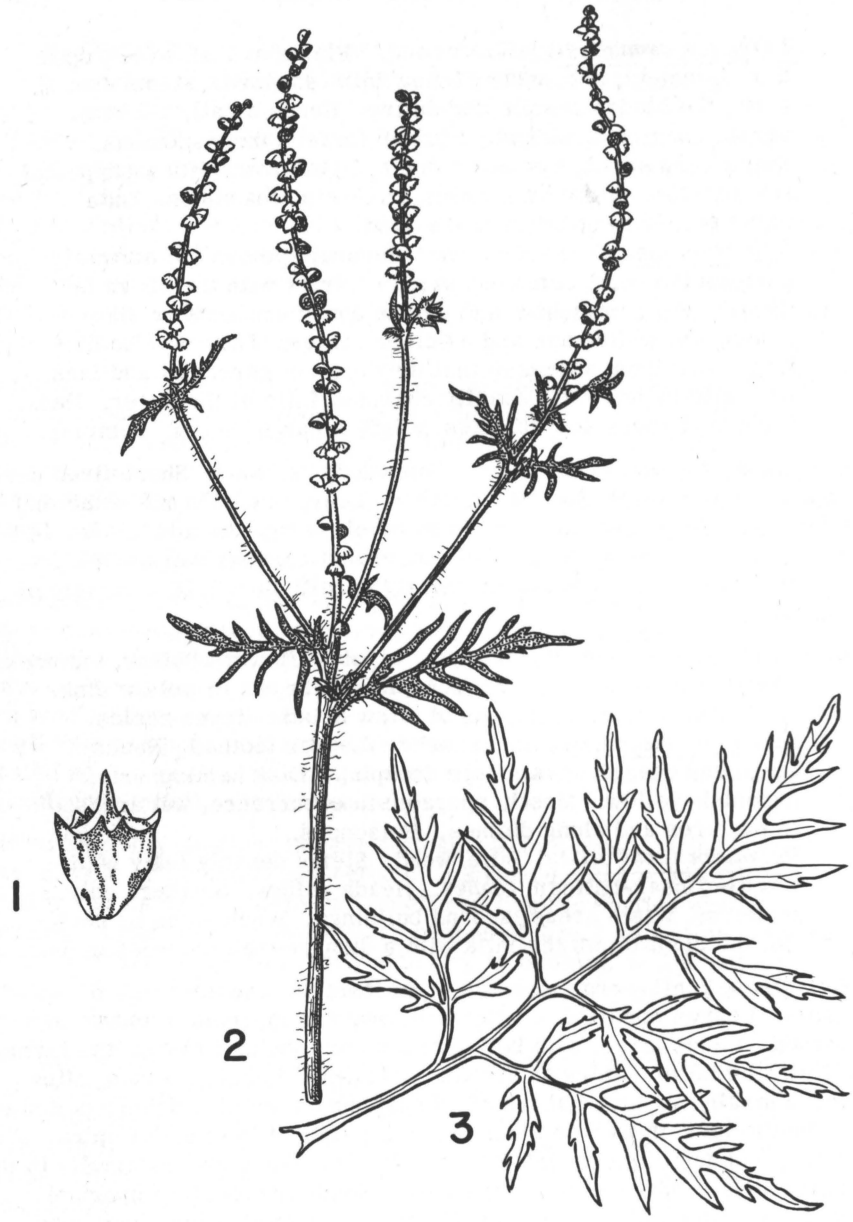


PLATE 101

Ambrosia elatior 1. "Seed" — involucre enclosing fruit x4. 2. Inflorescence x1/2. 3. Basal leaf x2/3.

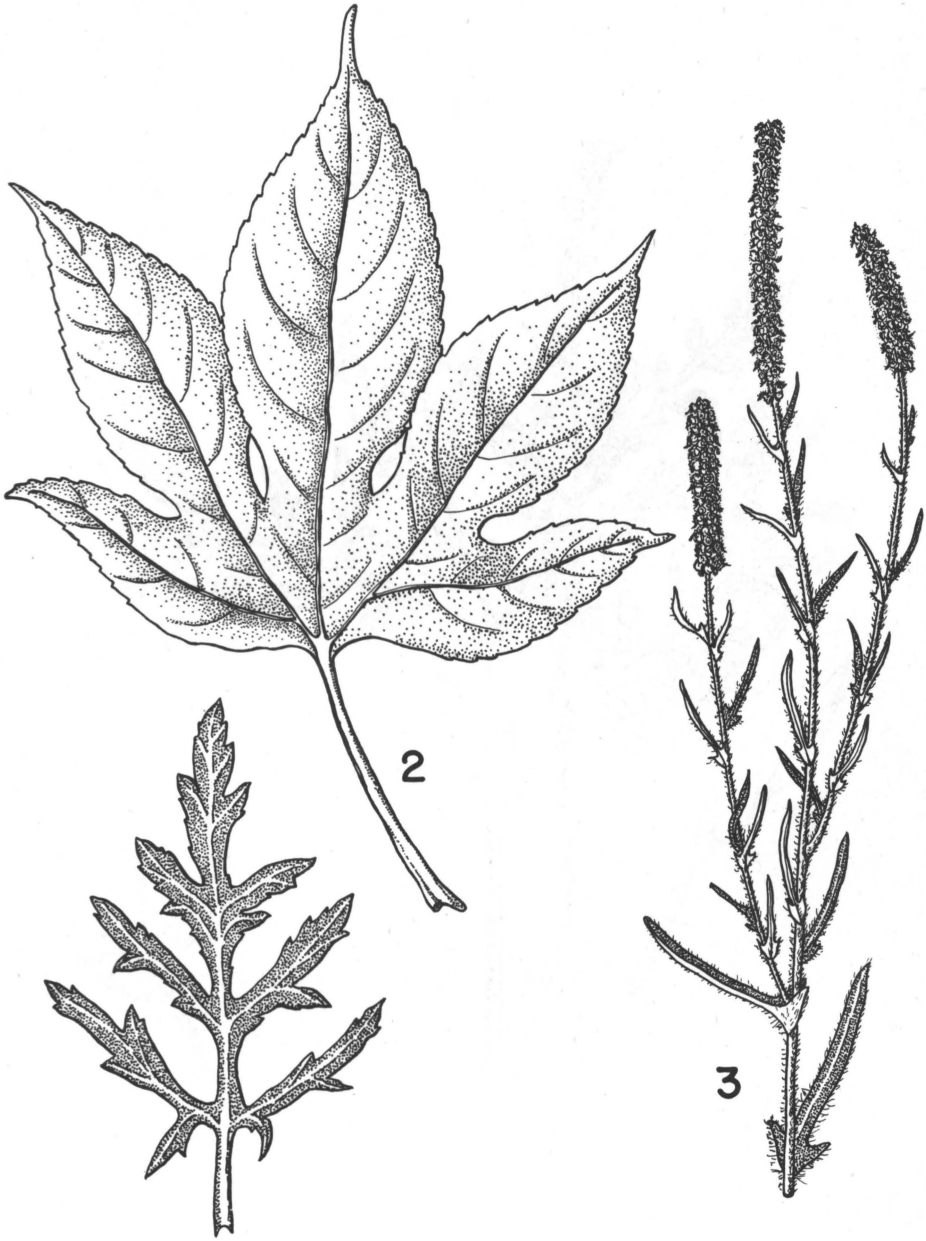


PLATE 102

Ambrosia psilostachya 1. Leaf x2/3.
Ambrosia trifida 2. Leaf x2/3.
Ambrosia bidentata 3. Apex of plant x2/3.

PLATE 103

Franseria discolor Flowering branch x2/3.

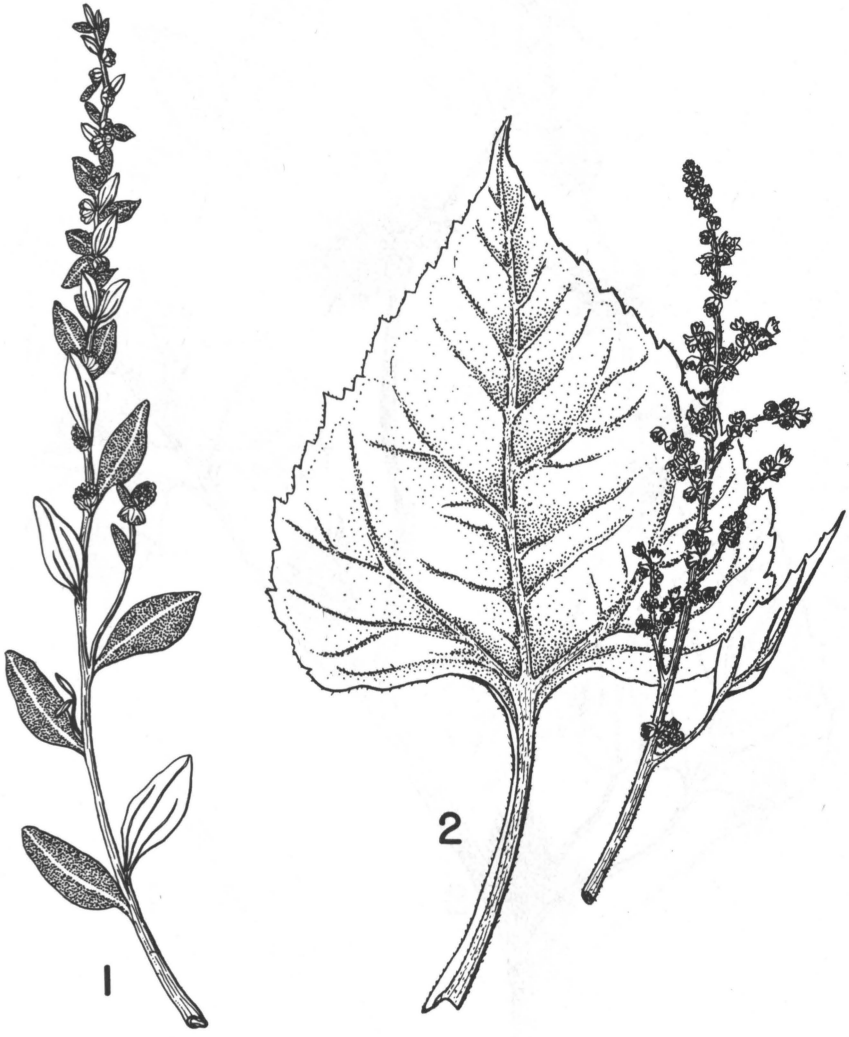


PLATE 104

Iva axillaris 1. Flowering branch x2/3.
Iva xanthifolia 2. Leaf and fragment of inflorescence x1/3.

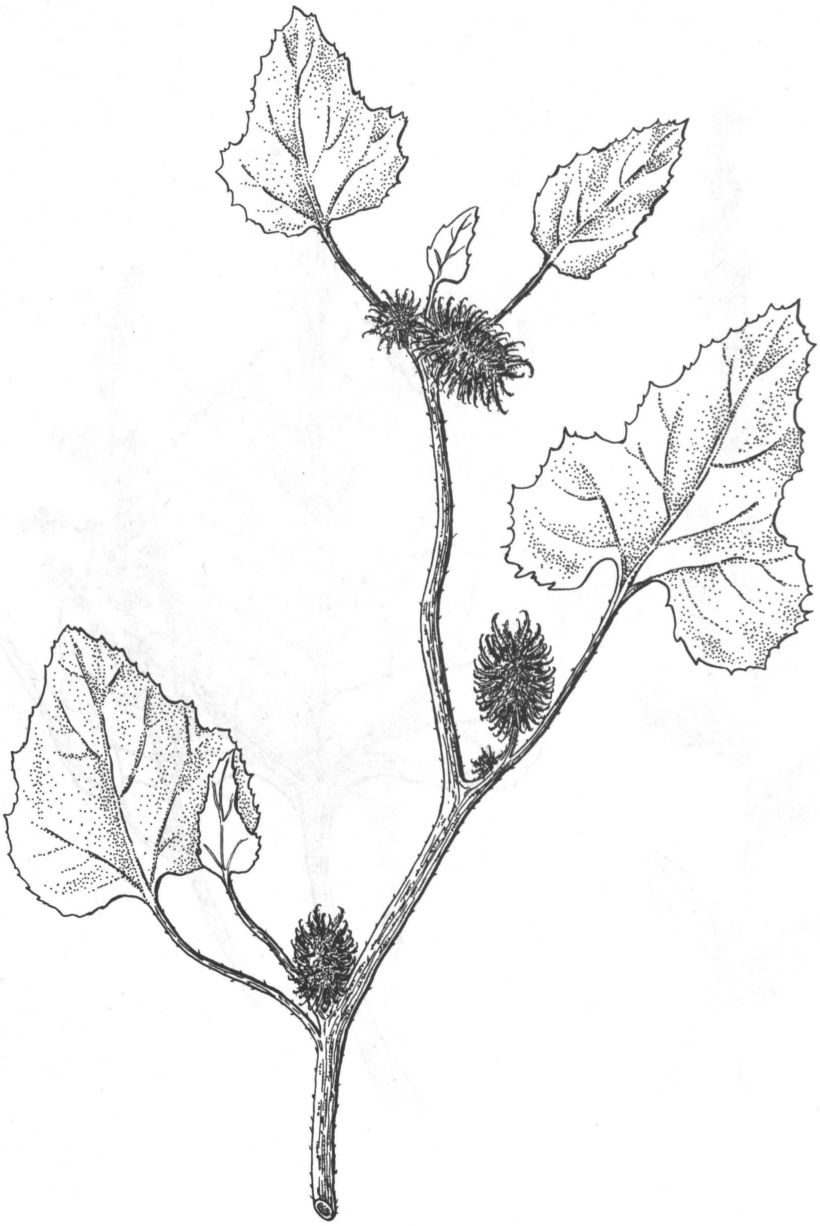


PLATE 105

Xanthium strumarium Fruiting branch x2/3.

PLATE 106

Cichorium intybus 1. Basal leaf x2/3. 2. Branch of inflorescence x2/3.

PLATE 107

Hieracium aurantiacum Habit x2/3.

PLATE 108

Lactuca scariola Stem apex of young plant x2/3.

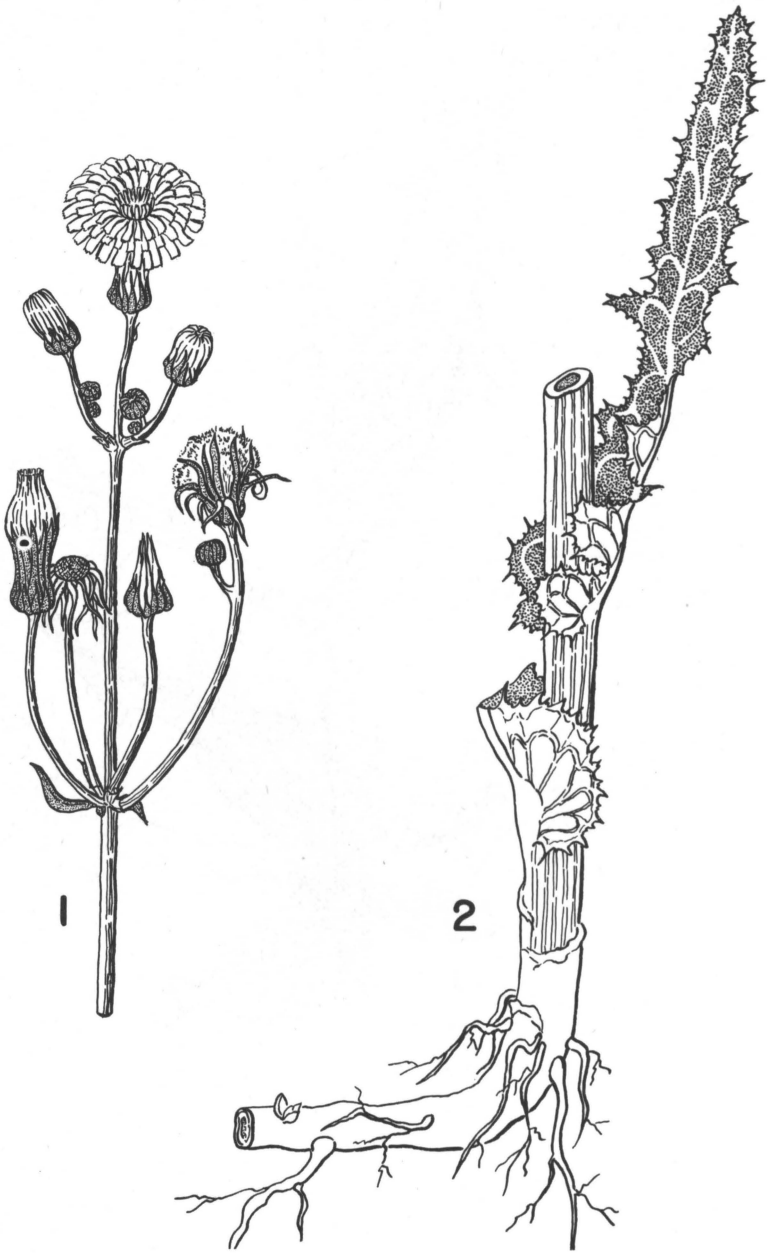


PLATE 109

Sonchus arvensis 1. Portion of inflorescence x2/3. 2. Basal leaf and root x2/3.

PLATE 110

Sonchus oleraceus Apex of stem x2/3.

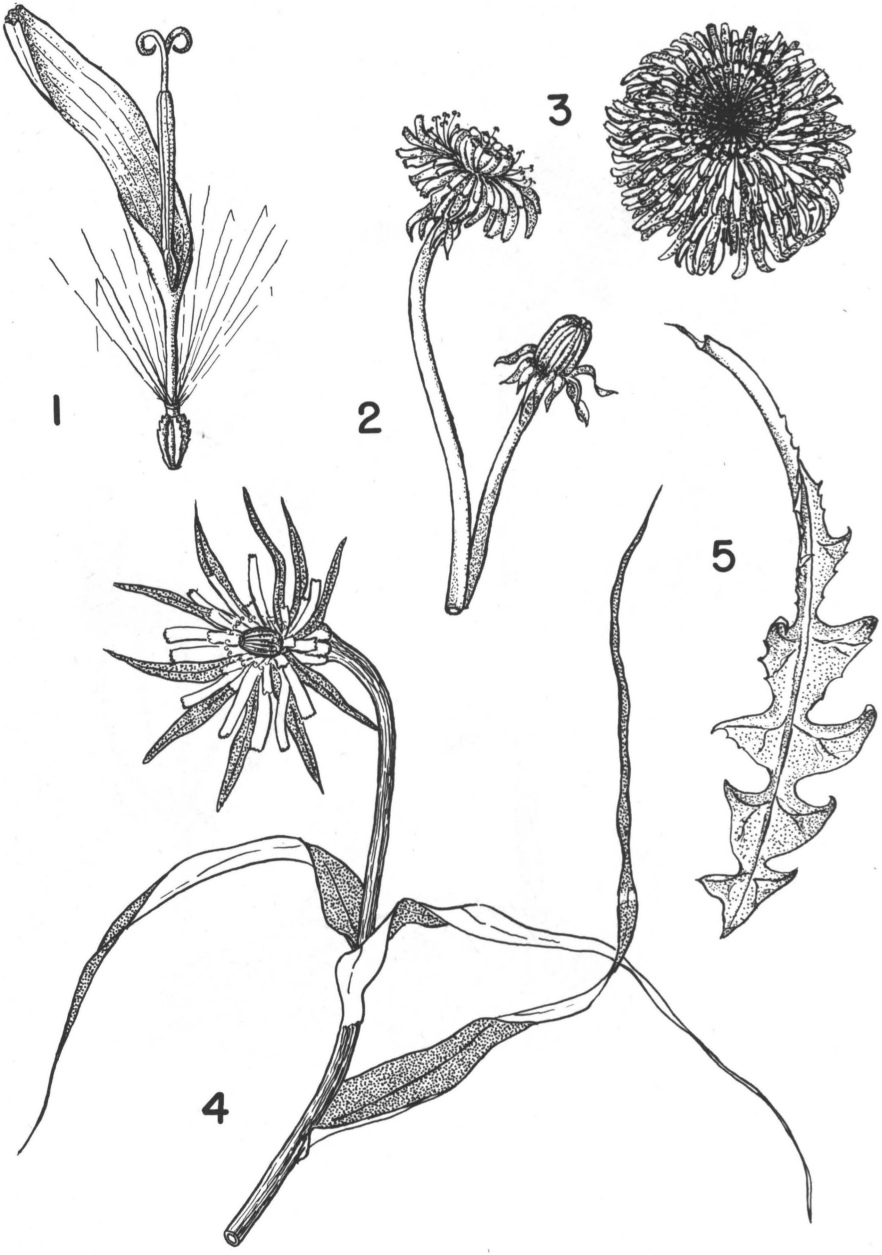


PLATE 111

Taraxacum officinale 1. Enlarged flower x4. 2. Flower heads x2/3. 3. Flower head, top view x1. 5. Leaf x2/3.
Tragopogon dubius 4. Head and leaves x2/3.

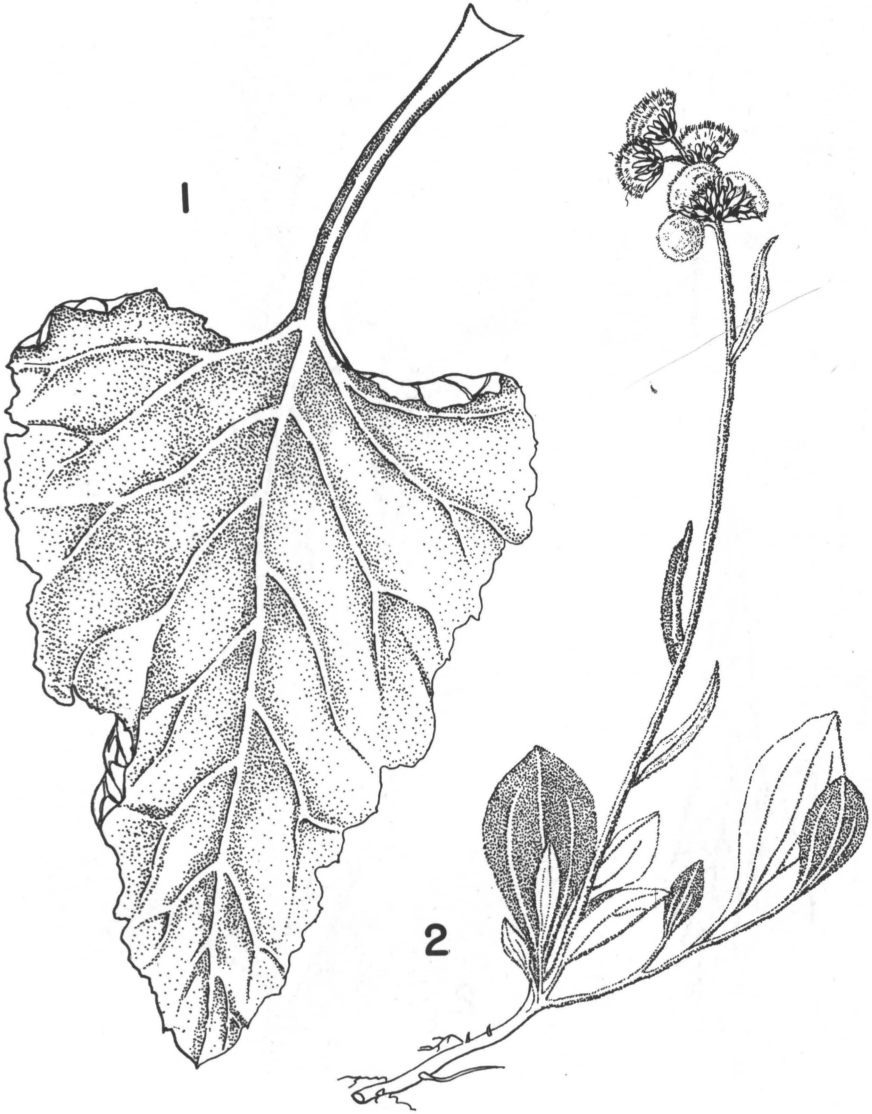


PLATE 112

Arctium minus 1. Leaf x1/2.
Antennaria plantaginifolia 2. Habit x2/3.

PLATE 113

Artemisia ludoviciana 1. Basal leaf x2/3. 2. Inflorescence x2/3.

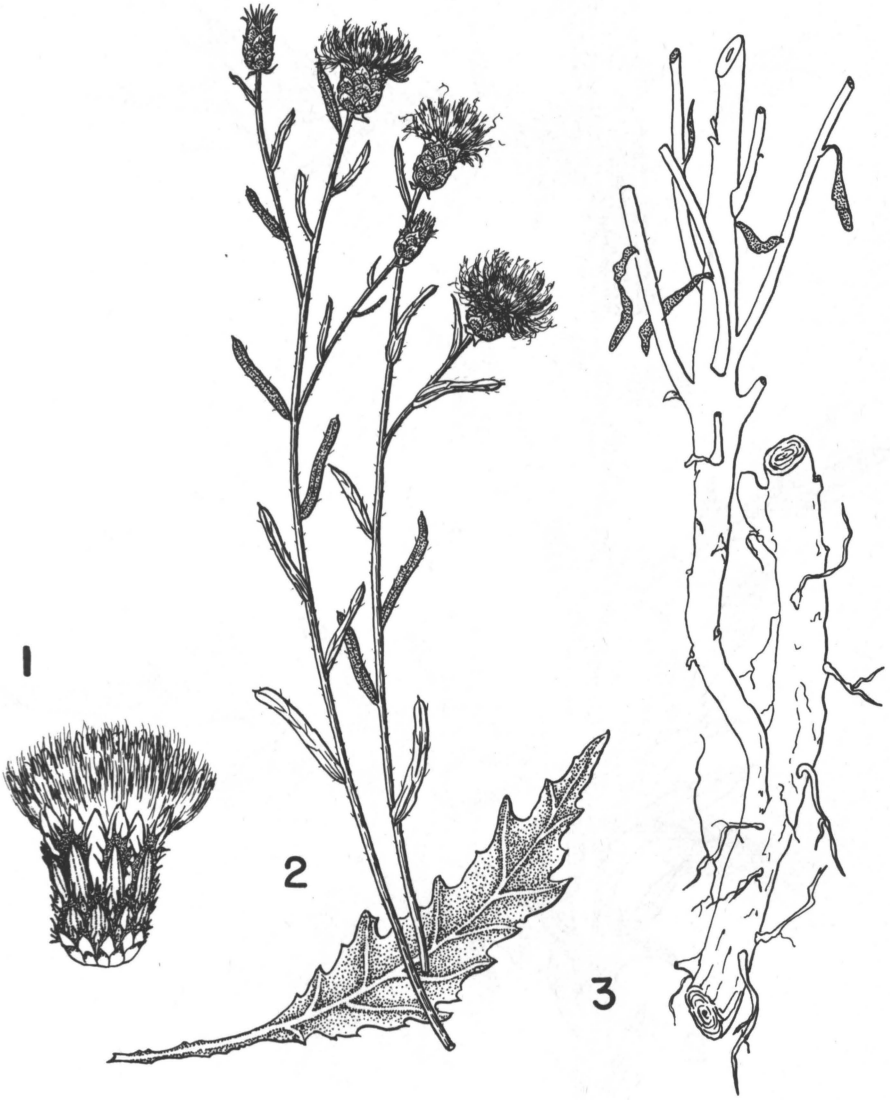
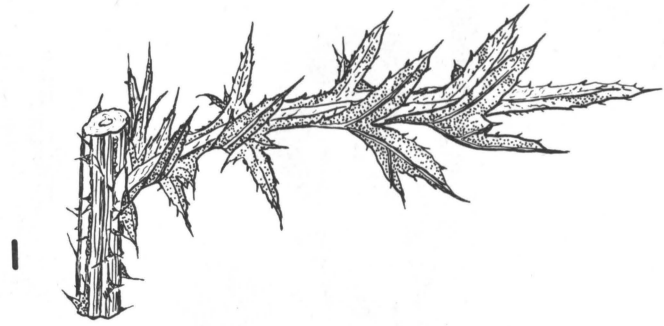


PLATE 114

Centaurea maculosa 1. Flower head x1 1/3.
Centaurea repens 2. Inflorescence and basal leaf x2/3. 3. Perennial root x2/3.



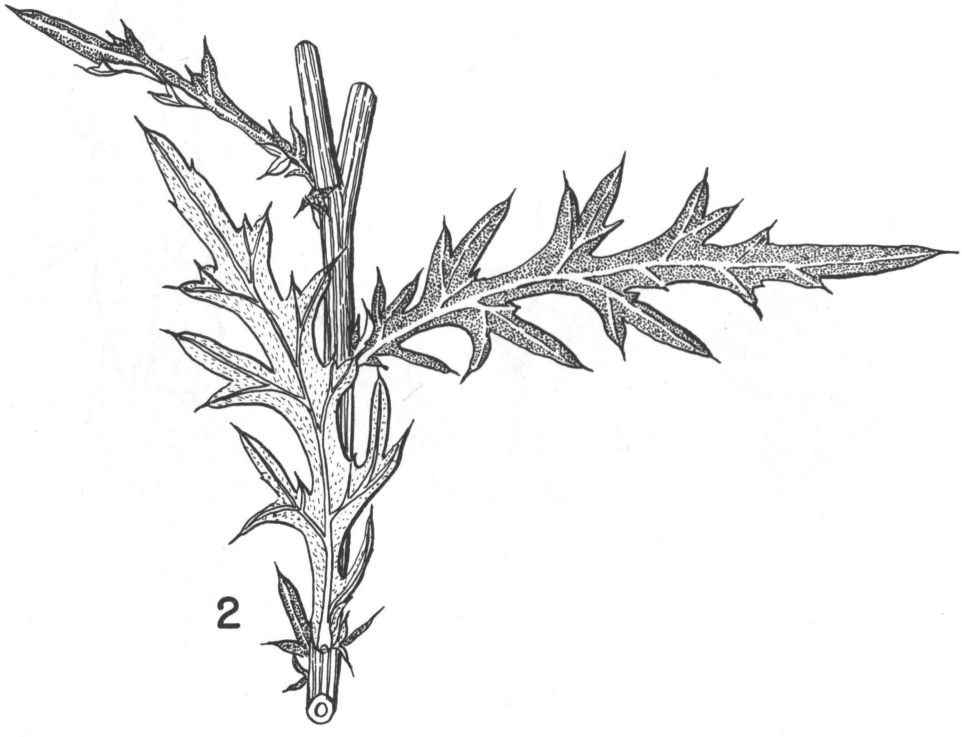


PLATE 115

Cirsium vulgare 1. Stem leaf x1/3.
Cirsium altissimum 2. Portion of stem x1/2.

PLATE 116

Cirsium arvense 1. Inflorescence x2/3. 2. Young plant x2/3.

PLATE 117

Cirsium vulgare 1. Head x2/3. 2. Rosette x1/3.

PLATE 118

Carduus nutans Head and leaf x1/2.

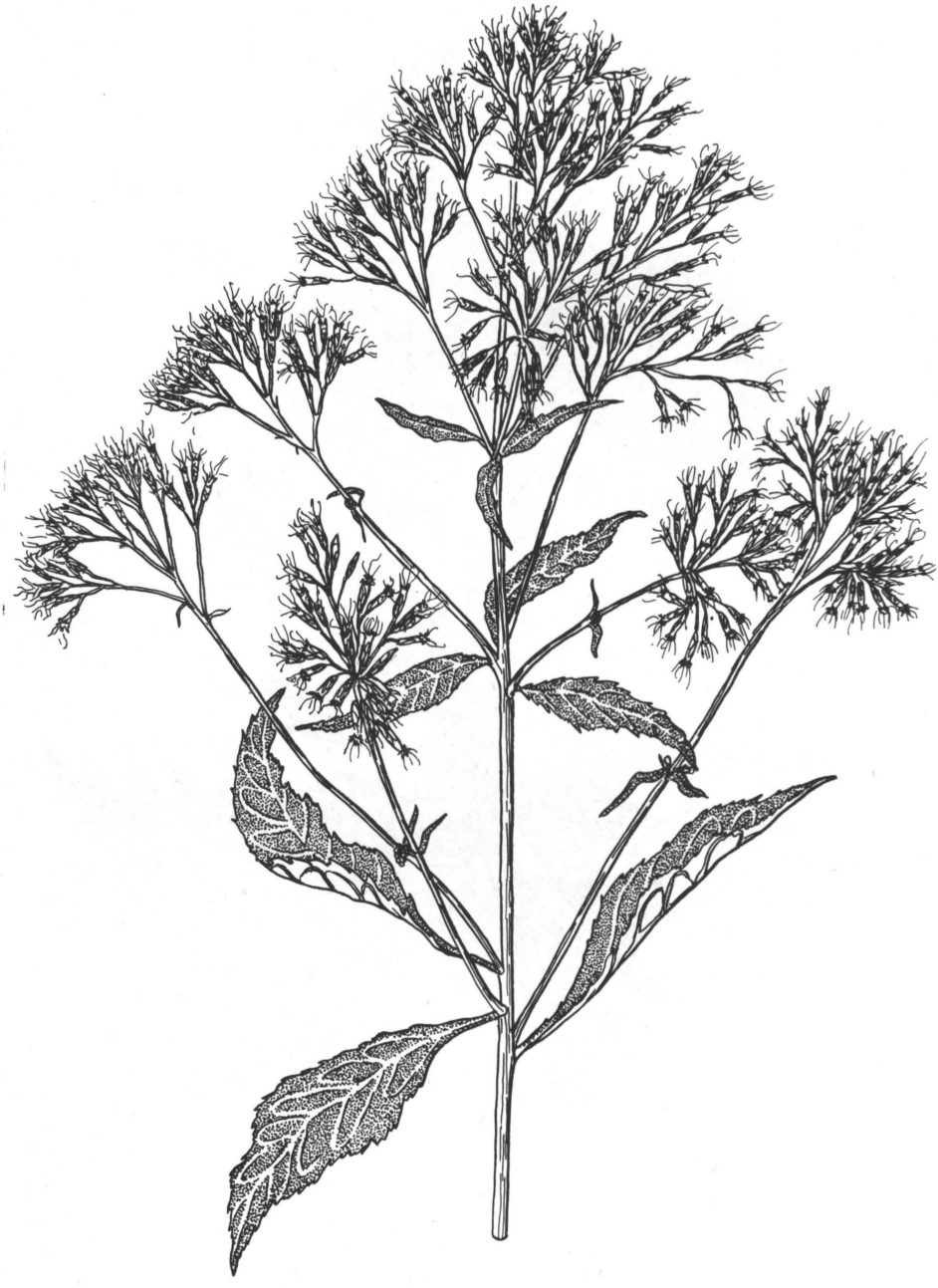


PLATE 119

Eupatorium purpureum Inflorescence x1/3.

PLATE 120

Gnaphalium obtusifolium Apex of plant x2/3.

PLATE 121

Vernonia crinita Apex of plant x2/3.

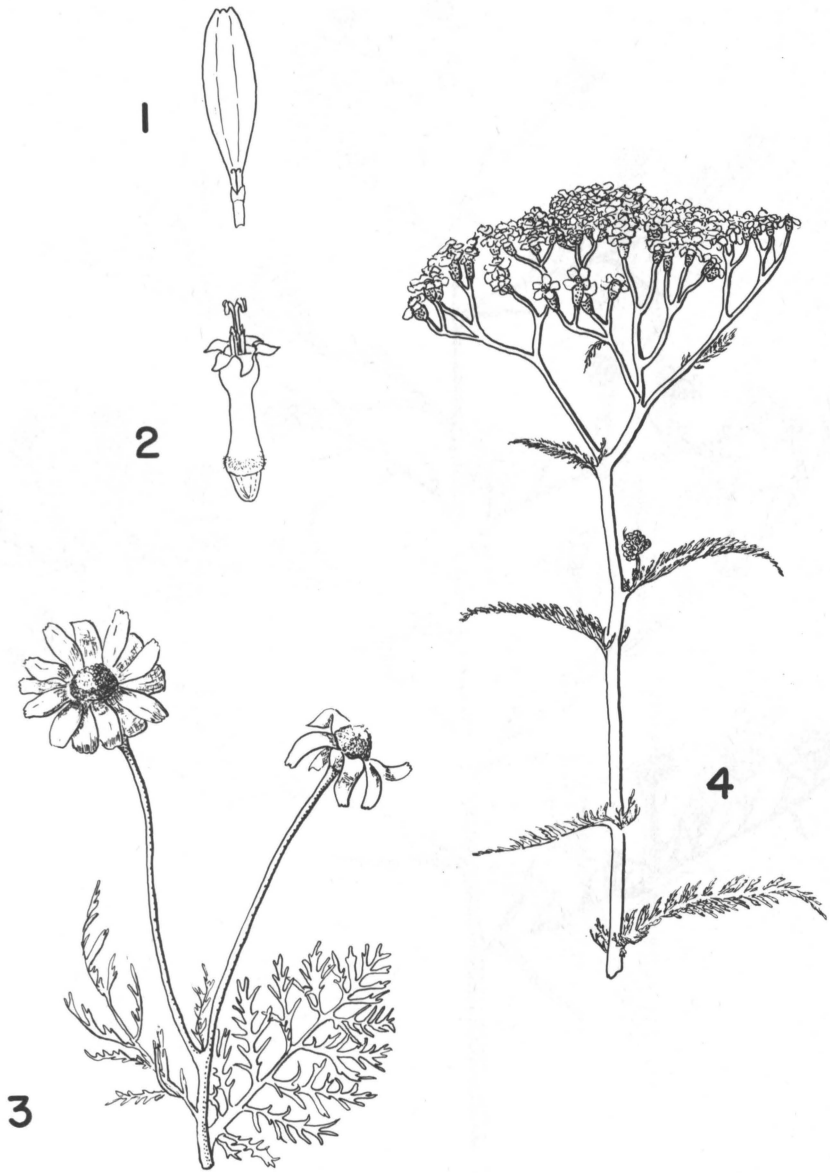


PLATE 122

Anthemis cotula 1. Ligulate flower x2. 2. Tubular flower x4. 3. Heads and leaves x2/3.
Achillea millefolium 4. Apex of plant x2/3.

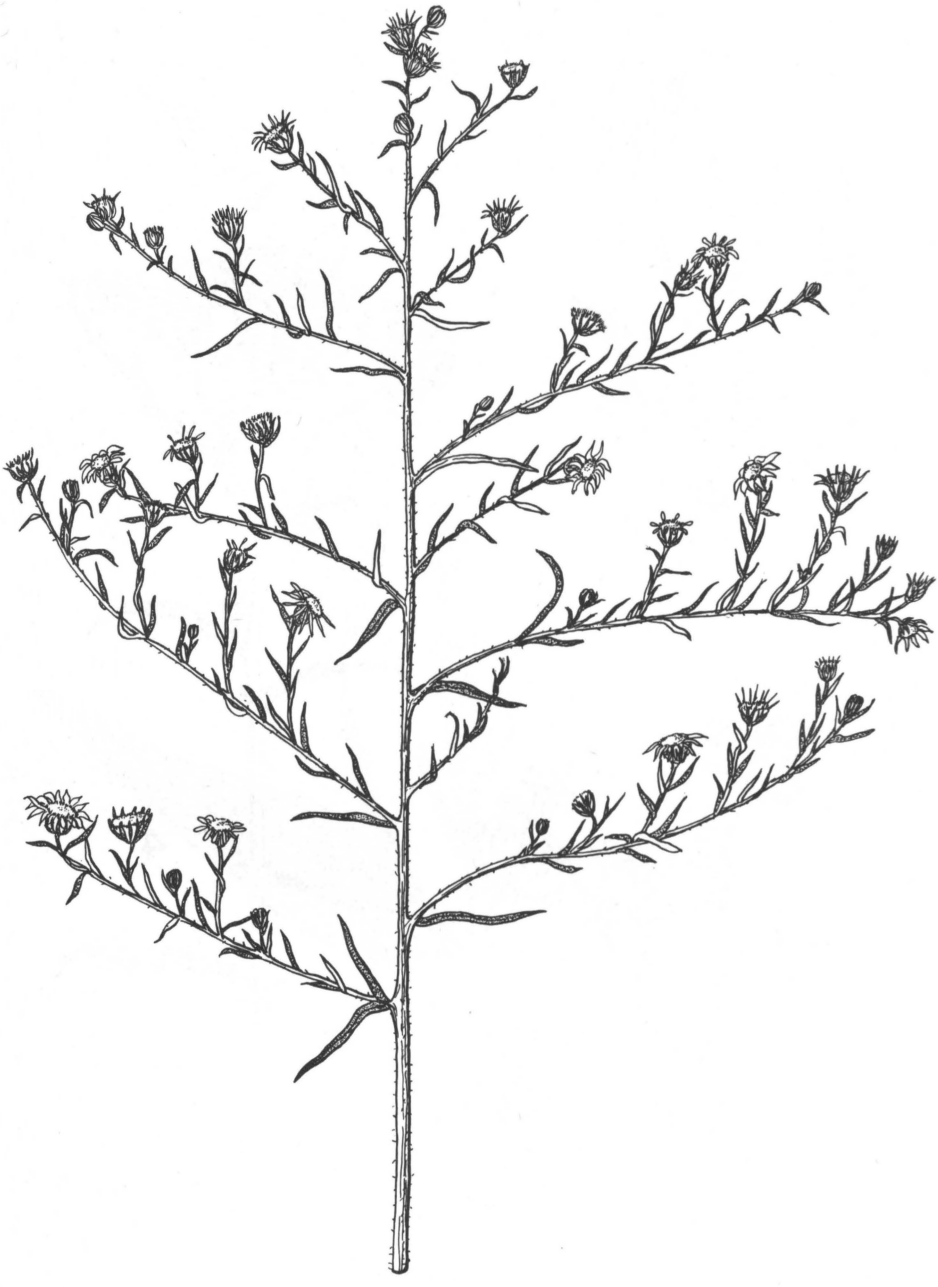


PLATE 123

Aster pilosus Inflorescence x1/2.

PLATE 124

Bidens bipinnata 1. Inflorescence fragment and leaf x2/3.
Chrysanthemum leucanthemum 2. Apex of plant x2/3.

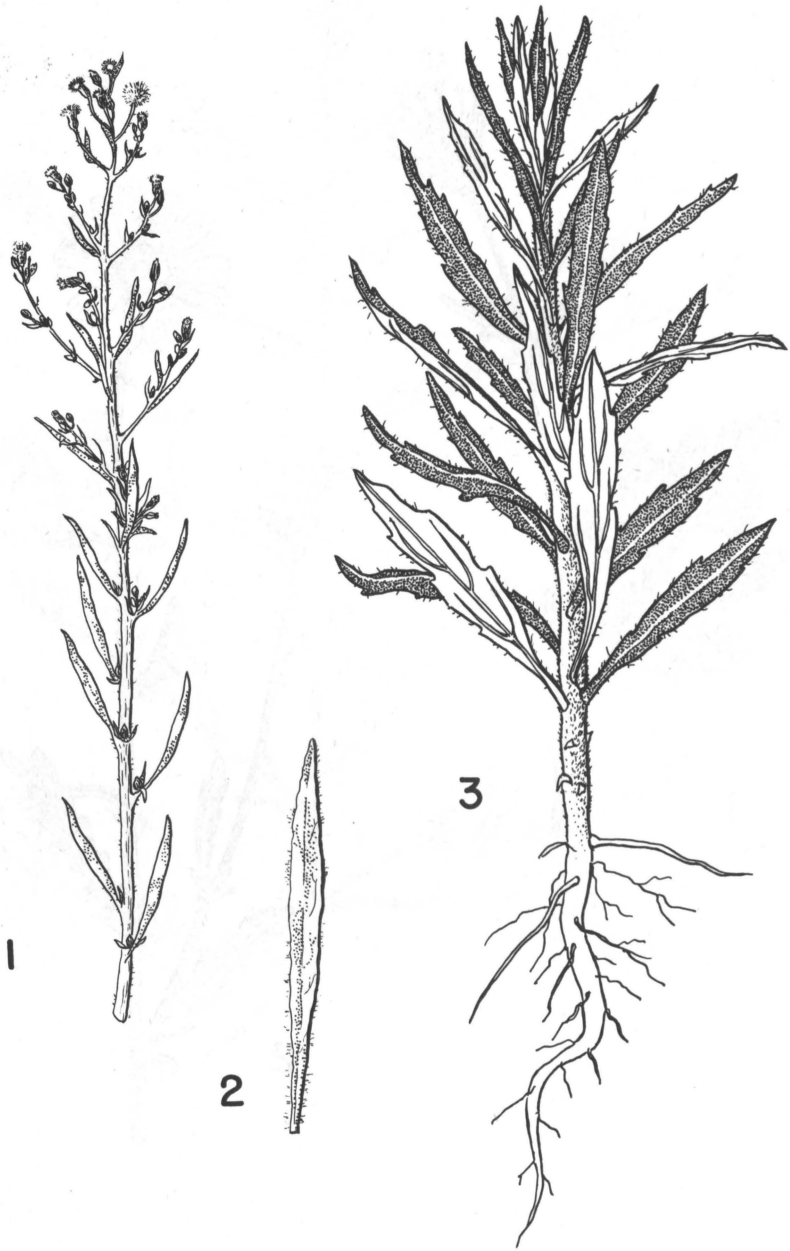


PLATE 125

Erigeron canadensis 1. Portion of inflorescence x2/3. 2. Basal leaf x2/3. 3. Young plant x2/3.

PLATE 126

Grindelia squarrosa 1. Habit x2/3.
Erigeron annuus 2. Basal leaf x2/3. 3. Portion of inflorescence x2/3.

PLATE 127

Helenium autumnale Habit x2/3.

PLATE 128

Helenium tenuifolium Habit x2/3.

PLATE 129

Solidago missouriensis 1. Habit x2/3.
Helianthus annuus 2. Head and leaves x1/4.