10. The Cruciferae, Mustard Family

LEAVES ALTERNATE. Flowers "cross-like" with 4 sepals, 4 petals, and 6 stamens. Fruit a silique, pod-like, or short and flattened, with two chambers separated by a central partition, bearing two to several seeds, usually dehiscent. Seeds various in shape, usually with a thin seed coat which is pitted or marked with a network of lines. Embryo variously folded. Endosperm not present.

The mustard family contains a great diversity of weeds over the entire United States. Many are winter or early spring annuals and are most conspicuous in the spring. The annual mustards *(Brassica)* and perennial peppergrass or whitetop *(Cardaria)* are the kinds most frequently considered noxious.

The majority of mustards possess fall or spring rosettes from which the leafy stem subsequently develops. Frequently the rosette and lower stem leaves are of different form than the later upper stem leaves. For instance, in *Sisymbrium altissimum* (tumble mustard), the lower leaves are pinnatifid or pinnately compound with coarse lobes; the upper leaves are pinnatifid with very fine divisions. The lower leaves of *Lepidium densiflorum* (common peppergrass) are pinnatifid or toothed; the upper ones are reduced, entire, or nearly so. In *Cardaria* (perennial peppergrass), *Thlaspi* (pennycress), *Lepidium campestre* (field peppergrass), *Neslia* (ball mustard), *Conringia* (hare's-ear-mustard), *Capsella* (shepherd's-purse), and *Camelina* (false flax), the rosette and lower stem leaves are petioled or narrowed at the base, while the middle and upper stem leaves are sessile with clasping basal lobes.

A host of well-known vegetable kinds are members of the mustard family, e.g. mustard, turnips, cabbage, cauliflower, Brussels sprouts. Some of them possess weedy forms and are not easily distinguished from related weeds. Such ornamentals as Alyssum, Iberis, and Stock are also of this group.

GENERA WITH YELLOW FLOWERS AND (USUALLY) ELONGATE, BEAN-POD-LIKE SILIQUES

Barbarea. Barbarea vulgaris, Yellow rocket, Winter cress. Perennial. p75
Plants with a conspicuous rosette of glossy leaves in fall and early

spring; blades pinnatifid with a large, rounded, terminal lobe. Stem leaves narrower, lobed or toothed. Flowers in dense racemes, yellow, but a richer or more orange tinge than mustards. Siliques elongate, crowded, usually ascending, tipped by a short beak. Seeds short-oblong, dull brown, narrowed and notched at one end. Spring. In eastern portion of range in grains and legumes; further west, primarily along roadsides and waste areas.

Brassica. Mustards. Plants annual or winter annual. Leaves not possessing rounded lobes. Flowers more of a lemon-yellow than *Barbarea*, less closely crowded. Pods with a long and distinctive beak.

Brassica kaber (Brassica arvensis), Wild mustard. Plants low and usually little branched, hairy. Siliques with short stalks
p76 which are nearly as thick as the pod proper, spreading in fruit. Seeds globular, smooth, black. Spring and early summer. Abundant in small grains and flax. Considered noxious in most states. The seeds are common in seed oats and flax.

Brassica juncea, Indian mustard. Plants sparsely hairy or glabrate. Siliques with slender pedicels which are much thin-
p77 ner than pod, spreading in fruit. Seeds subglobose, brownish, a little smaller than those of wild mustard, covered with a network of lines, red-brown in color. Early summer. Same areas as above but less common.

Brassica nigra, Black mustard. Plants hairy, frequently becoming tall and branched. Siliques short, upwardly directed,
p77 appressed against the stem. Seeds ellipsoidal or irregular in shape, covered with a very strong network of lines, red-brown in color. Fields, roadsides, and waste areas. Summer.

p78 *Camelina*, False flax. Leaves entire. Flowers yellow. Pods obovoid, somewhat flattened parallel to central partition. Three species, primarily in flax production areas.

p78 *Descurainia*, Tansy mustard, Flixweed. Two or three species with finely pinnatifid, fern-like leaves, yellow flowers, and oblong pods. Spring. Mostly roadsides and waste places, but also grassland and cultivated areas.

p79 *Conringia. Conringia orientalis*, Hare's-ear-mustard. Annual or winter annual. Leaves entire, mostly clasping. Flowers yellow. Siliques elongate, beakless. Rare except in northwestern portion of range. Spring.

p80 *Neslia. Neslia paniculata*, Ball mustard. Annual or winter annual. Stem leaves entire, clasping. Flowers yellow. Fruits ball-shaped, indehiscent, containing a single seed. Only locally common, grains and uncultivated land. Spring.

p78 *Raphanus. Raphanus raphanistrum*, Wild radish. Annual or winter annual. Pods elongate and beaked, constricted between the seeds, at maturity breaking into 1-seeded segments. Mostly northeastern, grains and waste areas.

Rorippa. Rorippa islandica, Marsh cress. Winter annual or biennial. p81
Leaves pinnatifid. Flowers yellow. Siliques pod-like, short. Seeds extremely small, about 0.5 mm. long. Low, poorly drained soils. Summer. Pods frequent in seed oats.

Sisymbrium. Leaves pinnatifid or lobed. Flowers yellow. Siliques pod-like, almost beakless.

Sisymbrium altissimum, Tumble mustard, Jim Hill mustard. Winter annual. Lower leaves coarsely pinnatifid; upper leaves divided into narrow thread-like segments. Pods long (exceeding 5 cm.) and narrow. Seeds about 1 mm. long, short-oblong, with a longitudinal furrow on each side, light brown, similar to those of shepherd's-purse. Fields and waste areas, usually poor soil. Spring and early summer. p82

Sisymbrium officinale, Hedge mustard. Winter annual or annual. Lower leaves pinnatifid; upper blades commonly with three narrow lobes. Siliques short, upwardly appressed against the flowering axis. Seeds 1.1-1.4 mm. long, often somewhat twisted, light yellow-brown to brownish-black, greasy in appearance. Pastures, legume seedings. Summer. p83

GENERA WITH WHITE FLOWERS AND SHORT SILIQUES

Berteroa. Berteroa incana, Hoary alyssum. Entire plant gray-hairy. p84
Leaves narrow, entire. Petals white, 2-lobed. Pods plump, ellipsoidal, beaked, hairy. Entire season. Most common in northern states. Grains, grassland, and waste ground.

Capsella. Capsella bursa-pastoris, Shepherd's-purse. Winter annual or annual. Leaves variously toothed or pinnatifid. Flowers white. Siliques short, flattened, triangular in shape. Seeds small, about 1 mm. long, p84
oblong, light brown, with a longitudinal furrow on each side. Cultivated ground, lawns, waste areas. Early spring, often very abundant.

Cardaria. Cardaria draba (Lepidium draba), Perennial peppergrass, Whitetop, Hoary cress. Perennial from creeping roots. Plants closely p85
hairy. Flowers white, in dense racemes. Siliques short, heart-shaped, inflated, a distinct beak present at the apex, one seed in each chamber. Seeds about 2 mm. long, ellipsoidal, somewhat flattened, and not as thick as wide, narrowed towards one end; surface finely granular, red-brown in color; immature seeds occasionally drying brownish-black. Plants and the seeds of perennial peppergrass are sometimes confused with those of field peppergrass *(Lepidium campestre)*; note distinguishing silique and seed characters.

A weed of arid regions, of common occurrence only in western portion of our range, but declared primary noxious or prohibited in nearly all states. Where adapted, it will grow in almost any agricultural situation.

Perennial peppergrass grows actively in the spring and early

summer. Following flowering it goes into a partial dormancy during the hot, dry portion of the season. In the fall it resumes growth, sending up new rosettes. Other closely related species and forms occur in the mountains and Pacific States.

Lepidium, Peppergrass. Plants winter annual or annual. Flowers white (with petals) or greenish (petals lacking). Siliques short, elliptic in outline, notched at the apex without a beak, flat or inflated; internal partition placed at right angles to the plane of flattening, each chamber with one seed.

Lepidium densiflorum, Peppergrass, Green-flowered peppergrass. Basal leaves deeply pinnatifid. Petals absent, flowers greenish. Siliques flat. Seeds 1.5-1.8 mm. long, obovate, flattened, narrowly winged, orange-brown in color. Fields, waste areas, and legume seedings. Early summer. Seeds found in red clover.
p86

Lepidium virginicum, Peppergrass. Similar to above but with conspicuous white petals. This species, common in the eastern United States, is frequently reported as a weed in the North Central States. However, most infestations seen are *Lepidium densiflorum*.
p86

Lepidium campestre, Field peppergrass. Plants densely hairy. Leaves toothed, or the lower lobed. Siliques inflated on one side, nearly flat on the other. Seeds 2.0-2.2 mm. long, obovoid (teardrop-shaped), brownish-black, nearly as thick as wide, rough-granular under magnification. Common, fields, roadsides, most common in central and eastern part of range. Spring.
p87

Thlaspi. Thlaspi arvense, Pennycress, Fanweed, Frenchweed. Winter annual. Plants glabrous. Flowers white. Siliques flattened, similar in appearance to those of common peppergrass but much larger, two or more seeds in each chamber. Seeds 1.7-1.9 mm. long, flattened, dark, the surface marked by very strong, curved ridges. Roadsides, small grains, waste areas. Spring. Less common to south and east.
p87

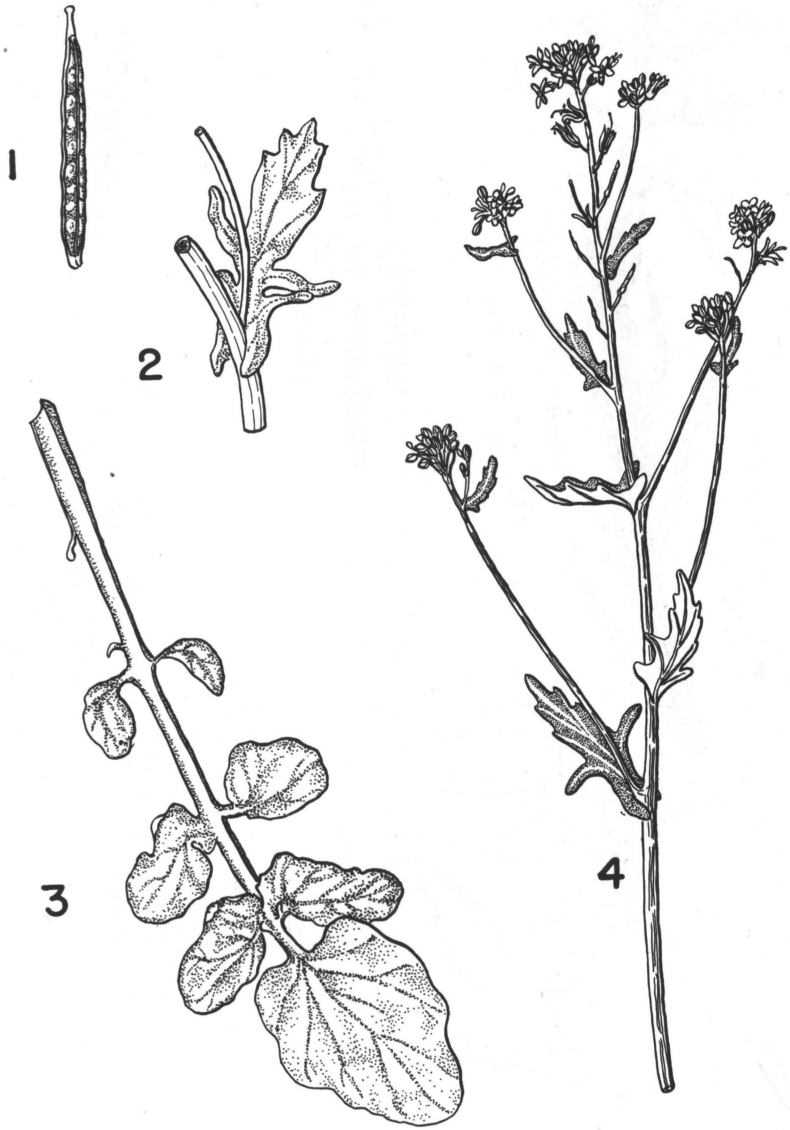

PLATE 29

Barbarea vulgaris 1. Mature silique x1 1/3. 2. Stem leaf x2/3. 3. Basal leaf x2/3. 4. Inflorescence x2/3.

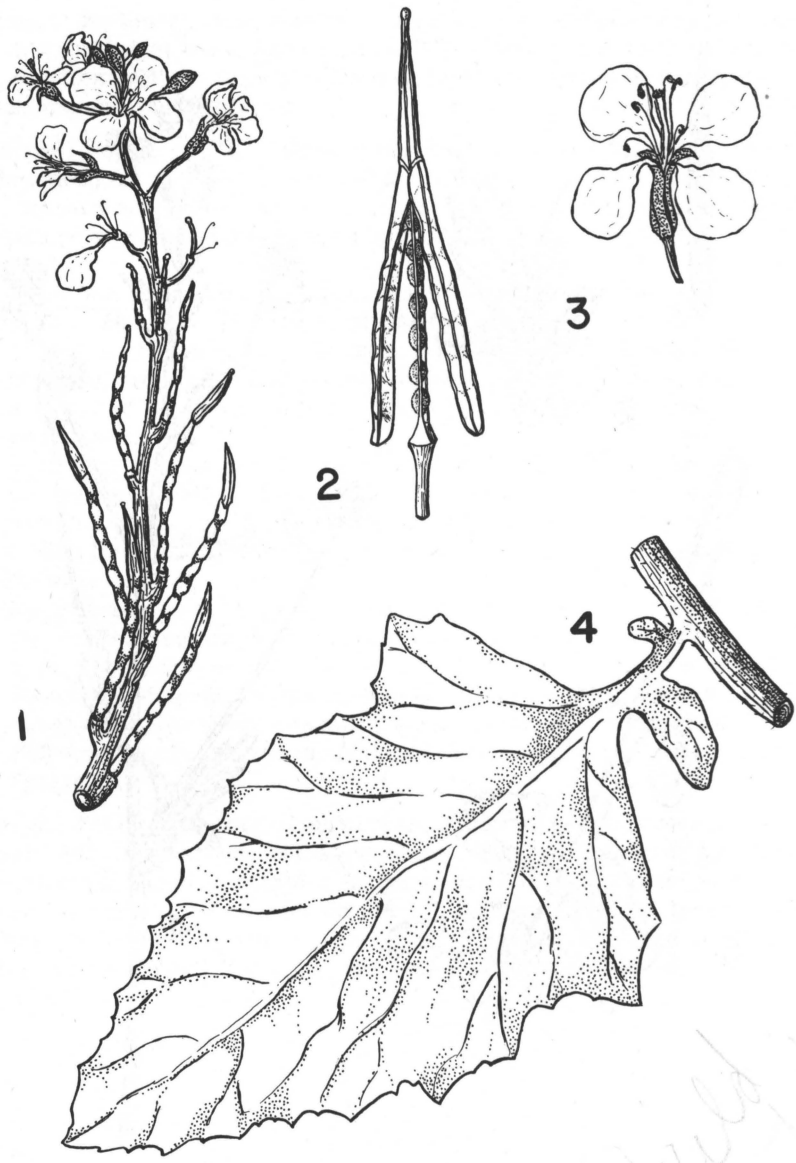

PLATE 30

Brassica kaber 1. Inflorescence x2/3. 2. Silique, valves partially separated, and seeds x1 1/3. 3. Flower x1 2/3. 4. Basal leaf x2/3.

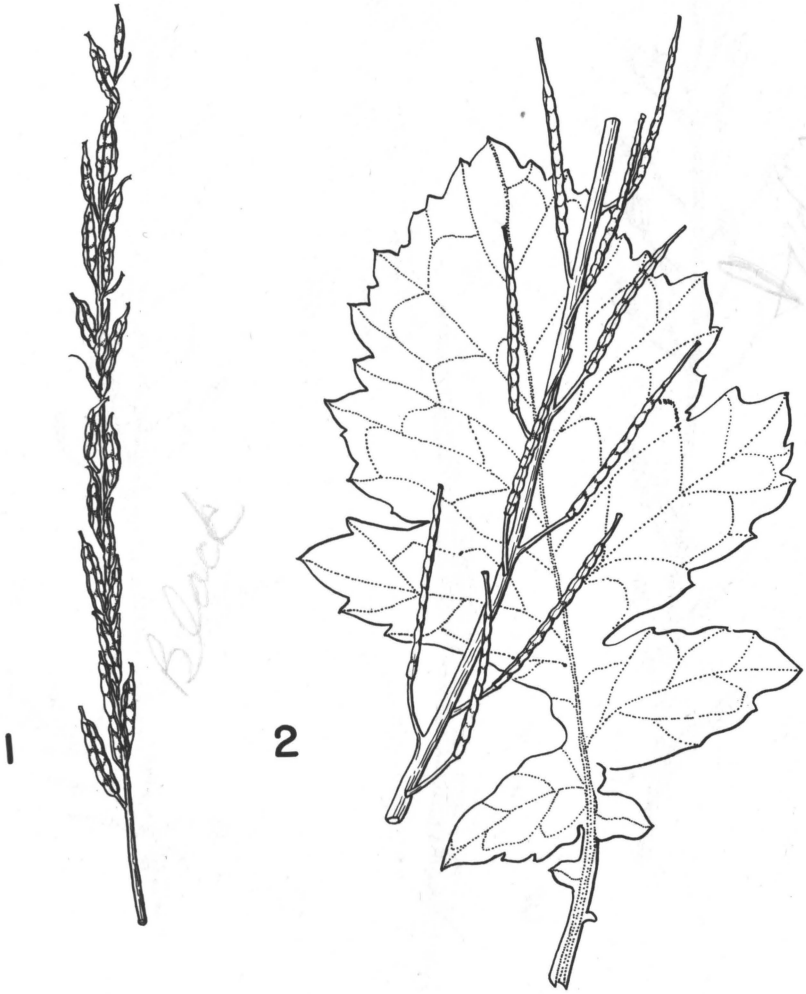

PLATE 31

Brassica nigra 1. Mature inflorescence x2/3.
Brassica juncea 2. Siliques and basal leaf x2/3.

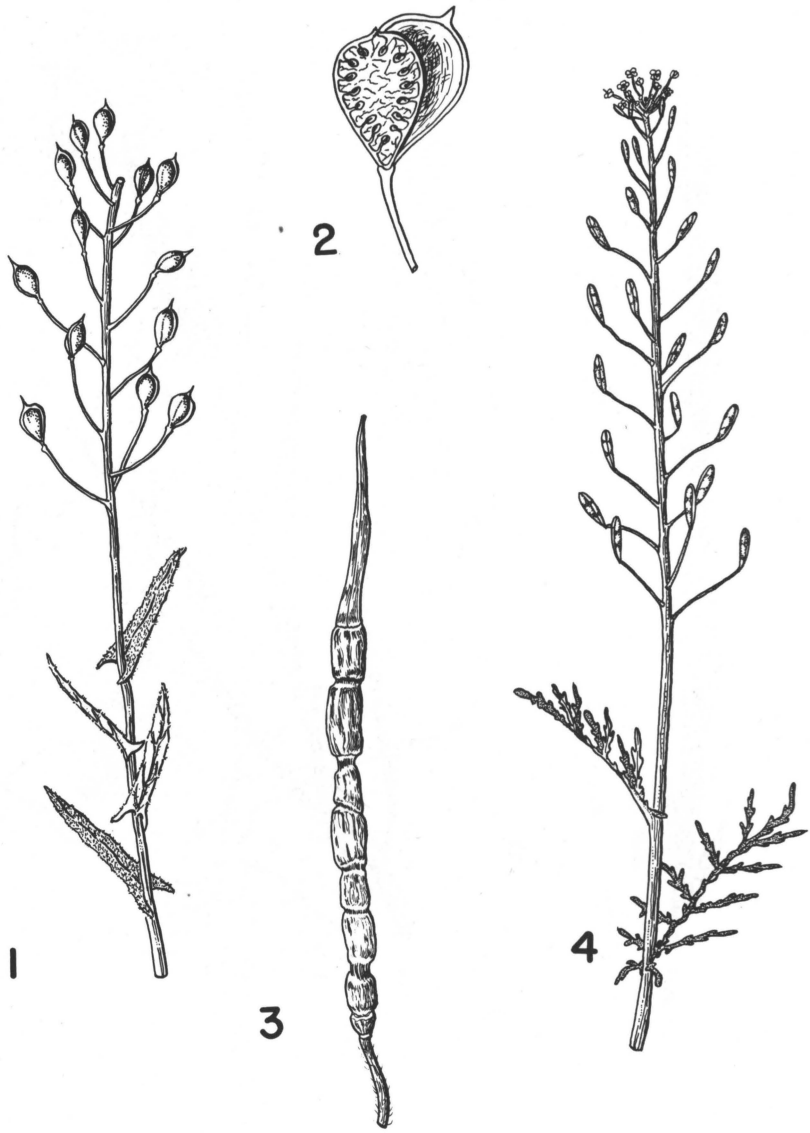

PLATE 32

Camelina microcarpa 1. Inflorescence x2/3. 2. Mature silique, seed bearing partition and one valve x4.
Raphanus raphanistrum 3. Silique x1 1/3.
Descurainia pinnata 4. Inflorescence x2/3.

PLATE 33

Conringia orientalis Habit x1/2.

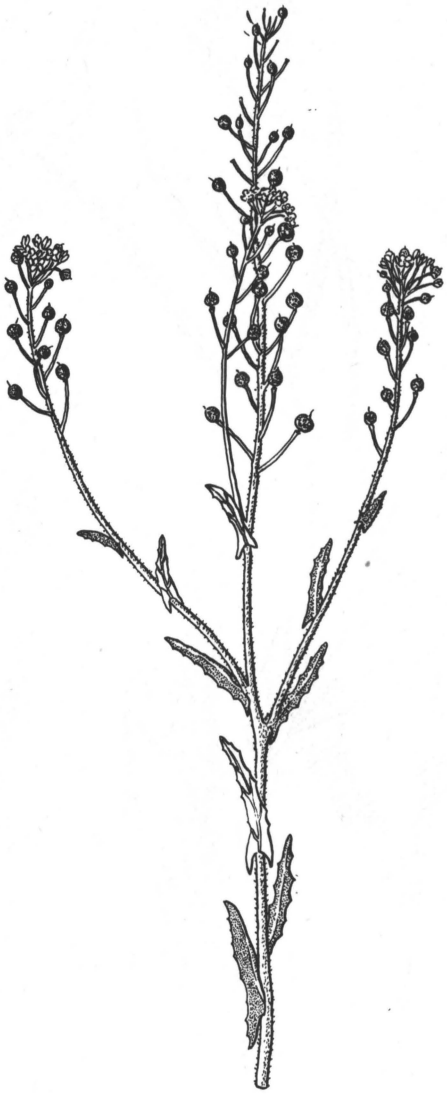

PLATE 34

Neslia paniculata Habit x2/3.

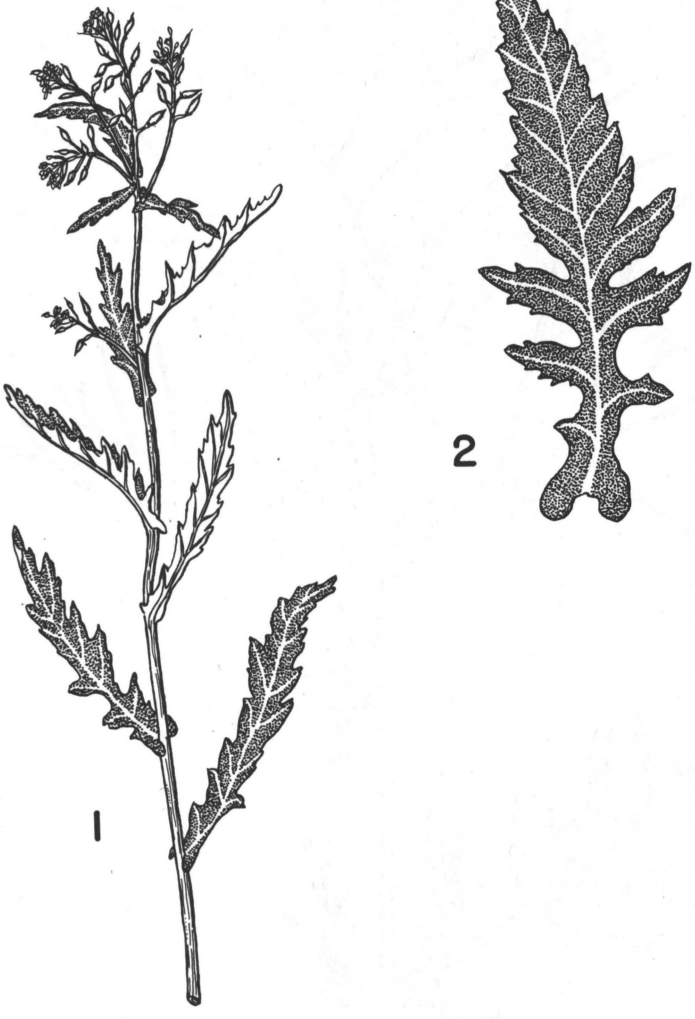

PLATE 35

Rorippa islandica 1. Apex of plant x2/3. 2. Basal leaf x2/3.

PLATE 36

Sisymbrium altissimum 1. Inflorescence x1/4. 2. Basal leaf x1/2.

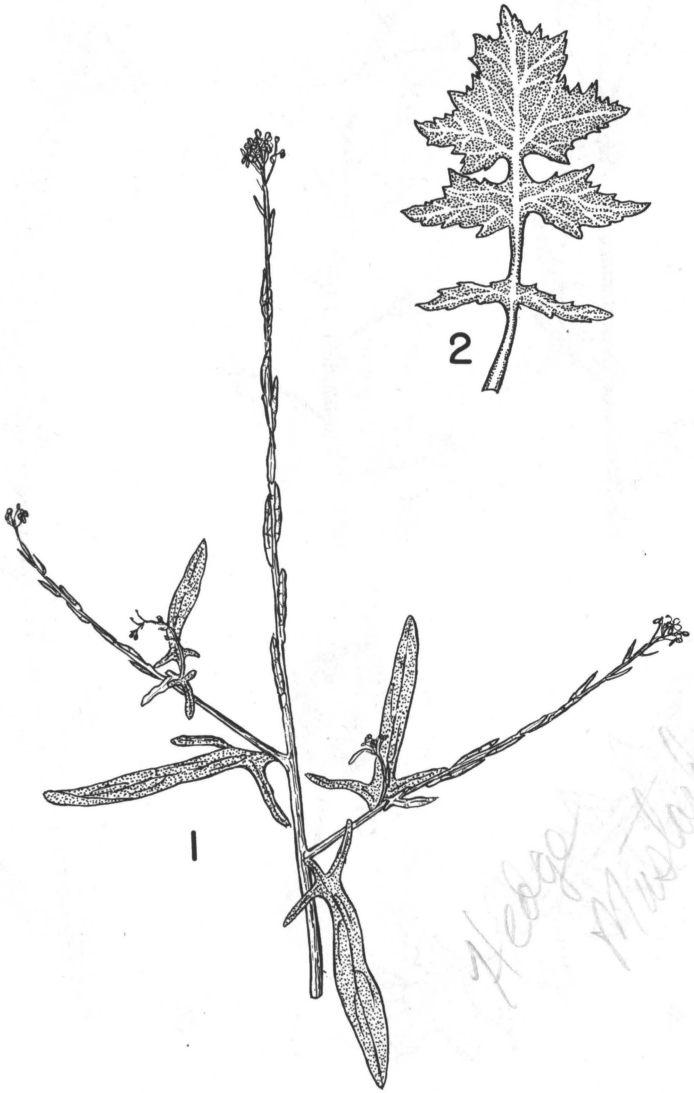

PLATE 37

Sisymbrium officinale 1. Inflorescence and upper leaves x2/3. 2. Basal leaf x2/3.

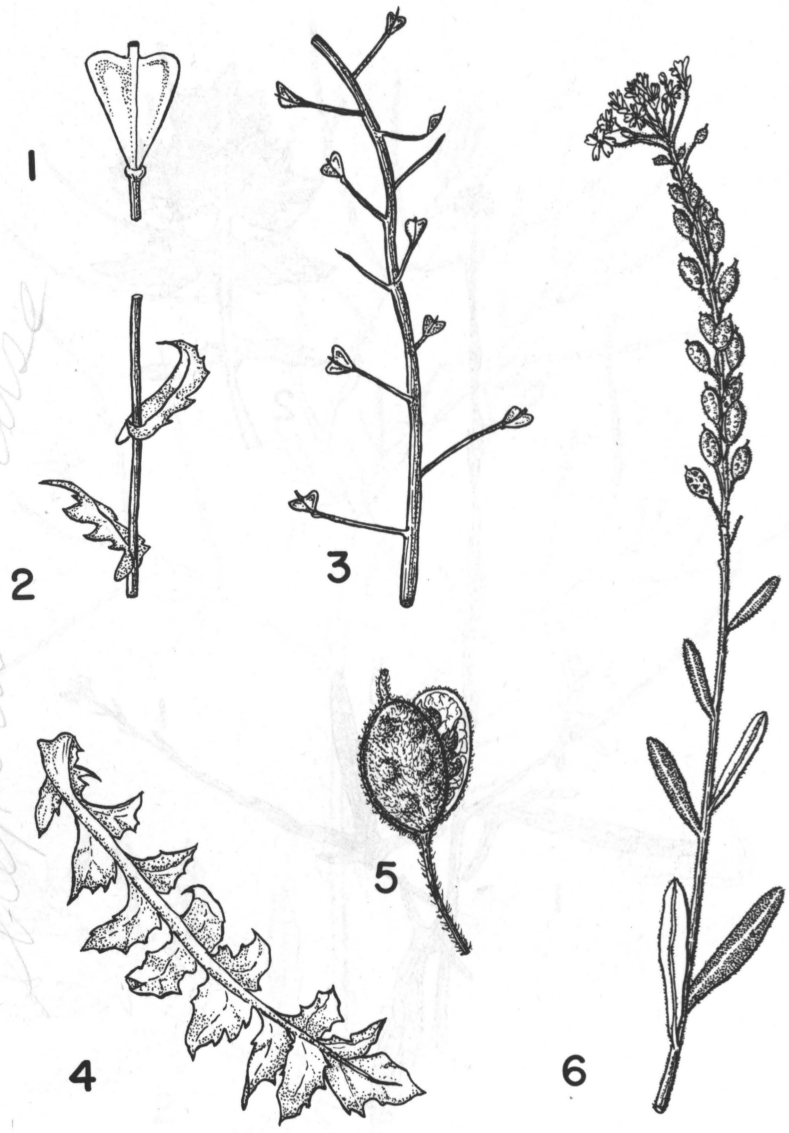

PLATE 38

Capsella bursa-pastoris 1. Silique x3. 2. Stem leaves x2/3. 3. Inflorescence x2/3. 4. Basal leaf x2/3.
Berteroa incana 5. Silique, one valve and seed-bearing partition x3. 6. Habit x2/3

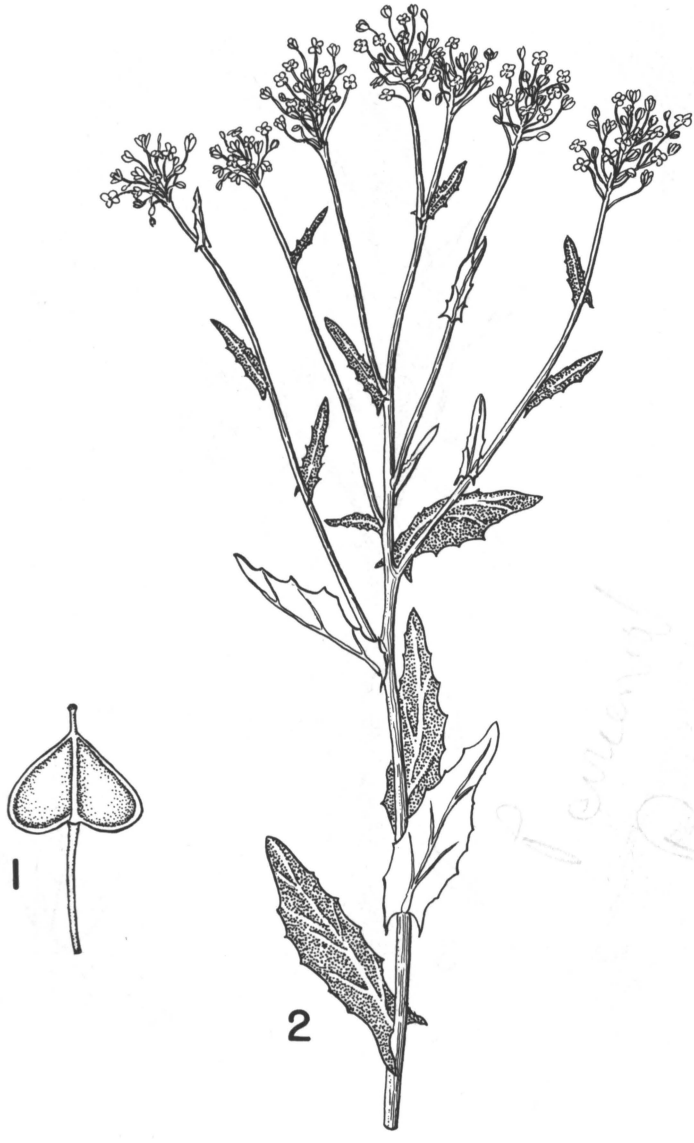

PLATE 39

Cardaria draba 1. Silique x3. 2. Habit x2/3.

PLATE 40

Lepidium virginicum 1. Flower x6.
Lepidium densiflorum 2. Basal leaf x2/3. 3. Habit x2/3. 4. Mature pod and seeds semi-diagrammatic x7.

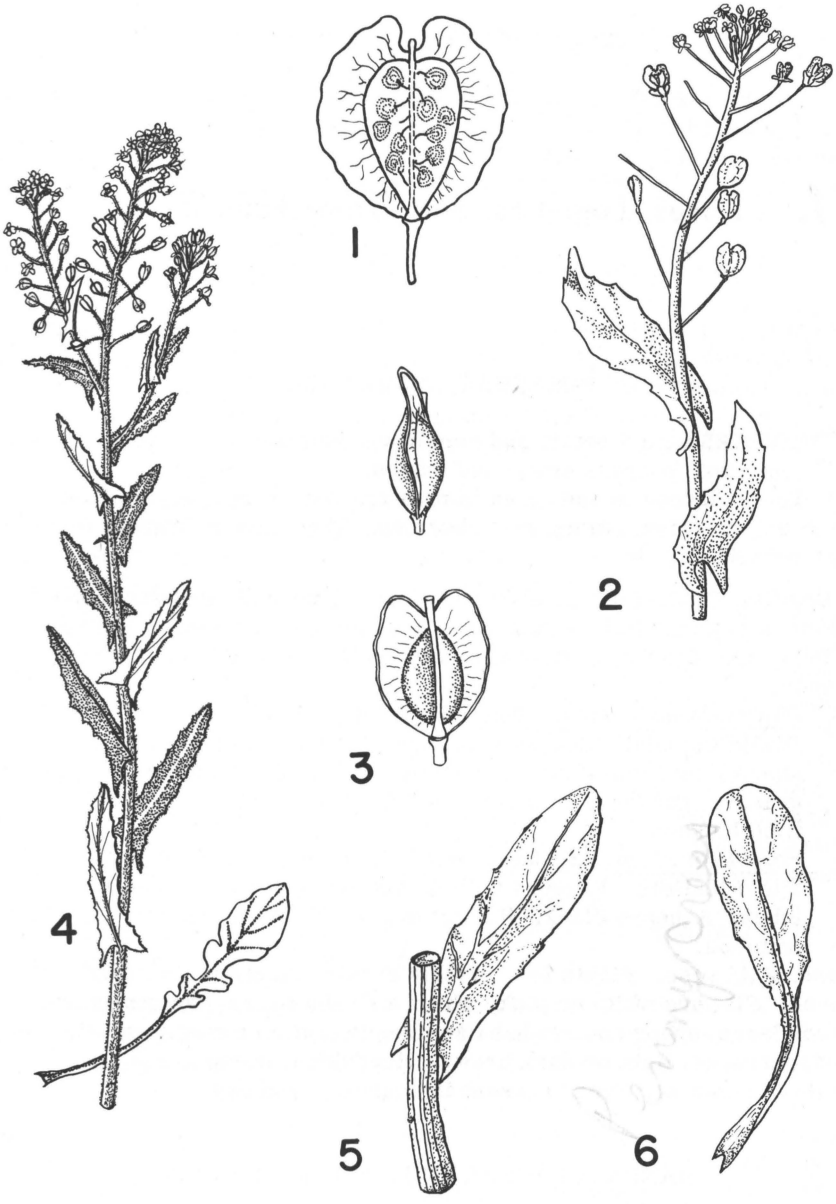

PLATE 41

Thlaspi arvense 1. Silique, semi-diagrammatic x2. 2. Inflorescence x2. 5. Middle stem leaf x2/3. 6. Basal leaf x2/3.

Lepidium campestre 3. Front and side view of pod x4. 4. Habit and basal leaf x2/3.