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*** START OF THE PROJECT GUTENBERG EBOOK SEEDS OF MICHIGAN WEEDS ***

BULLETIN 260

MARCH, 1910

MICHIGAN
STATE AGRICULTURAL COLLEGE
EXPERIMENT STATION

DIVISION OF BOTANY

SEEDS OF MICHIGAN WEEDS

BY
W. J. BEAL

EAST LANSING, MICHIGAN
1910

The Bulletins of this Station are sent free to all newspapers in the State and to such individuals interested in farming as may request them. Address all applications to the Director, East Lansing, Michigan.

MICHIGAN AGRICULTURAL EXPERIMENT STATION

Postoffice and Telegraph address,
Railroad and Express address,

East Lansing, Mich.
Lansing, Mich.

A DEPARTMENT OF THE STATE AGRICULTURAL COLLEGE, AND, WITH IT, CONTROLLED
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SUB-STATIONS.

Chatham, Alger County, 160 acres deeded—Leo M. Geismar in charge.
Grayling, Crawford County, 80 acres deeded.
South Haven, Van Buren County, 10 acres rented; 5 acres deeded—Frank A. Wilkin in charge.

by Mr. F. H. Hillman. A hand lens costing from twenty cents to a dollar is almost indispensable in examining our seeds. The brief descriptions are necessarily made by using definite scientific terms, which are explained in a glossary at the close of the work. A few weeds are not illustrated, for the reason that the plants have ceased to produce seeds, such as the horse radish, and some of them are not conspicuously bad. Not far from half the illustrations are made from small seed-like fruits, likely to be mistaken for seeds, such as are produced by dandelions, burdocks, narrow-leaved dock, all grasses. Cuts of seeds of several clovers are inserted that students may learn to distinguish them from weeds too often mixed with them.

No apology is offered for making use of the decimal scale instead of the cumbersome antiquated English scale, which fortunately is gradually growing out of use. In the back part of the bulletin are duplicate copies of the decimal scale that any one can cut out and use for measuring.

For copies of the following figures some time ago prepared by Mr. Hillman, we are indebted to the authorities of the Agricultural College, of Reno, Nevada: 7, 11, 12, 16, 17, 23, 24, 31, 32, 34, 35, 36, 37, 39, 40, 41, 42, 44, 46, 55, 56, 58, 63, 68, 69, 71, 74, 75, 84, 86, 87, 91, 92, 95, 97, 98, 99, 108, 110, 116, 125, 130, 135, 138, 140, 144, 146, 152, 153, 158, 159, 172, 173, 174, 175, 178, 179, 181, 182, 185, 187, 189, 190, 191, 199, 203, 205, 212, 214, 215.

"A weed is any useless or troublesome plant."

"A plant out of place or growing where it is not wanted."

"Tobacco."

"A plant whose virtues have not yet been discovered."—Emerson.

Weeds everywhere; they thrive in the cornfield, they choke wheat in the field, they annoy the gardner, they thrive in the meadow, they spring up by the roadside, they encroach on the swamp, they damage the fleeces of sheep. The rapid increase in the number and variety of weeds should cause alarm.

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DISADVANTAGES OF WEEDS.

1. They rob cultivated plants of nutriment.
2. They injure crops by crowding and shading.
3. They retard the work of harvesting grain by increasing the draft and by extra wear of machinery. (Bindweed, thistles, red root.)
4. They retard the drying of grain and hay.
5. They increase the labor of threshing, and make cleaning of seed difficult.
6. They damage the quality of flour, sometimes making it nearly worthless. (*Allium vineale* L.)
7. Most of them are of little value as food for domestic animals.
8. Some weeds injure stock by means of barbed awns. (Squirrel tail grass, wild oats, porcupine grass.)
9. Some of them injure wool and disfigure the tails of cattle, the manes and tails of horses. (Burdock, cocklebur, houndstongue.)
10. A few make "Hair balls" in the stomachs of horses. (Rabbit-foot clover, crimson clover.)
11. Some injure the quality of dairy products. (Leeks, wild onions.)
12. Penny cress, and probably others, when eaten by animals, injure the taste of meat.
13. Poison hemlock, spotted cowbane and Jamestown weed are very poisonous.
14. Many weeds interfere with a rotation of crops.
15. All weeds damage the appearance of a farm and render it less valuable. (Quack-grass, Canada thistle, plantains.)

SOME SMALL BENEFITS.

1. They are of some use in the world to induce more frequent and more thorough cultivation, which benefits crops.
2. The new arrival of a weed of first rank stimulates watchfulness. (Russian thistle.)

3. In occupying the soil after a crop has been removed they prevent the loss of fertility by shading the ground.

4. Weeds plowed under add some humus and fertility to the soil, though in a very much less degree than clover or cow peas.

5. Some of them furnish food for birds in winter.

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WHAT ENABLES A PLANT TO BECOME A WEED.

1. Sometimes by producing an enormous number of weeds. (A large plant of purslane, 1,250,000 seeds; a patch of daisy fleabane, 3,000 to a square inch.)

2. In other cases by the great vitality of their seeds. Shepherd's purse, mustard, purslane, pigeon-grass, pigweeds, pepper-grass, May weed, evening primrose, smart weed, narrow-leaved dock, two chick-weeds survive when buried in the soil thirty years at least, as I have found by actual test.

3. In each prickly fruit of a cocklebur there are two seeds, only one of which grows the first year, the other surviving to grow the second year.

4. Some are very succulent, and ripen seeds even when pulled. (Purslane.)

5. Often by ripening and scattering seeds before the cultivated crop is mature. (Red root, fleabane.)

6. Sometimes by ripening seeds at the time of harvesting a crop, when all are harvested together. (Chess, cockle.)

7. Some seeds are difficult to separate from seeds of the crop cultivated. (Sorrel, mustard, narrow-leaved plantain in seeds of red clover and alfalfa.)

8. Some are very small and escape notice. (Mullein, fleabane.)

9. Some plants go to seed long before suspected, as no showy flowers announce the time of bloom. (Pigweeds.)

10. In a few cases the plants break loose from the soil when mature and become tumble-weeds. (Some pigweeds, Russian thistle.)

11. Some seeds and seed-like fruits are furnished each with a balloon, or a sail, or with grappling hooks. (Dandelion, sticktight, burdock.)

12. Some remain with the dead plant long into winter, and when torn off by the wind or by birds, drift for long distances on the snow, often from one farm to another. (Pigweeds.)

13. Some have creeping root-stocks or tubers. (Quack-grass, nut-grass.)

14. Some defend themselves with forks and bayonets. (Thistles.)

15. Most of them are disagreeable in taste or odor, so that domestic animals leave them to occupy the ground and multiply. (Jamestown weed, stink grass, milk weed.)

16. Plants with stout roots are sometimes passed over by the harrow or cultivator.

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HOW ARE WEEDS INTRODUCED AND HOW ARE THEY SPREAD?

1. By live stock, carried in the hair or fleece or carried by the feet; in some instances passing alive with the excrement.

2. By unground feed-stuff purchased.

3. By adhering to the insides of sacks where they were placed with grain.

4. In barnyard manure drawn from town.

5. In the packing of trees, crockery, baled hay and straw.

6. By wagons, sleighs, threshing machines.

7. Sometimes by plows, cultivators and harrows.

8. By railway trains passing through or near a farm.

9. By ballast of boats at wharves.

10. By wool-waste at factories.
11. By birds, squirrels, and mice.
12. By water of brooks, rivers, by washing rains and by irrigating ditches.
13. By the wind aided by little wings or down, or by drifting on the snow.
14. By dropping seeds to the ground from extending branches and repeating the process.
15. By creeping root-stocks, as June grass, quack-grass and toad-flax.
16. By piercing potatoes, carrots, etc., quack-grass, June grass, Bermuda grass are sometimes carried to other fields or farms where the tubers and roots are planted.

17. A farmer buys clover seeds or grass seeds that were grown in some state that never before grew seeds that went onto his farm and thus he may get some new weeds. Seeds of alfalfa or some other crop bring new kinds of weeds, especially those of dodder. As every kind of weed goes onto a farm to stay there it follows that as a country becomes older the greater the number of kinds of weeds. As a rule each farm is annually getting more sorts of weeds, and as each farmer is cultivating weeds, they are more freely distributed in every field and along every roadside and by exchanging they are carried to neighboring and distant farms.

A great many farmers buy and sow whatever the merchant offers them under the name mentioned. For example, the college has a sample of something called clover seed, sold by a dealer in this state. It contains about 40 per cent of narrow-leaved plantain.

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WHERE CERTAIN WEEDS ARE TROUBLESOME.

To begin with, years and years ago no new farm in the wilderness of Michigan contained more than twenty to thirty-five kinds of weeds, as there were not more than thirty-five sorts in the entire state, while at present there are not far from 250 kinds. A large majority of weeds hail from older countries, more especially from Europe.

There are a few weeds, like Canada thistle and quack-grass, that may infest any crop of farm or garden, but in most cases, whether to call a weed very bad depends on the nature of the crop grown, the size of the weed-seeds and their time of ripening.

Some weeds have a very wide distribution, thriving all around the world in temperate climates, while others are more limited in range; some thrive only in dry, thin, sandy soil and others in wet soils. To some extent the presence of a few weed-seeds is almost as objectionable when once on the farm, as though there were more, because these few may thrive and seed freely.

In many respects the lists of weeds for New Jersey is different from the list in Michigan, while half the weeds of Nevada or Oregon are not known in our state.

Chess, cockle, red root and rye are liable to be troublesome in fields of winter wheat, because the seeds are more or less difficult to separate from this grain and for the reason that they require a portion of two years to come to maturity.

Meadows and pastures, especially where the land is not fertile, abound in weeds that require two years or more to produce seeds, such as narrow-leaved dock, bitter dock, bull thistle, carrot, teasel, two kinds of mulleins, night-flowering catchfly, evening primrose, several kinds of fleabane, ox-eye daisy, orange hawkweed, two or three kinds of plantain, Canada thistle, hound's tongue, stick seed, sow thistle, horse nettle, buttercups, toad flax, silvery cinquefoil, and many more, not excluding some annuals, like crab-grass, tickle grass, pigeon grasses. As crops of corn, potatoes, beans, turnips, beets and squashes are ready to harvest at the close of one growing season they are molested more or less by pigeon grasses, several pigweeds, purslane, crab-grass, barnyard grass, tickle grass and a number of others.

In 1897 some seventy-five lots of timothy seeds were examined and the following list of twenty-four species of weeds were found. Doubtless other weeds may still be found in other lots of timothy seed. No sample was entirely free from weeds. Pepper grass was most common, next followed tumble weed and then shepherd's purse:

- Amaranthus graecizans, Tumble weed.
- Amaranthus retroflexus, Rough pigweed.
- Anthemis Cotula, May weed.
- Brassica arvensis, Charlock. Brassica nigra, Black mustard.
- Bursa Bursa-pastoris, Shepherd's purse.
- Carduus arvensis, Canada thistle.
- Carex straminea. A kind of sedge.
- Chenopodium album, Pigweed.
- Chenopodium filicifolium, Another kind of pigweed.
- Lactuca Canadensis, Wild Lettuce.
- Lepidium Virginicum, Wild Pepper-grass.

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Onagra biennis, Evening primrose.
Panicum capillare, Hair grass, tickle grass.
Plantago lanceolata, Narrow-leaved plantain.
Plantago Rugelii, Rugel's Plantain, one of the broad-leaved plantains.
Poa compressa, Flat-stemmed poa, wire grass.
Potentilla Monspeliensis, Rough cinquefoil.
Prunella vulgaris, Self-heal.
Rumex Acetocella, Field or sheep sorrel.
Sisymbrium officinale, Hedge mustard.
Verbena angustifolia, Narrow-leaved vervain.
Verbena hastata, Blue vervain.
Verbena urticifolia, White vervain.

In examining some 130 lots of clover seeds as found in the market during 1897, thirty-two kinds of weed seeds were found. Sheep sorrel was most common, next to this yellow or bitter dock and green foxtail. Only three samples of clover seed was free from weeds, but possibly some weeds might have been seen if larger quantities had been looked over.

During the year 1908, eleven years later, 47 kinds of weed seeds were found in 122 lots of seed of red clover, a gain of nearly 50 per cent.

During three months from January 1, 1910, in examining 450 lots of seeds of grasses, clovers and alfalfas, besides large numbers of common weeds that we know, were 74 kinds not known to the writer. Of these 74 kinds, probably some will never become weeds of any account. Some of these came with alfalfa from Montana and some were importations from Europe and elsewhere.

Parasitic fungi rank as weeds; such as rusts and smuts of wheat, oats, corn; apple scab, black knot of plum, brown rot of cherry, anthracnose of beans.

SOME MEANS FOR PREVENTING THE INTRODUCTION OF WEEDS AND A FEW RULES FOR THEIR EXTERMINATION.

1. The right kind of a man, who will carefully observe and study the kinds of weeds and their habits, fighting each to the best advantage, i. e. with method.

2. See that all seeds purchased or grown at home for seed are free from seeds of weeds. Although often heard, these words are too little heeded.

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3. See that threshing machines, hay racks, grain bags from other farms are well cleaned before used on the farm.

4. Cook or grind screenings and burn chaff when certain weeds are suspected.

5. Send seeds to the Agricultural College, East Lansing, for identification, unless they are known to be harmless.

6. Strive to prevent weeds from ripening seeds. This is especially important late in the season in case of all pigweeds, purslane and others where the flowers are very small and are liable to be overlooked and the seeds ripen before their presence is suspected.

7. For meadow or pasture make the soil very fertile, as most weeds will then be killed or crowded by the better grass and become of little account.

8. Modify the rotation of crops with reference to killing the weeds.

9. Make a specialty of hoed or cultivated crops.

10. Make soiling crops a prominent feature in certain fields.

11. Smother weeds with quick growing and thickly seeded crops, like red clover or rye or buckwheat.

12. Keep some crops growing on the land from early spring till late autumn,—double cropping, i. e., two cultivated crops in one year for barn and cellar instead of one for use and one of weeds.

13. Cultivate thoroughly after a crop is removed.

14. Clean up and avoid leaving any vacant or out of the way places for breeding ground.

15. Where practicable, remove fences and cultivate to the gutters of the highway.

16. Keep some sheep.

17. When once begun, continue the work thoroughly from year to year, giving no quarter to weeds. This is the easiest in the long run and the royal way.

18. Where hand labor is employed, it is far less expensive and much easier to keep weeds down by raking or hoeing once a week than by going over the ground much less frequently.

The habits of a weed determine to a great extent the best mode of fighting it. Certain remedies suggest themselves for creeping perennials, like quack grass and toad flax, while different treatment is best for narrow-leaved dock; and still a different mode of attack may be adopted for crab grass and purslane.

Weeds are annuals, as pigweeds, crab grass, purslane; biennials as bull thistle and mulleins; perennials, like quack grass, Canada thistle, ox-eye Daisy.

Will it pay? The annual cost of successfully fighting a weedy farm of 100 acres in Ontario has been found to be about \$75. Good cultivation in the long run pays a greater profit than slipshod culture. It not only kills the weeds, but keeps the soil in condition for securing good crops. It conserves moisture.

Perennial plants cannot gain any if the green leaves are not allowed to appear. The nourishment stored in the root stocks underground will aid the plant to send up slender leaves and if these remain, the plants gain and recruit, but if the leaves start underground and are cut off before coming to the light, these root stocks are drawn on again to furnish food to start more leaves and thus, in time become exhausted.

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SEEDS OF MICHIGAN WEEDS.

ASCOMYCETES.

Ergot. *Claviceps purpurea*. This is a poisonous fungus, not a seed, mentioned here because it is frequently found as an outgrowth of the grain of many grasses, such as rye, timothy, red top. To mature spores, it must pass to another stage requiring six months or more.

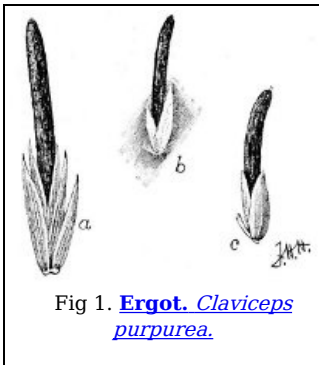


Fig 1. [Ergot. *Claviceps purpurea*](#).

GRASS FAMILY. GRAMINEAE.

Quack-Grass. Couch-Grass. *Agropyron repens* (L.) Beauv. Florets about 1 cm. long, 5-nerved at the short-awned apex; grain seldom produced and still less frequently found apart from the floral glume and palea, linear, about 4 mm. long, base abruptly acute, apex rounded, rounded on the back or outside, inside concave. Our worst weed. Introduced from Europe.

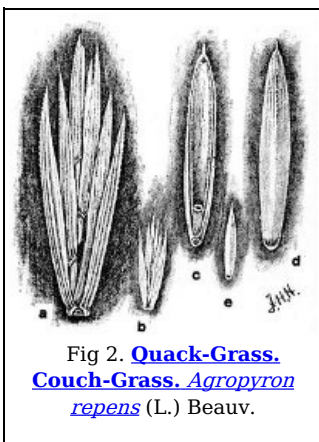


Fig 2. [Quack-Grass. Couch-Grass. *Agropyron repens* \(L.\) Beauv.](#)

Wild Oat. *Avena fatua* L. Freed from chaff the floral glume is firm, rough, brown, thinly hairy, about 15 mm. long, awn from near the middle 2-4 cm. long with several firm twists, abruptly bent near the middle, the true grain seldom separated from the firmer floral glume. A bad weed in Oregon and California, seldom seen in Michigan.

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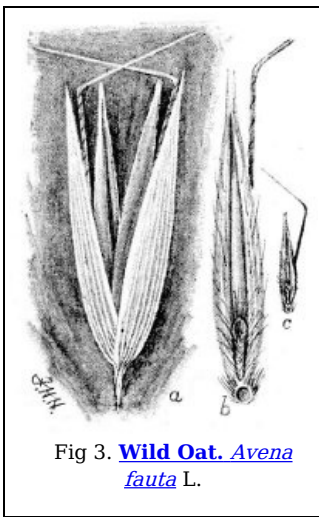


Fig 3. **Wild Oat.** *Avena fava* L.

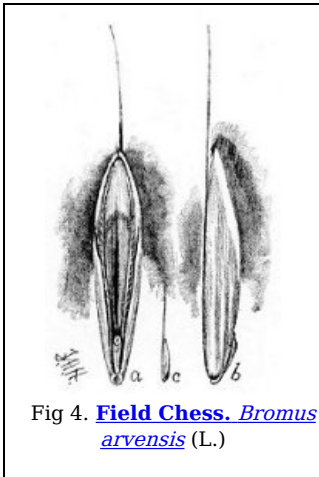


Fig 4. **Field Chess.** *Bromus arvensis* (L.)

Field Chess. *Bromus arvensis* (L.) Not often seen in this country; floral glume 6-7 mm. long bearing an awn rather longer; grain much like that of *B. secalinus* which see. Introduced from Europe.

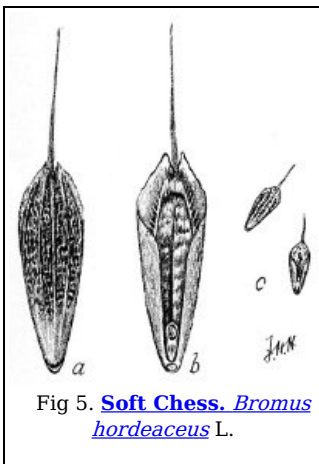


Fig 5. **Soft Chess.** *Bromus hordeaceus* L.

Soft Chess. *Bromus hordeaceus* L. (*Bromus mollis*). Floral glume extending beyond the grain, 5-7 nerved, 6-9 mm. long, grain rounded on the back, shape of a shallow boat, 6.5 mm. long, palea thin with comb-like teeth on the margins. Waste places, thin meadows. Introduced from Europe.

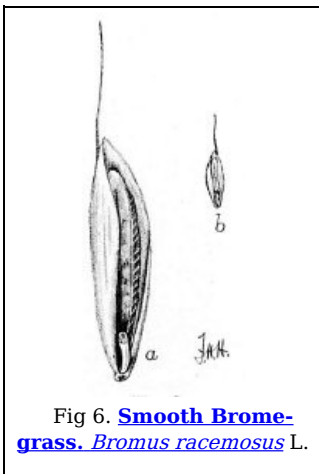


Fig 6. **Smooth Brome-grass.** *Bromus racemosus* L.

Smooth Brome-grass. *Bromus racemosus* L. Florets about 9 mm. long, awn 6-10 mm. long; longer, softer, thinner, with longer awn than found in florets of *B. secalinus* which see. Not often seen in this country. Introduced from Europe.

Chess Cheat. *Bromus secalinus* L. Florets swollen a little above the middle, the floral glume

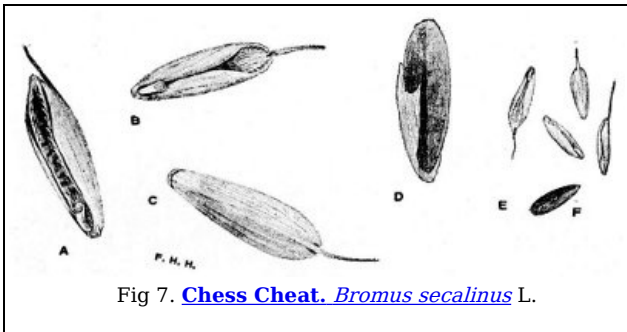


Fig 7. **Chess Cheat.** *Bromus secalinus* L.

rounded on the back, obscurely 7-nerved, 6-7 mm. long, an awn 3-4 mm. long, more or less; palea covering the concave side, each edge bearing a single row of stiff hairs; glume and palea closely adhering to the grain. Introduced from Europe. A weed in wheat fields.

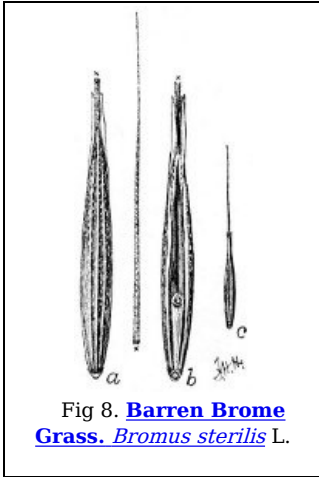


Fig 8. **Barren Brome Grass.** *Bromus sterilis* L.

Barren Brome Grass. *Bromus sterilis* L. Floral glume minutely roughened, adhering to the grain; 5-7 nerved; 11-15 mm. long; compressed; concave in section. Introduced from Europe, becoming common in the state.

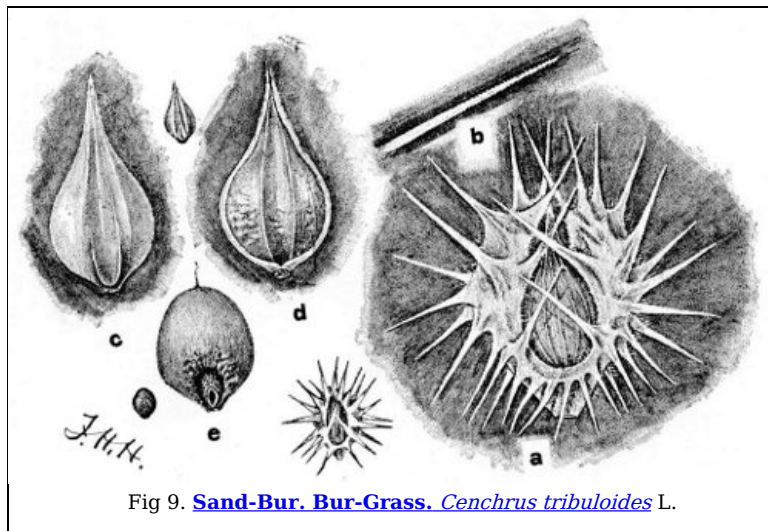


Fig 9. **Sand-Bur. Bur-Grass.** *Cenchrus tribuloides* L.

Sand-Bur. Bur-Grass. *Cenchrus tribuloides* L. Spikelets consisting of the grain and its coverings, broad oval, somewhat flattened, about 7 mm. long, thinly covered by stiff, straight, barbed, prickles, 2-5 mm. long, making a disagreeable and formidable bur, often common on sandy land. Native of this country.

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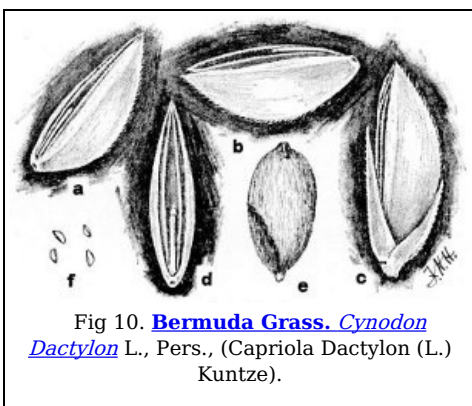


Fig 10. **Bermuda Grass.** *Cynodon Dactylon* L., Pers., (*Capriola Dactylon* (L.) Kuntze).

Bermuda Grass. *Cynodon Dactylon* L., Pers., (*Capriola Dactylon* (L.) Kuntze). Floral glume enclosing the grain, smooth, light colored, oval to half-oval, 1.5 to 2 mm. long, in cross section with two long sides and a short side half as long; grain light brown, obovate to oval, a small nipple at the larger end.

The plant seeds in hot countries but not in cool, temperate regions; spreading chiefly by coarse, hard rootstocks. Introduced.

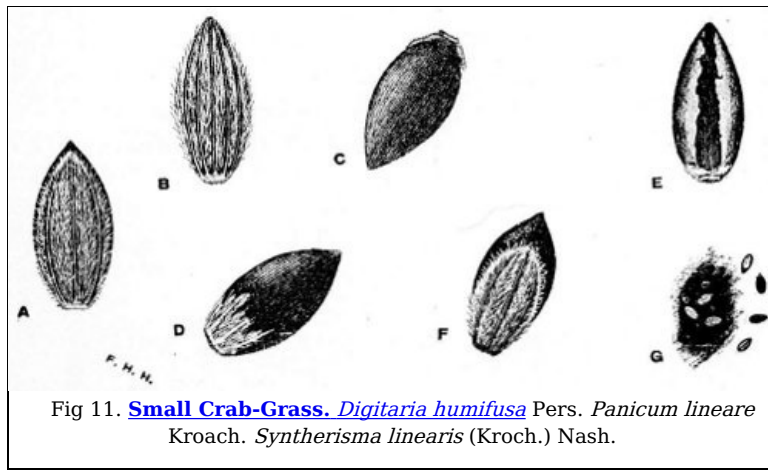


Fig 11. **Small Crab-Grass.** *Digitaria humifusa* Pers. *Panicum lineare* Kroach. *Syntherisma linearis* (Kroch.) Nash.

Small Crab-Grass. *Digitaria humifusa* Pers. *Panicum lineare* Kroach. *Syntherisma linearis* (Kroch.) Nash. Spikelets in the rough, before severe rubbing, ovoid or oblong, flattened, 2 mm. long, first glume minute, second and third as long as the spikelet, soft with very short hairs, one of them 3-nerved, the other 5-nerved; floret after severe rubbing, brown to black, smooth, floral glume of the rounded side curving over the edges below covering with their edges about two-thirds of the palea. Introduced from Europe; becoming troublesome on thin lawns.

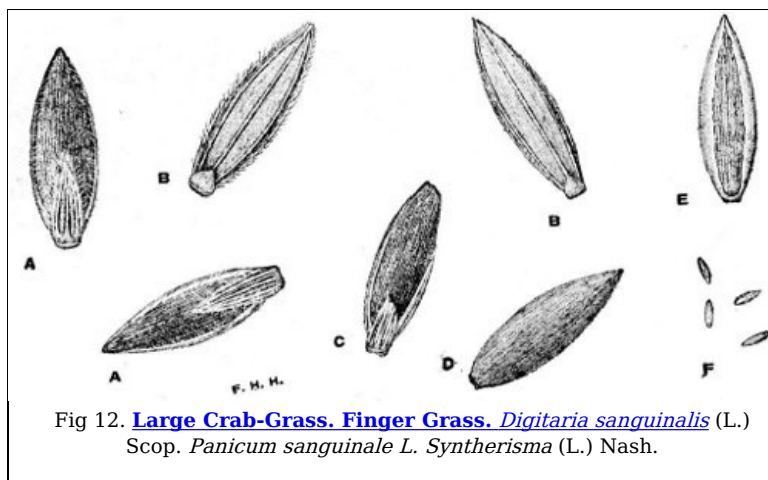


Fig 12. **Large Crab-Grass. Finger Grass.** *Digitaria sanguinalis* (L.) Scop. *Panicum sanguinale* L. *Syntherisma* (L.) Nash.

Large Crab-Grass. Finger Grass. *Digitaria sanguinalis* (L.) Scop. *Panicum sanguinale* L. *Syntherisma* (L.) Nash. Spikelets before severe rubbing, oblong, acute, 2.5-3.5 mm. long, first glume on flattened side minute, second on rounded side about half as long as the spikelet, pubescent or nearly smooth, third glume more or less pubescent, 5-7-nerved; floret, after severe rubbing, smooth, edges of floral glume thin. Introduced from Europe. Roots very tough and coming from the lower joints.

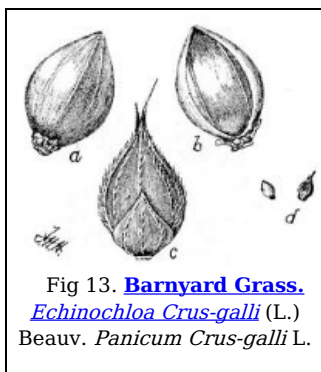
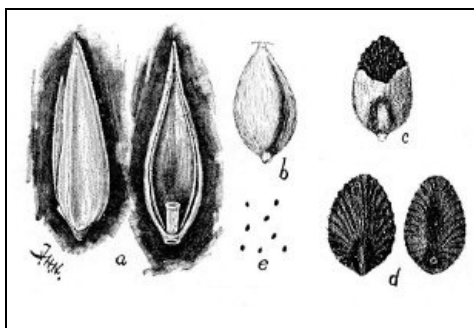


Fig 13. **Barnyard Grass.** *Echinochloa Crus-galli* (L.) Beauv. *Panicum Crus-galli* L.

Barnyard Grass. *Echinochloa Crus-galli* (L.) Beauv. *Panicum Crus-galli* L. Florets oval, white, yellowish gray or brown, 2.4-3 mm. long, plano-convex, glume on the convex side, highly polished, three obscure longitudinal nerves. Native of this country.



Yard-Grass. Wire-Grass. *Eleusine Indica* (L.) Gaertn. Florets light lead color or brown before threshing or much rubbing; grain dark, reddish brown, 1.2-1.4 mm., ovoid with the base abruptly pointed, 3 sided, the corners rounded, a vertical groove along one side; seen from the back with the groove side down and base toward the observer, starting from an oval spot near the base, 10-15 ridges on each side, extend downward and forward. Introduced from some warmer region of the Old World.

Fig 14. **Yard-Grass. Wire-Grass. Eleusine Indica** (L.) Gaertn.

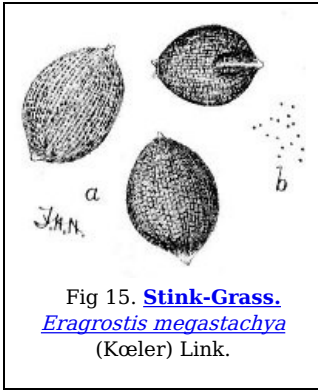


Fig 15. **Stink-Grass. Eragrostis megastachya** (Køeler) Link.

Stink-Grass. *Eragrostis megastachya* (Køeler) Link. *Eragrostis major* Host. Grain orange red or wine color .4-.6 mm. long. Broad oval to nearly circular, very slightly flattened, extremities slightly pointed, embryo within one edge near the base, a fine network of dark lines evident under a good lens. Introduced from Europe.

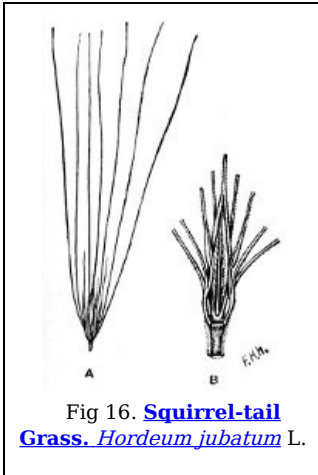


Fig 16. **Squirrel-tail Grass. Hordeum jubatum** L.

Squirrel-tail Grass. *Hordeum jubatum* L. Spikelets in clusters of three, central one only fertile, 5 mm. long, containing a grain adhering to the floral glume and palea, the other two abortive, seven awns in these three spikelets, 4-6 cm. long, four others less than 1 cm. long; awns and fragment of rachis holding the cluster of spikelets together, all barbed upward, making them troublesome for fleeces of sheep and the mouths of animals eating them. Native of this country and widely distributed.

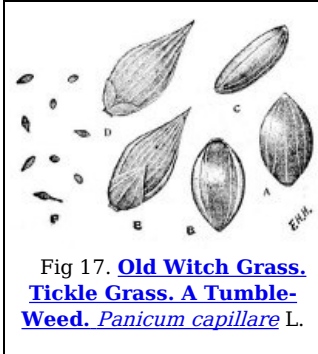


Fig 17. **Old Witch Grass. Tickle Grass. A Tumble-Weed. Panicum capillare** L.

Old Witch Grass. Tickle Grass. A Tumble-Weed. *Panicum capillare* L. Florets flattened, elliptical, apex abruptly pointed, about 1.5 mm. long, highly polished, leaden gray, lighter at the extremities and along the edges of the glume, five slender light colored nerves join the extremities passing vertically over the glume, two light nerves on the palea. Native to this country.

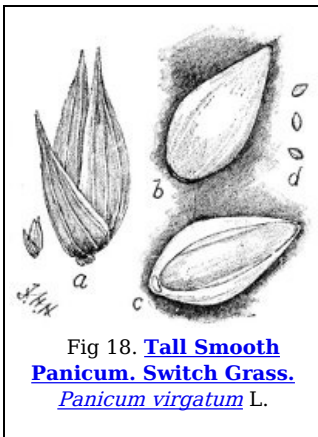


Fig 18. **Tall Smooth Panicum. Switch Grass. Panicum virgatum** L.

Tall Smooth Panicum. Switch Grass. *Panicum virgatum* L. Achene surrounded by two persistent shining pieces, the floret; floral glume hard, light brown, oval or ovate-lanceolate 2.5-3.1 mm. long. Apex obtusely pointed. Seldom troublesome, widely distributed.

Low Spear-Grass. *Poa annua* L. Florets straw-colored, 2.8-3.1 mm. long, apex smooth, lower half of keel and the base of lateral nerves, having numerous soft hairs. A low annual grass, introduced from Europe.

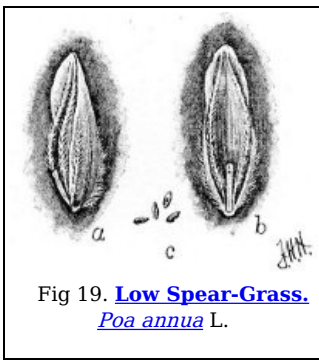


Fig 19. **Low Spear-Grass.**
Poa annua L.

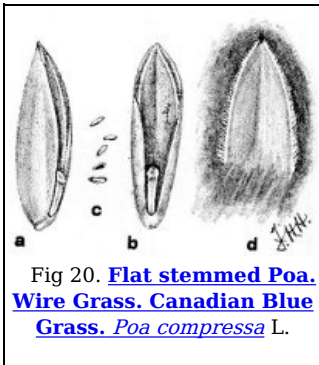


Fig 20. **Flat stemmed Poa.**
Wire Grass. Canadian Blue
Grass. *Poa compressa* L.

Flat stemmed Poa. Wire Grass. Canadian Blue Grass. *Poa compressa* L. Florets lance-obovate, 2-2.5 mm. long, closely resembling those of *Poa pratensis*, which see.

Palea abruptly acute. If well rubbed after threshing, the floret is nearly smooth, otherwise it contains on the lower half numerous webby hairs. Grain reddish brown, both ends pointed, 1-1.4 mm. long. Seldom sown purposely. Sometimes used to adulterate *Poa pratensis*. In early days this grass was called blue grass by people of New England and New York State. Introduced from Europe.

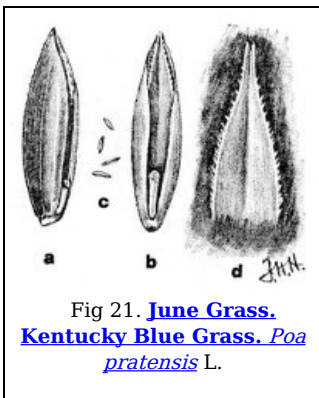


Fig 21. **June Grass.**
Kentucky Blue Grass. *Poa*
pratensis L.

June Grass. Kentucky Blue Grass. *Poa pratensis* L. Florets ovate-lanceolate, acute 3-4 mm. long, with three equal sides when seen in transverse section, nearly smooth, if severely rubbed in threshing, otherwise the floral glume is thickly webbed at the base; palea acuminate, grain light brown, elliptical, both ends usually pointed 1.2-1.4 mm. long, in cross sections with three equal sides, one of which has a shallow vertical groove. Compare with *Poa compressa*. Introduced from Europe.

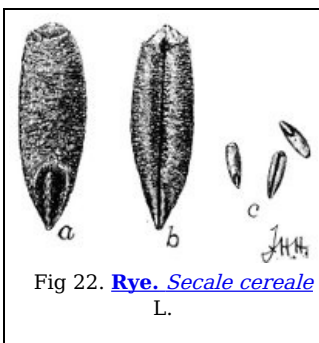


Fig 22. **Rye.** *Secale cereale*
L.

Rye. *Secale cereale* L. Grain light brown, 6-8 mm. long, elliptical, base acute, apex obtuse and rounded, in cross section the back somewhat acutely rounded, the opposite side with a narrow vertical groove, surface more or less irregularly wrinkled. Introduced from Europe. A bad weed in wheat fields.

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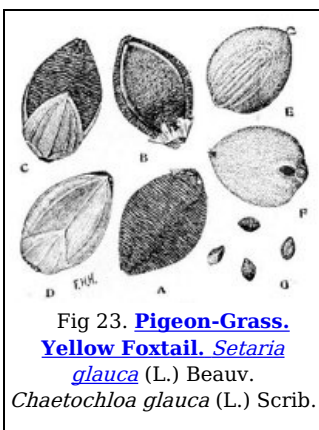


Fig 23. **Pigeon-Grass.**
Yellow Foxtail. *Setaria*
glauca (L.) Beauv.
Chaetochloa glauca (L.) Scrib.

Pigeon-Grass. Yellow Foxtail. *Setaria glauca* (L.) Beauv. *Chaetochloa glauca* (L.) Scrib. Spikelets light to dark brown, 2.5-3 mm. long; after threshing or much rubbing consisting of each a grain and two firm coverings, known as a floral glume which covers the sides of the somewhat depressed palea, oval, apex slightly 3-toothed, rounded side strongly arched, somewhat V-shaped, roughened crosswise by prominent fine more or less branching ridges; ridges of palea on concave side less prominent. Introduced from Europe. Very common in hoed annual crops.

Green Foxtail. Green Pigeon Grass. *Setaria viridis* (L.) Beauv.

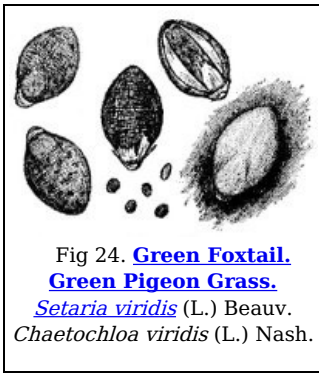


Fig 24. **Green Foxtail.**
Green Pigeon Grass.
Setaria viridis (L.) Beauv.
Chaetochloa viridis (L.) Nash.

Chaetochloa viridis (L.) Nash. Spikelets, light to dark brown mottled, 2-2.3 mm. long, after threshing or much rubbing consisting of the grain and two firm coverings, the rounded one known as a floral glume which covers the edges of the flattened side, oval, the surface granular and very faintly striate, lengthwise and ridged crosswise. Much resembling Hungarian grass. Introduced from Europe. Found with yellow foxtail.

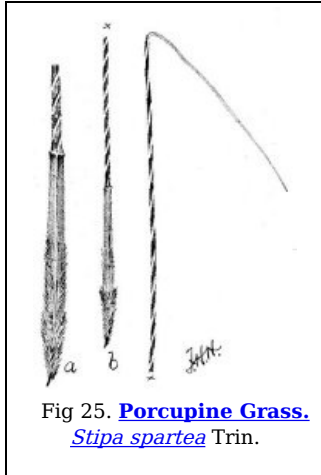


Fig 25. **Porcupine Grass.**
Stipa spartea Trin.

Porcupine Grass. *Stipa spartea* Trin. Grain inclosed in the floral glume, light brown, 18 mm. long, clothed on the lower half with short brown hairs slanting upward, bearing at the base a sharp, hard, curved beak, when dry the attached awn is twisted for 6 cm. and straight and bent at right angles about 6 cm. When moistened, the awn untwists more or less; twisting and untwisting the beards hold what the beak pierces, thus making it a formidable weapon to enter the skins of sheep, goats and dogs. Fortunately it is seldom abundant. Sandy land Michigan and westward.

SEDGE FAMILY. CYPERACEAE.

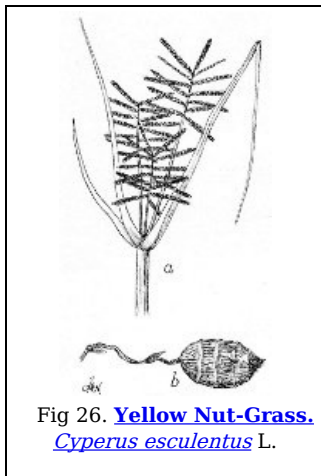


Fig 26. **Yellow Nut-Grass.**
Cyperus esculentus L.

Yellow Nut-Grass. *Cyperus esculentus* L. This is a species of sedge, and so far as I have examined, produces no seeds, perhaps having lost that method of reproduction, as it acquired the habit of spreading by tubers here illustrated. In moist soil, sometimes a troublesome weed.

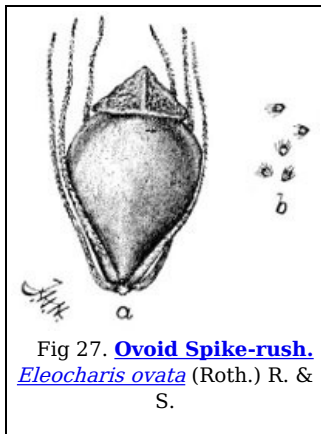


Fig 27. **Ovoid Spike-rush.**
Eleocharis ovata (Roth.) R. & S.

Ovoid Spike-rush. *Eleocharis ovata* (Roth.) R. & S. Spike ovoid, 4-10 mm. long, achene pale to chestnut brown, shining, obovate-oblong, compressed, about 1 mm. long, bearing a triangular tubercle at the apex, and six to eight barbed bristles, 1.3-1.7 mm. long, very variable. Not troublesome except in low land.

RUSH FAMILY. JUNACEAE.

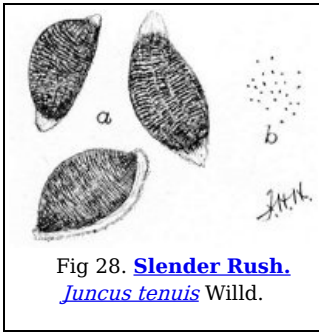


Fig 28. **Slender Rush.**
Juncus tenuis Willd.

Slender Rush. *Juncus tenuis* Willd. Seeds light brown to amber color, translucent, flattened, oval, half oval, oblong, ovoid, the acute apex curved to one side, about 0.3 mm. long. Dry to moist soil, almost throughout North America, now migrating to all parts of the world. A very common, grass-like rush in this state, seldom recognized by any one under any name, except by a first-rate botanist.

LILY FAMILY. LILACEAE.

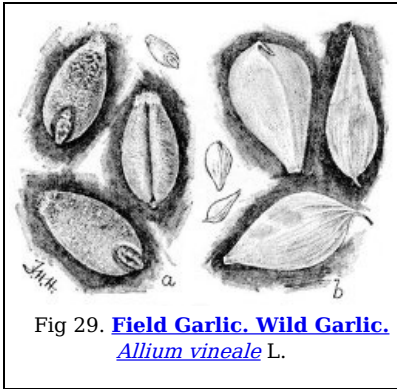


Fig 29. **Field Garlic. Wild Garlic.**
Allium vineale L.

Field Garlic. Wild Garlic. *Allium vineale* L. Seeds not seen, apparently seldom produced; bulblets (b) light yellow or almost white, obovoid to elliptical, 7-8 mm. long, when dry. Introduced from Europe. Troublesome in pastures and tainting the flavor of butter; in wheat it taints the flavor of flour. Persistent when introduced. The illustration of grains of wheat (a) are given for comparison.

NETTLE FAMILY. URTICACEAE.

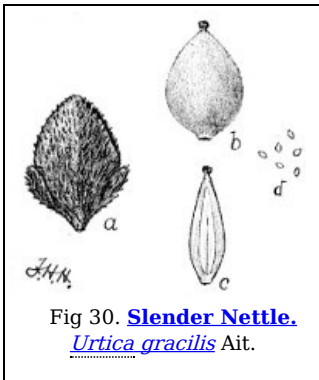


Fig 30. **Slender Nettle.**
Urtica gracilis Ait.

Slender Nettle. *Urtica gracilis* Ait. Achenes compressed, lens-shaped, ovate, rarely oval, faces similar, smooth, dull and grayish brown, .9-1.1 mm. long. Native of this country. Compared with *U. dioica*, this achene is thinner and shorter. Prominent in low pastures.

BUCKWHEAT FAMILY. POLYGONACEAE.

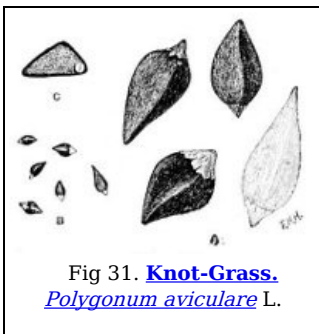


Fig 31. **Knot-Grass.**
Polygonum aviculare L.

Knot-Grass. *Polygonum aviculare* L. This door-yard weed is in no sense a grass. Achenes unequally 3-sided, ovoid, acute, angles obtuse, surface, dull, light to dark reddish brown, finely granular and striate lengthwise. 1.8-2.2 mm. long, usually with the remains of calyx attached. Native of this country. Common about door-yards.

Wild Buckwheat. *Polygonum Convolvulus* L. Achenes dull, jet-black, equally 3-sided, elliptical to obovoid, minutely granular often with faint longitudinal striation, the faces often more or less concave, the angles rounded, 2.5-3.5 mm. long, sometimes with the remains of calyx attached. Introduced from Europe. Often climbing up corn stalks.

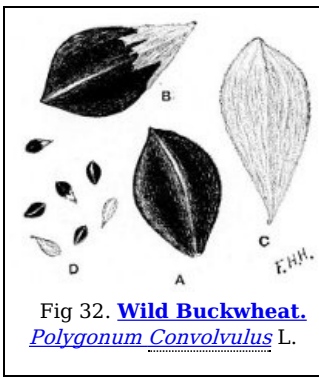


Fig 32. **Wild Buckwheat.**
Polygonum Convolvulus L.

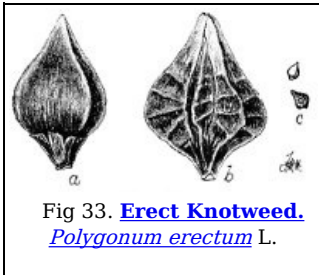


Fig 33. **Erect Knotweed.**
Polygonum erectum L.

Erect Knotweed. *Polygonum erectum* L. Achenes dull, light to dark brown, unequally 3-sided, ovoid or rhombic, finely granular and striate lengthwise, the faces sometimes concave, the angles rounded, 2.5-3 mm. long, sometimes with the remains of calyx attached. Native to this country. Of little account.

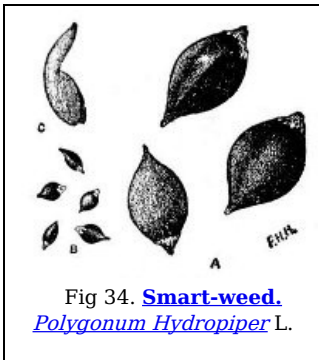


Fig 34. **Smart-weed.**
Polygonum Hydropiper L.

Smart-weed. *Polygonum Hydropiper* L. Achene dull, granular, light to dark reddish brown, lenticular, acutely and narrowly or broadly elliptical, or 3-sided, apex acute, concave on the sides, angles obtuse, 2-3 mm. long, sometimes with the remains of the dotted calyx attached. Introduced from Europe. Wet land.

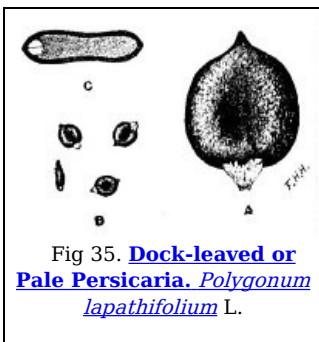


Fig 35. **Dock-leaved or Pale Persicaria.** *Polygonum lapathifolium* L.

Dock-leaved or Pale Persicaria. *Polygonum lapathifolium* L. Achene shining, dark to chestnut brown, 2-2.2 mm. long, flattened, circular to broadly ovate with abruptly pointed apex, the base obtuse or bearing the remains of the thin calyx. Introduced from Europe. Low wet places.

Shore Knotweed. *Polygonum littorale* Link. So far as the achenes are concerned, they are identical with those of *P. aviculare* above described. Native of this country. On hard or thin places, especially when newly graded.

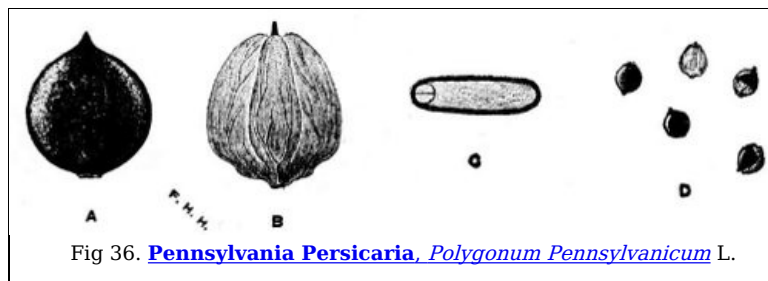


Fig 36. **Pennsylvania Persicaria,** *Polygonum Pennsylvanicum* L.

Pennsylvania Persicaria, *Polygonum Pennsylvanicum* L. Achene shining, jet-black, flattened, surface very slightly uneven and granular nearly circular with a short abrupt apex, edge rounded, 2.5-3 mm. long, often bearing the remains of the calyx. Native to this country. Occasional in annual crops.

Lady's Thumb. *Polygonum Persicaria* L. Achene shining, jet-black, surface finely uneven, much flattened with rounded edges or with 3 nearly equal concave faces, the edges faintly angled along the center, broadly ovate, base obtuse or bearing a portion of the calyx, apex abruptly pointed, 2-2.3 long. Introduced from Europe. Waste places and stubble ground.

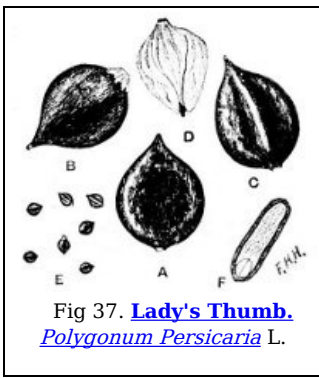


Fig 37. **Lady's Thumb.** *Polygonum Persicaria* L.

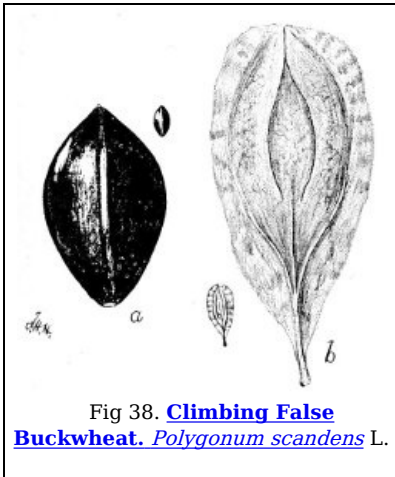


Fig 38. **Climbing False Buckwheat.** *Polygonum scandens* L.

Climbing False Buckwheat. *Polygonum scandens* L. Achene black, shining, in cross-section sides flat or concave, corners rounded, obovate, in vertical outline sides rounded to an obtuse apex, from rounded sides to base slightly concave, base acute, 3.5-4 mm. long when freed from the persistent base of the calyx. Woods and shady places. Not prominent as a weed.

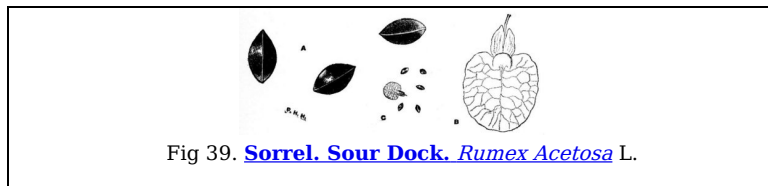


Fig 39. **Sorrel, Sour Dock.** *Rumex Acetosa* L.

Sorrel, Sour Dock. *Rumex Acetosa* L. Calyx-wings broadly ovate or orbicular, heart-shaped 3.5-4.5 mm. long, achene shining, with 3 equal sides, broadly oval, both ends abruptly pointed, the thin edges usually lighter colored than the dark brown or black convex faces, 1.5-2 mm. long. Introduced from Europe. Not common.

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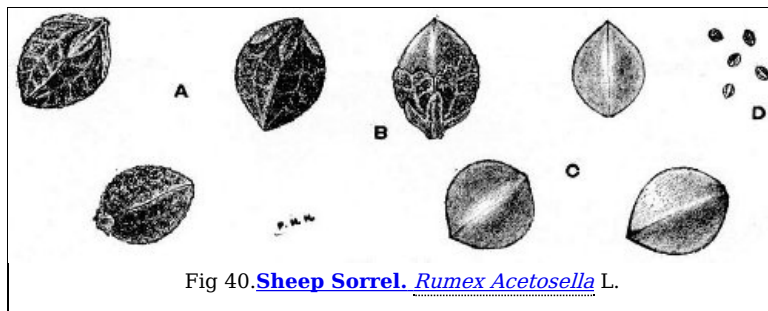
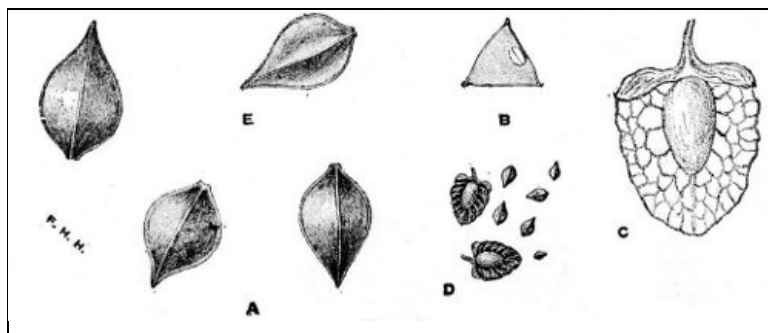


Fig 40. **Sheep Sorrel.** *Rumex Acetosella* L.

Sheep Sorrel. *Rumex Acetosella* L. Achenes usually closely covered by dull reddish brown, finely roughened calyx, which is removed with difficulty; achenes shining with 3 equal sides, broadly oval, the base rounded, the apex abruptly pointed, sides convex, reddish brown or amber color, corners obtuse, darker colored. Native of this country, though in large part introduced from Europe. Very common in thin sandy meadows.



Narrow-leaved or Curled Dock. *Rumex crispus* L. Achene covered by 3 brown heart-shaped calyx-wings, which are 2.5–3.5 mm. long, each bearing an ovoid, acute tubercle; one of them is 1.5 mm. long, the other two smaller. Achene ovoid, 3-angled, shining, rich reddish-brown, 1.3–1.8 mm. long, .7–1.4 mm. wide, in transverse section the angles prominent, convex sides and angles concave near the base; base abruptly acute; when viewed vertically sides and angles concave near the apex; apex abruptly acute, compare these notes with those concerning *R. obtusifolius*. Introduced from Europe. Very common on low land and in meadows.

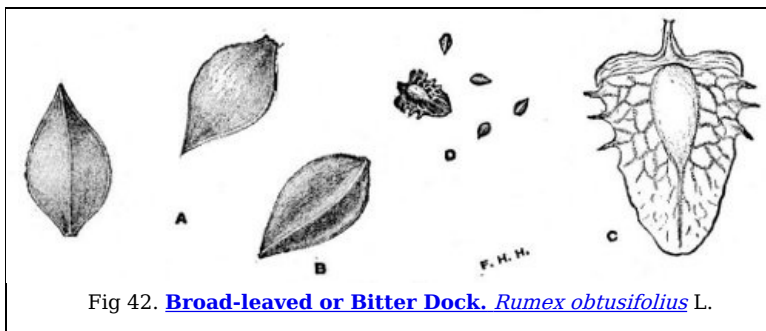


Fig 42. [Broad-leaved or Bitter Dock, *Rumex obtusifolius* L.](#)

Broad-leaved or Bitter Dock. *Rumex obtusifolius* L. Achene covered by three brown, hastate-deltoid calyx-wings, which are about 4 mm. long, each bearing an ovoid-elliptical tubercle, one of them 1.5 mm. long, the other two very narrow, rudimentary. Achenes ovoid, 3-angled, less polished than those of *R. crispus*, light brown, 2–2.4 mm. long, 1–1.4 mm. wide, angles in transverse section slight, sides convex, usually in a greater degree than in the specie just named, vertically sides and angles very slightly concave or straight near the base which is abruptly acute; sides and angles near the apex scarcely concave or straight; apex acute. Introduced from Europe. Not very common.

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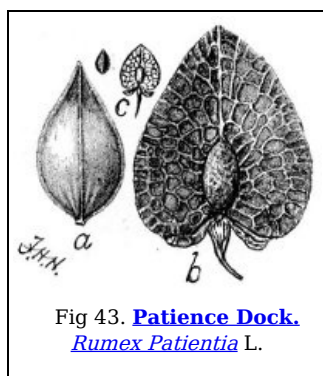


Fig 43. [Patience Dock, *Rumex Patientia* L.](#)

Patience Dock. *Rumex Patientia* L. Calyx-wings circular-heart shaped, 4–6 mm. long, one of them bearing a prominent ovoid tubercle; achene ovoid-elliptical, 3-angled, somewhat polished, shining, light-brown, 2.5–3.5 mm. long, 1.7–2 mm. wide, angles prominent, sides straight, in transverse section, not counting the angles, base rounded, not counting the abrupt point, when seen vertically, the sides near the apex are straight or slightly concave. Introduced from Europe. Not common.

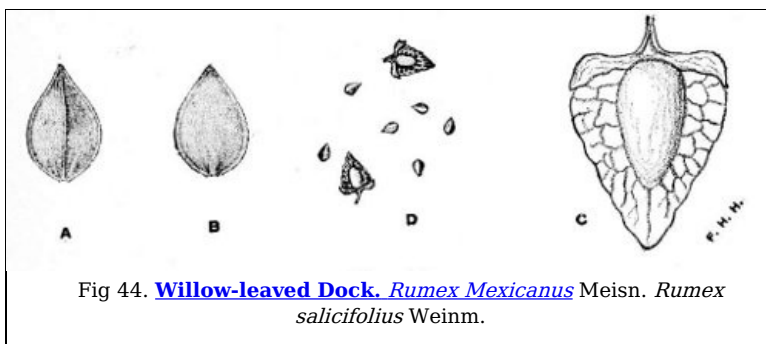


Fig 44. [Willow-leaved Dock, *Rumex Mexicanus* Meisn. *Rumex salicifolius* Weinm.](#)

Willow-leaved Dock. *Rumex Mexicanus* Meisn. *Rumex salicifolius* Weinm. Calyx-wings triangular-ovate, about 3 mm. long, each bearing a large tubercle; achene dark reddish brown, smooth, shining, 1.8–2.2 mm. long, ovoid, angles prominent, the sides viewed transversely rounded, the sides of the base as viewed vertically, rounded, straight or slightly concave, near the apex straight or concave. A native of Northeastern North America. Not common.

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GOOSEFOOT OR PIGWEED FAMILY. CHENOPODIACEAE.

Spreading Orache. *Atriplex patula* L. Seeds are likely to occur in either of three different guises, depending upon the degree of their ripeness or the amount of threshing to which they have been subjected.

Achenes thin, dull, granular, gray, closely fitting the seed; seed

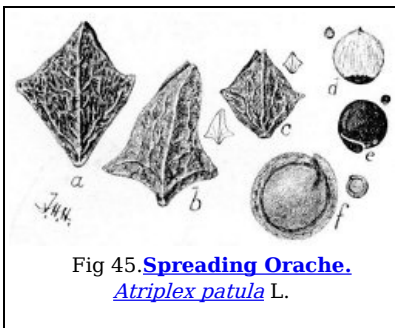


Fig 45. **Spreading Orache.**
Atriplex patula L.

jet-black, shining, flattened, nearly circular, edge bluntly rounded, and notched in one place, a groove leading from one side of a margined protuberance part way to the center of the face, 1.5-1.8 mm. in diameter. Introduced from Europe. Seldom troublesome.

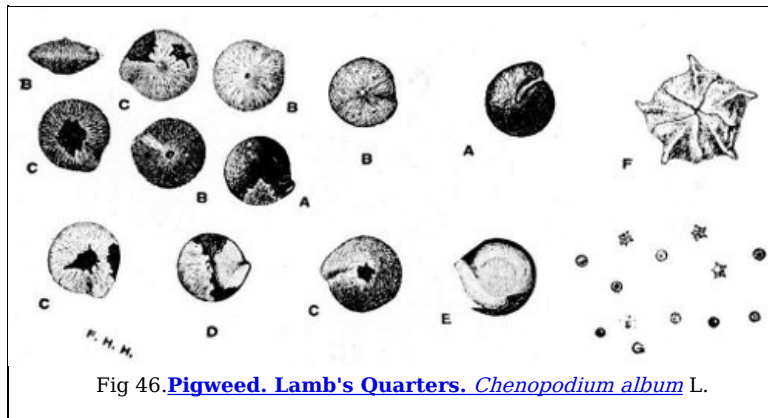


Fig 46. **Pigweed, Lamb's Quarters.** *Chenopodium album* L.

Pigweed, Lamb's Quarters. *Chenopodium album* L. Seeds are likely to occur in either of three different guises dependent upon the degree of their ripeness or the amount of threshing to which they have been subjected. The figure shows these conditions admirably.

Seeds black, dull or somewhat glistening, gray if not pretty clean; nearly circular; somewhat lens-shaped, one side usually more nearly flattened than the other 1-1.4 mm. in diameter, the edge bluntly rounded, the more convex side bearing a curved groove leading from one side of the marginal protuberance to near the center of the face, surface finely uneven, often with a faintly evident radiating striation. Introduced from Europe. Very common in annual crops.

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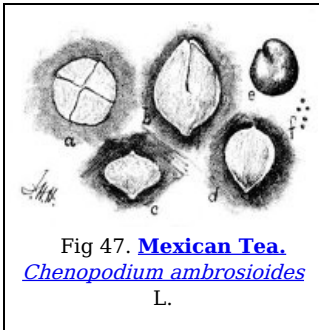


Fig 47. **Mexican Tea.**
Chenopodium ambrosioides
L.

Mexican Tea. *Chenopodium ambrosioides* L. Note remarks under last preceding description concerning different stages of cleaning. Seeds smooth, shining, reddish brown, to black, thickly double convex with scarcely a trace of a hem-like margin, circular, short kidney-shaped or ovate with a notch on the edge, .6-.8 mm. long. Introduced from tropical America. Not prominent.

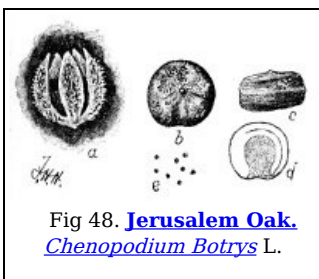


Fig 48. **Jerusalem Oak.**
Chenopodium Botrys L.

Jerusalem Oak. *Chenopodium Botrys* L. Concerning different states of cleaning, note remarks above under C. album.

Seeds perfectly cleaned with great difficulty, brown to black or gray, when imperfectly cleaned, slightly flatted on two sides, circular or round, kidney-shaped, sometimes with a hem-like margin, on one side a faint groove from the margin to near the center of the face, .6-.8 mm. in diameter. Introduced from Europe. Not prominent.

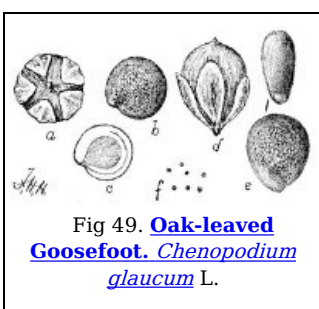


Fig 49. **Oak-leaved Goosefoot.** *Chenopodium glaucum* L.

Oak-leaved Goosefoot. *Chenopodium glaucum* L. Concerning the different stages of cleaning note remarks above under C. album.

Seeds brown to black, more or less slightly granular, shining, flattened on two sides, circular edge bluntly rounded, with a single notch from which on one side extends a slight depression toward the center of the face, .5-.8 mm. in diameter. Introduced from Europe. Occasional on moist soil.

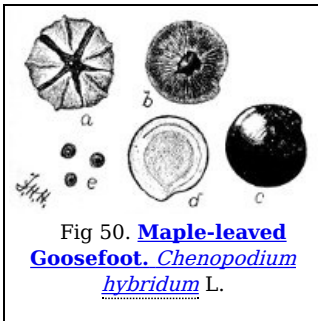


Fig 50. **Maple-leaved Goosefoot.** *Chenopodium hybridum* L.

Maple-leaved Goosefoot. *Chenopodium hybridum* L. Concerning the different stages of cleaning, note remarks above under C. album.

Seeds black, shining, greenish gray if not fully cleaned, nearly circular, lens-shaped, equally convex, 1.2-1.8 mm. in diameter, with a notch on the edge, from which on one side a groove leads to near the center of the face, surface finely uneven, often with a faintly evident radiating striation. Native of this country. Of little importance.

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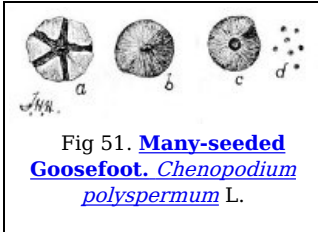


Fig 51. **Many-seeded Goosefoot.** *Chenopodium polyspermum* L.

Many-seeded Goosefoot. *Chenopodium polyspermum* L. Concerning different stages of cleaning, note remarks above under C. album.

Seeds finely glandular, shining, jet-black, greenish gray, when not fully cleaned, nearly circular or broadly kidney-shaped, sides equally convex, .6-1.1 mm. in diameter, with a notch on the edge from which on one side, a groove leads to near the center of the face. Introduced from Europe.

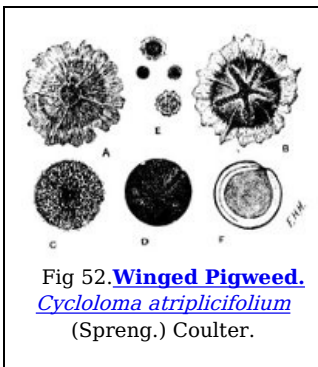


Fig 52. **Winged Pigweed.** *Cycloloma atriplicifolium* (Spreng.) Coulter.

Winged Pigweed. *Cycloloma atriplicifolium* (Spreng.) Coulter. Seeds are likely to occur in either of three different guises depending upon the degree their ripeness or the amount of threshing to which they have been subjected. See the figure of this species. Seeds granular, circular, dull, jet-black, or gray in case the thin ovary remains, 1.3-1.7 mm. in diameter, lower face convex, the upper slightly convex if mature, with a slight notch on the rounded edge, the lower face bearing a slight curved groove, leading from the notch to near the center, the upper face with a light spot at the center. Introduced from western United States. A tumble weed, not common.



Fig 53. **Russian Thistle.** *Salsola Kali tenuifolia* G. F. W. Mey.

Russian Thistle. *Salsola Kali tenuifolia* G. F. W. Mey. This is not a thistle nor a cactus, but a pigweed. Concerning different stages of cleaning, note remarks above under *Chenopodium album* (see the figures). Seeds conical, the apex flattened or concave, both sides showing the long coiled embryo, light gray in color, about 2 mm. in diameter. Introduced from northern Europe into the north west and from there into Michigan. Well advertised, though not of high rank as a weed in this state. A tumble weed.

AMARANTH FAMILY. AMARANTHACEAE.

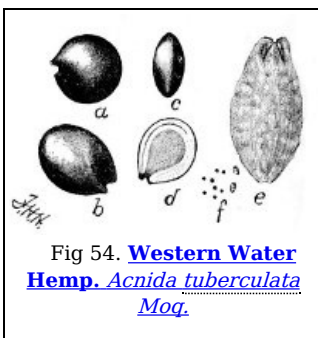


Fig 54. **Western Water Hemp.** *Acnida tuberculata* Moq.

Western Water Hemp. *Acnida tuberculata* Moq. Seeds smooth, highly polished, brown to jet-black, double convex, nearly circular, with a slight notch at one edge, .6-.8 mm. in diameter, smaller, lighter colored, and thin margins less conspicuous than those found on the seeds of *Amaranthus circaezans*. There are three varieties with seeds much the same as these. Native of low ground in central and southern Michigan.

[Pg 127]

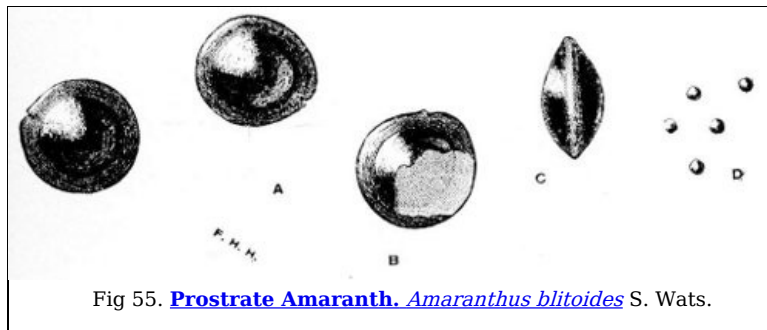


Fig 55. **Prostrate Amaranth.** *Amaranthus blitoides* S. Wats.

Prostrate Amaranth. *Amaranthus blitoides* S. Wats. Seeds smooth, highly polished, jet-black, double convex, nearly circular, with a slight notch at one edge, 1.4-1.5 mm. in diameter. Introduced from west of the Rocky Mountains. It thrives on sandy and gravelly banks. Margin of this seed is less pronounced than in either of the other three noticed above. Found almost everywhere in fields of Michigan. Introduced from tropical America. Very common in annual hoed crops.

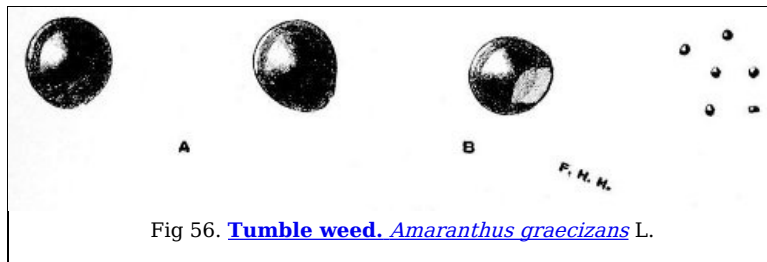


Fig 56. **Tumble weed.** *Amaranthus graecizans* L.

Tumble weed. *Amaranthus graecizans* L. Seeds smooth, highly polished, jet-black, double convex, nearly circular with a slight notch at one edge, .7-1 mm. in diameter. Compare with *Acnida*. Introduced from tropical America. It needs sand or gravel.

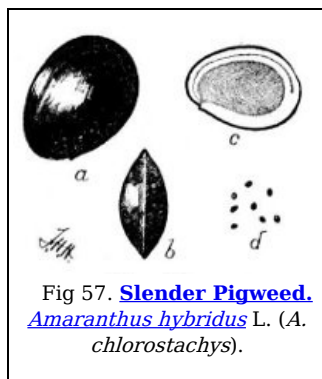


Fig 57. **Slender Pigweed.** *Amaranthus hybridus* L. (*A. chlorostachys*).

Slender Pigweed. *Amaranthus hybridus* L. (*A. chlorostachys*). Seeds smooth, highly polished, jet-black, double convex, broadly ovate, with a slight notch at the narrow extremity, 1.1-1.4 mm. long. Distinguished from the preceding species by having a seed ovate instead of circular. Introduced from tropical America. Not abundant.

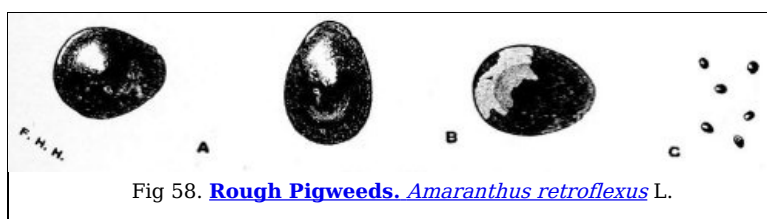


Fig 58. **Rough Pigweeds.** *Amaranthus retroflexus* L.

Rough Pigweeds. *Amaranthus retroflexus* L. Sometimes incorrectly called red-root. Seeds smooth, highly polished, jet-black, double convex, broadly ovate, with a slight notch at the narrow end, .9-1.2 mm. long. The seeds of this and the next preceding are ovate, while those of the first two are very nearly circular. When seen edgewise, the hem-like margin of this seed is less prominent than in either of the preceding three noticed above. Found almost everywhere in annual crops. Introduced from tropical America.

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KNOTWEED FAMILY. ILLECEBRACEAE.

Knawel. *Scleranthus annuus* L. As the seed is single for each flower, it is unnecessary for the ovary to open; the small, hardened, ten-angled calyx with its five thick lobes aid in protecting and distributing the seed within. The seed is seldom seen. Calyx straw colored, obovoid, 2 mm. long besides the five spreading, membranaceous lobes, which are nearly as long. A low spreading plant, resembling some kinds of chickweed.

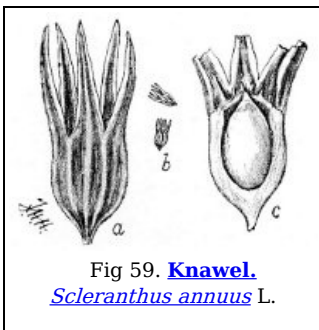


Fig 59. **Knawel.**
Scleranthus annuus L.

AIZOACEAE.

Carpet-Weed. *Mollugo verticillata* L. Seeds orange-red, shining, flattened, kidney-shaped or ovoid, .4-.6 mm. long, concave on the thinner edge from which protrudes a nipple-like point, a low central ridge passing over the rounded edge. Native of warmer America. Needing sand.

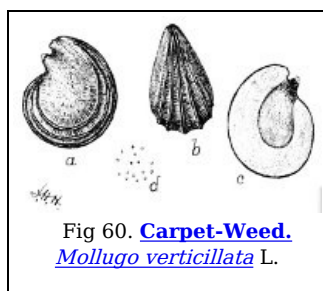


Fig 60. **Carpet-Weed.**
Mollugo verticillata L.

PINK FAMILY. CARYOPHYLLACEAE.

Cockle. *Agrostemma Githago* L. Flowers rose-colored; pod erect, ovoid, about 16 mm. long; seeds dark brown to black, wedge-shaped-triangular, appearing as though the two extremities were bent together; surface covered with curved rows of conspicuous teeth, one side 3-3.5 mm. long. Introduced from Europe. In no sense a weed except in wheat fields.

[Pg 129]

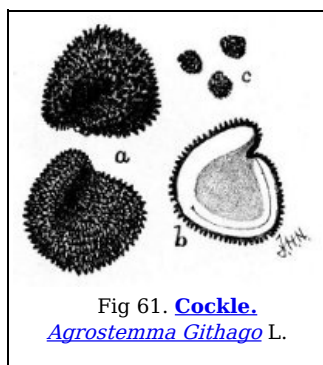


Fig 61. **Cockle.**
Agrostemma Githago L.

Thyme-leaved Sandwort. *Arenaria serpyllifolia* L. Flowers white; seeds reddish brown to lead color, slightly flattened, circular to short-kidney-shaped. Each side covered with 4-5 curved rows of smooth, oval tubercles, giving the appearance of having two extremities bent together, about 5 mm. in diameter. Naturalized from Europe, delighting in light, poor soil. When well grown it becomes a tumbleweed.

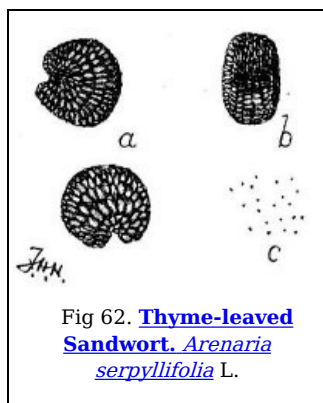


Fig 62. **Thyme-leaved Sandwort.**
Arenaria serpyllifolia L.

Larger Mouse-ear Chickweed. *Cerastium vulgatum* L. Flowers white; pods cylindrical; seeds light-reddish yellow to dark reddish brown; slightly flattened, 4-sided, 2 of them straight, converging, one rounded, the other narrow and notched. Some of them ovoid, others nearly circular, covered with a few irregularly curved rows of tubercles, .4-.8 mm. in diameter. In large part introduced from Europe, though a native of this continent.

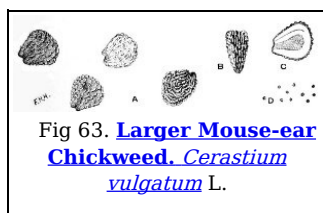


Fig 63. **Larger Mouse-ear Chickweed.**
Cerastium vulgatum L.

Bouncing Bet. Soapwort. *Saponaria officinalis* L. Flowers white; seeds dark lead-color, flattened, short-kidney-shaped to circular with notch on one side, 2 mm. across, more or less, with 6-7 curved rows of short, shiny tubercles. Naturalized from

Europe, delighting in sandy soil.

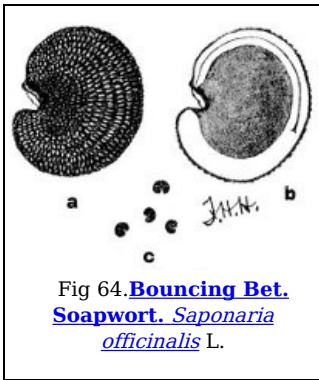


Fig 64. **Bouncing Bet.**
Saponaria officinalis L.

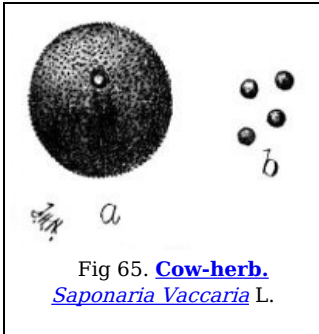


Fig 65. **Cow-herb.**
Saponaria Vaccaria L.

Cow-herb. *Saponaria Vaccaria* L. Seed dull, jet-black, slightly roughened by great numbers of minute points, nearly spherical, 2.3 mm. in diameter. An annual very troublesome in spring wheat. Introduced from Europe.

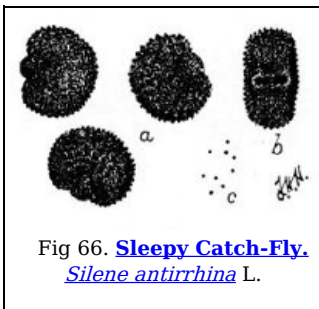


Fig 66. **Sleepy Catch-Fly.**
Silene antirrhina L.

Sleepy Catch-Fly. *Silene antirrhina* L. Flowers pink; seeds lead-color, slightly flattened, circular to short-kidney-shaped, each side covered with 5-6 curved rows of pointed tubercles giving the appearance of having two blunt extremities bent together, .5-.7 mm. across. Compare seeds with those of *Arenaria* above described. When in flower, two of the upper internodes are glutinous. Only found on thin soil.

[Pg 130]

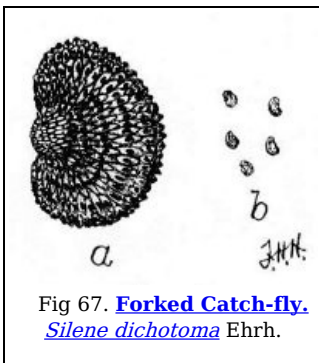


Fig 67. **Forked Catch-fly.**
Silene dichotoma Ehrh.

Forked Catch-fly. *Silene dichotoma* Ehrh. Seeds reddish-brown, flattened, the three sides and the corners rounded, thickest at one corner narrowing to the side opposite; seed scar in the middle of the narrow side, four curved rows of tubercles on either side of the seed extending to the scar, diameter 1.3 mm., the thick edge concave, containing 6-7 rows of tubercles.

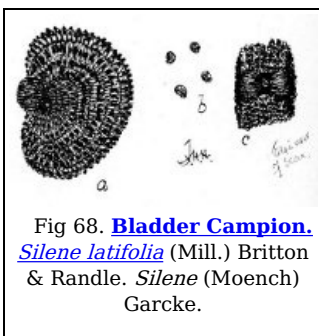


Fig 68. **Bladder Champion.**
Silene latifolia (Mill.) Britton & Randle. *Silene* (Moench) Garcke.

Bladder Champion. *Silene latifolia* (Mill.) Britton & Randle. *Silene* (Moench) Garcke. Flowers white; pod covered by an inflated calyx, seeds dull grayish brown, flattened, wedge-shaped, oval or 3-sided, 1-1.7 mm. across, 5-7 curved rows or tubercles on each side. Naturalized from Europe.

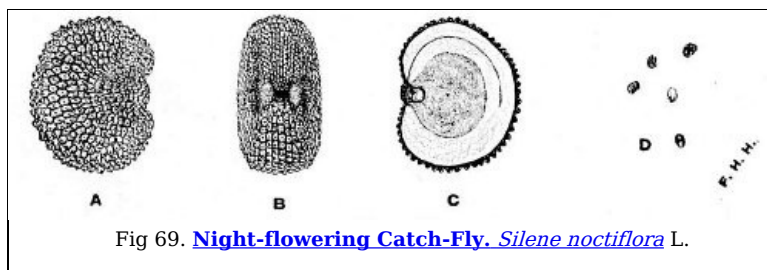


Fig 69. [Night-flowering Catch-Fly. *Silene noctiflora* L.](#)

Night-flowering Catch-Fly. *Silene noctiflora* L. Flowers white; seeds dull grayish brown, very slightly flattened, oval or short kidney-shaped, nearly 1.5 mm. across, with 8-10 curved rows of tubercles on each side. Naturalized from Europe.

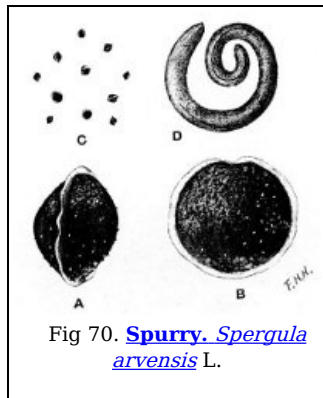


Fig 70. [Spurry. *Spergula arvensis* L.](#)

Spurry. *Spergula arvensis* L. Flowers white; seeds jet-black, except a narrowly winged, light-colored margin, slightly flattened, circular in outline 1-1.5 mm. across, with a slight notch on one side, surface often sprinkled with delicate, fragile, light-colored prickles. Introduced from Europe. Thriving on poor, sandy land.

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Fig 71. [Common Chickweed. *Stellaria media* \(L.\) Cyrill. *Alsine media* L.](#)

Common Chickweed. *Stellaria media* (L.) Cyrill. *Alsine media* L. Flowers white; seeds reddish yellow to dark brown, somewhat flattened, nearly circular, each side covered with 5-6 curved rows of tubercles, giving the appearance of having the two extremities bent together, about 1 mm. in diameter. Introduced from Europe, thriving in cool weather in shade.

PURSLANE FAMILY. PORTULACACEAE.



Fig 72. [Purslane. Pussley. *Portulaca oleracea* L.](#)

Purslane. Pussley. *Portulaca oleracea* L. Flowers yellow, seeds jet-black, shining, flattened, wedge-shaped, having three rounded nearly equal sides, broadly oval or almost circular, often having a curved tooth or point on one side, with 3-4 curved rows of minute tubercles. Seed .5-.8 mm. in diameter. Naturalized from the southwest. Every gardener knows how difficult it is to exterminate this weed.

CROWFOOT FAMILY. RANUNCULACEAE.

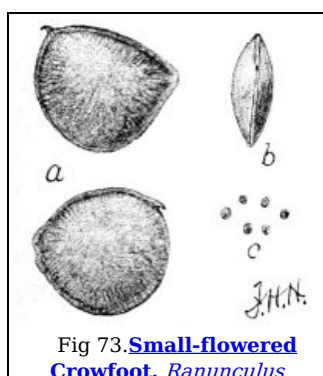


Fig 73. [Small-flowered Crowfoot. *Ranunculus*](#)

Small-flowered Crowfoot. *Ranunculus abortivus* L. Achene light brown to straw colored, 0.8-1.2 mm. in diameter, oblong, 0.3 mm. thick, when seen in cross sections, surface uneven with minute wrinkles, pits and dots flattened, broad oval to circular, three-sided, bearing the remains of a short curved style. Rich, low woods, not a common weed.

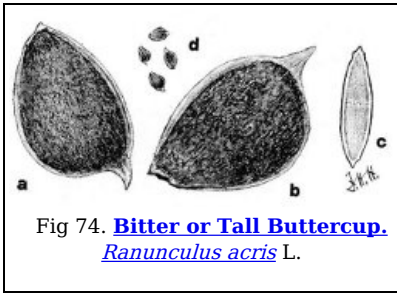


Fig 74. **Bitter or Tall Buttercup.**
Ranunculus acris L.

Bitter or Tall Buttercup. *Ranunculus acris* L. Achenes dull, dark brown, two-beaked, somewhat lens-shaped, 3-4 mm. long, one edge very slightly convex, the other prominently so, or somewhat semicircular in outline, hem-like margin, obscure. Introduced from Europe. Low land.

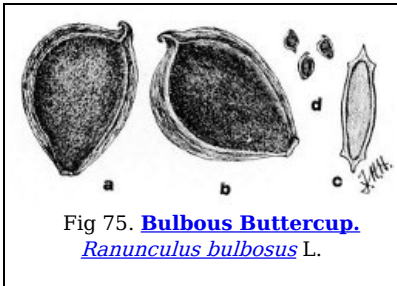


Fig 75. **Bulbous Buttercup.**
Ranunculus bulbosus L.

Bulbous Buttercup. *Ranunculus bulbosus* L. Achenes dull brown, nearly circular, diameter 3-4 mm.; beak short, turned to one side, surrounded by a narrow, hem-like margin. In June, many meadows of New England and New York are yellow with great numbers of flowers. Introduced from Europe. Upland; fortunately not yet common in this state.

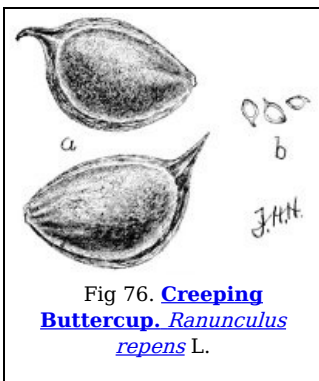


Fig 76. **Creeping Buttercup.** *Ranunculus repens* L.

Creeping Buttercup. *Ranunculus repens* L. Achenes plump, dull, light-brown, nearly circular, diameter 3-4 or more mm.; beak more or less hooked, hem-like margin conspicuous. This species usually seeds very sparingly, but when once introduced, it loses no time in spreading by creeping stems. Introduced from Europe. Moist land; a rapid spreader by runners.

POPPY FAMILY. PAPAVERACEAE.

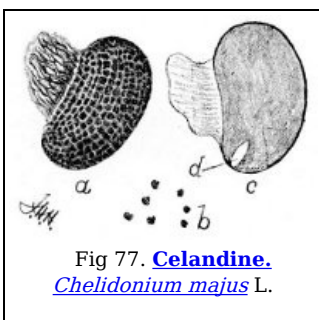


Fig 77. **Celandine.**
Chelidonium majus L.

Celandine. *Chelidonium majus* L. Yellow sap, yellow flowers; seeds dark brown to almost black, ovoid, 1.2-1.5 mm. long, with 10-12 curved vertical rows of small square depressions on each side; projecting from one side a prominent white or cream-colored ridge, irregularly wrinkled when dry. Introduced from Europe. Persistent.

MUSTARD FAMILY. CRUCIFERAE.

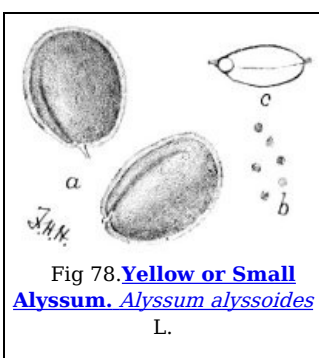
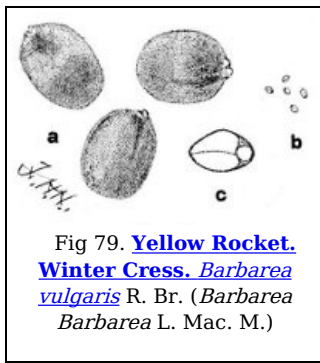


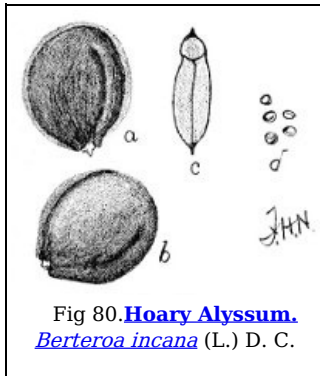
Fig 78. **Yellow or Small Alyssum.** *Alyssum alyssoides* L.

Yellow or Small Alyssum. *Alyssum alyssoides* L. Flowers yellow; fruit nearly circular; seeds rich yellowish brown, about 1.5 mm. long, nearly straight on one edge, flattened slightly, convex on each side or one side flat, surrounded by a thin wing. Cotyledons accumbent. Introduced from Europe.



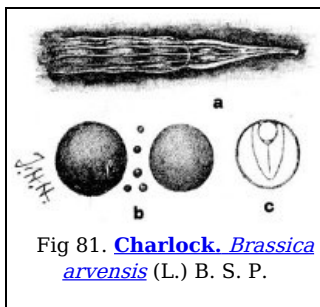
Yellow Rocket. Winter Cress. *Barbarea vulgaris* R. Br. (*Barbarea Barbarea* L. Mac. M.) Seeds roughened, dull, light brown, irregularly flattened, broad oval, circular-oval, circular-oblong, cotyledons accumbent. Introduced from Europe.

Fig 79. **Yellow Rocket. Winter Cress.** *Barbarea vulgaris* R. Br. (*Barbarea Barbarea* L. Mac. M.)



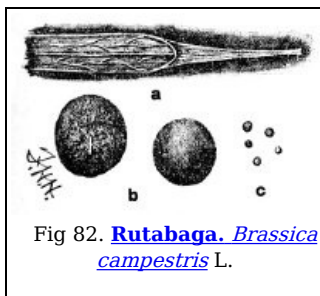
Hoary Alyssum. *Berteroa incana* (L.) D. C. Flowers white; pods oval, flattened; seeds reddish brown, circular, broad oval, or rhombic in outline, about 1.5 mm. in diameter, flat on one side showing a slight groove, the other side convex, irregular owing to pressure in the pod. Cotyledons accumbent. Introduced from Europe. A thrifty weed of the mustard family.

Fig 80. **Hoary Alyssum.** *Berteroa incana* (L.) D. C.



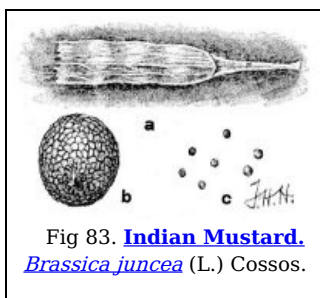
Charlock. *Brassica arvensis* (L.) B. S. P. Pods tipped with a flattened elongated-conic, often 1-seeded beak. See also cuts of rutabaga and black mustard. Introduced from Europe. See statements last above.

Fig 81. **Charlock.** *Brassica arvensis* (L.) B. S. P.



Rutabaga. *Brassica campestris* L. Seed dull, light or dark reddish brown, roughened by an indistinct net work of ridges, very nearly spherical, 1.4-1.8 mm. in diameter. Much cultivated, inclined to escape. Included here for comparison with other species. Introduced from Europe.

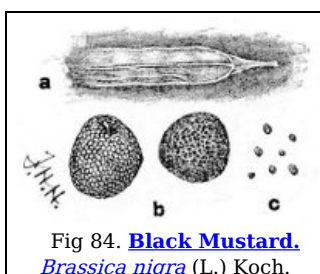
Fig 82. **Rutabaga.** *Brassica campestris* L.



Indian Mustard. *Brassica juncea* (L.) Cossos. See also cuts of turnip and black mustard. Introduced from Europe.

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Fig 83. **Indian Mustard.** *Brassica juncea* (L.) Cossos.



Black Mustard. *Brassica nigra* (L.) Koch. Seeds dark brown to reddish brown, 1-1.7 mm., spherical, or broadly oblong, not flattened. The surface of well developed specimens presents a delicate but evident net work of fine ridges which appear under the lens as dark lines. The scar (hilum) is a whitish, elevated spot, at one extremity of the oblong seeds. See cuts of seeds of turnip. Introduced from Europe. A vigorous persistent weed.

Fig 84. **Black Mustard.** *Brassica nigra* (L.) Koch.

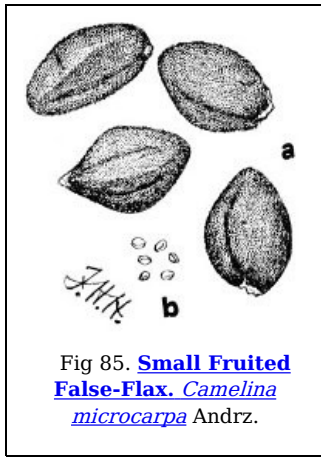


Fig 85. **Small Fruited False-Flax.** *Camelina microcarpa* Andrz.

Small Fruited False-Flax. *Camelina microcarpa* Andrz. Flowers small, yellow; pods pear-shaped, flattened, about 6 mm. long, surrounded by a vertical ridge; seeds reddish brown, granular, usually broad-oval, about 1 mm. long, slightly flattened, the vertical ridge much less prominent than in *C. sativa*. When wet the seed is soon covered with mucilage. Not yet very common. Naturalized from Europe.

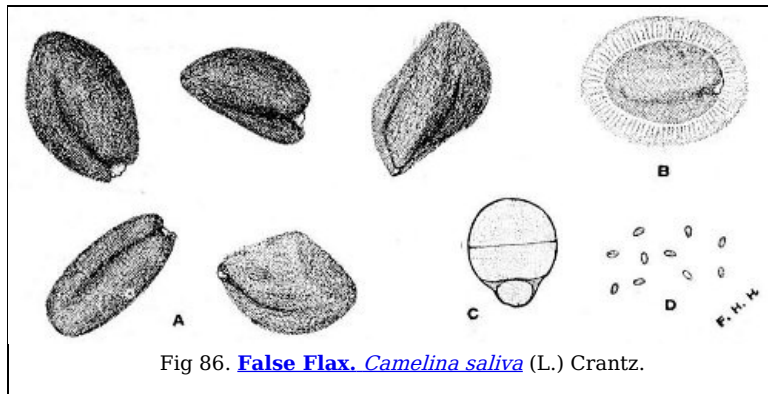


Fig 86. **False Flax.** *Camelina saliva* (L.) Crantz.

False Flax. *Camelina saliva* (L.) Crantz. The common name is derived from the fact that it is a weed of flax fields in Europe. Flowers small, yellowish; pods pear-shaped, slightly flattened, 8-10 mm. long, surrounded by a vertical ridge. Seeds reddish yellow, granular, usually oval, 2-3 mm. long, one side flat or roundish, the other furnished with a prominent vertical or oblique ridge. Seed incumbent. When wet the seed is soon covered with mucilage. Naturalized from Europe.

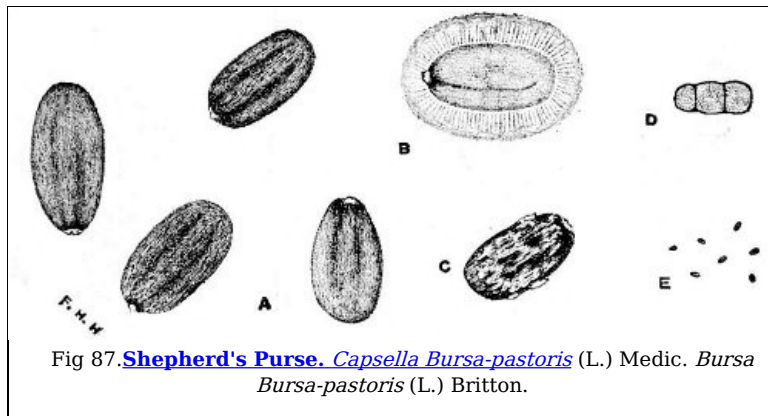


Fig 87. **Shepherd's Purse.** *Capsella Bursa-pastoris* (L.) Medic. *Bursa Bursa-pastoris* (L.) Britton.

Shepherd's Purse. *Capsella Bursa-pastoris* (L.) Medic. *Bursa Bursa-pastoris* (L.) Britton. Flowers small, white; pods flat, nearly triangular, about 4 mm. long. Seeds reddish yellow, granular, oblong, slightly flattened, 1 mm. or less long. Each side usually bearing two longitudinal grooves, separating the surface into three nearly equal parts, these grooves indicating the position of the parts of the embryo. When placed in water, a copious coat of transparent mucilage appears on the surface. In Nevada and Colorado a great pest in fields of Alfalfa.

Hare's Ear. *Conringia orientalis* (L.) Dumort. Seeds brown, surface checked off into minute irregular pits or patches; broad oval, 2-2.5 mm. long, in section nearly circular, except two opposite slight grooves near one side. Cotyledons incumbent. Introduced, not common.

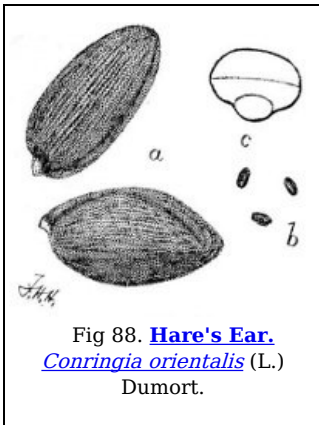


Fig 88. **Hare's Ear.**
Conringia orientalis (L.)
Dumort.

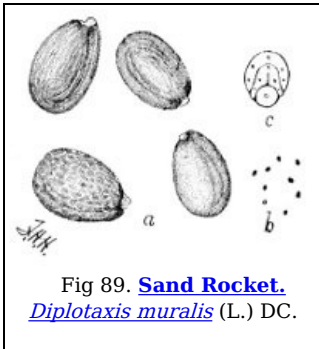


Fig 89. **Sand Rocket.**
Diplotaxis muralis (L.) DC.

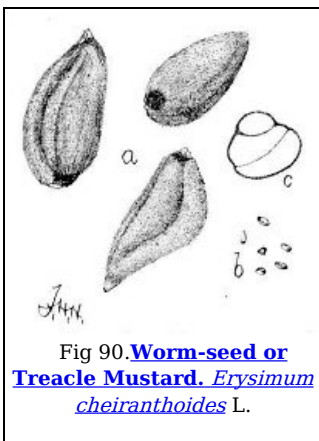


Fig 90. **Worm-seed or
Treacle Mustard.** *Erysimum
cheiranthoides* L.

Sand Rocket. *Diplotaxis muralis* (L.) DC. Flowers yellow, seeds reddish yellow or reddish brown, broad oval, somewhat flattened. Mucilaginous when wet. Introduced from Europe. A vigorous weed.

Worm-seed or Treacle Mustard. *Erysimum cheiranthoides* L. Flowers yellow; seeds reddish yellow, smooth, dull, about 1.2 mm. long, ovoid or oval, more or less flattened, varying much in shape; some of them acute, rhombic or triangular, becoming mucilaginous when wet. Probably introduced from Europe. If not already in some portions of the state, we may at any time expect to find three other species of *Erysimum*. A vigorous and prominent weed.

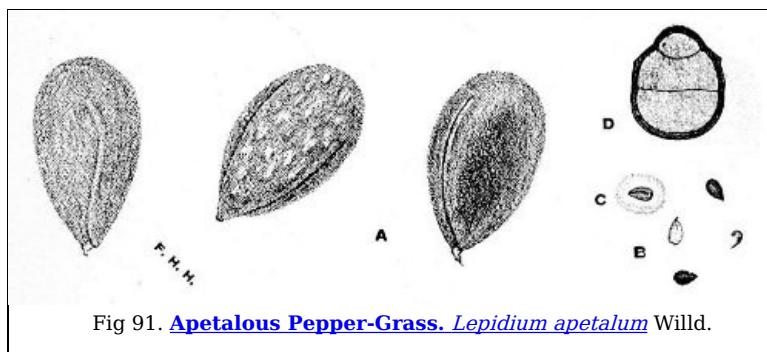


Fig 91. **Apetalous Pepper-Grass.** *Lepidium apetalum* Willd.

Apetalous Pepper-Grass. *Lepidium apetalum* Willd. Petals usually wanting, sometimes 2 and minute; pods flat, nearly circular; seeds reddish yellow, flattened, ovate, 1.5-1.8 mm. long, or more exactly, nearly straight on one side and roundish on the other. Mucilaginous when wet. Cotyledons incumbent. When well developed in open places it becomes a tumble weed. Apparently naturalized from Europe.

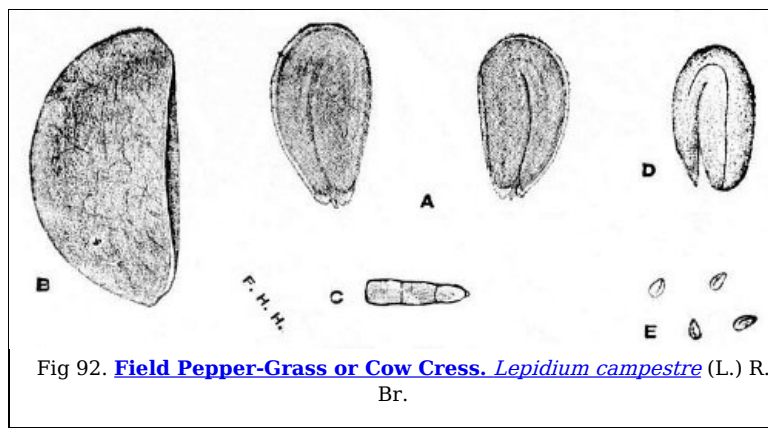


Fig 92. **Field Pepper-Grass or Cow Cress.** *Lepidium campestre* (L.) R. Br.

Field Pepper-Grass or Cow Cress. *Lepidium campestre* (L.) R. Br. Petals white; pods flat, nearly circular; seeds dull, dark brown, obovoid, with base acute, more or less flattened on three sides, 2-2.5 mm. long. Mucilaginous when wet. Cotyledons incumbent. Naturalized from Europe.

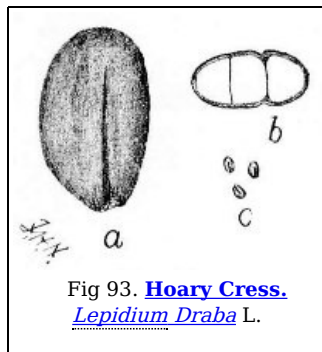


Fig 93. **Hoary Cress.** *Lepidium Draba* L.

Hoary Cress. *Lepidium Draba* L. Seed reddish brown, surface slightly uneven, slightly flattened, oval to broad oval, 2-2.3 mm. long, usually with two slight vertical grooves on each side, incumbent. This may soon appear in Michigan.

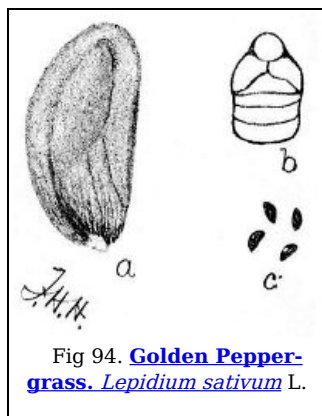


Fig 94. **Golden Pepper-grass.** *Lepidium sativum* L.

Golden Pepper-grass. *Lepidium sativum* L. Seed reddish yellow to reddish brown, oval, slightly compressed, often nearly straight on one edge, usually showing two vertical grooves on each side, 2.5 mm. long, cotyledons incumbent. This is not a grass but a plant of the mustard family; it has escaped from cultivation.

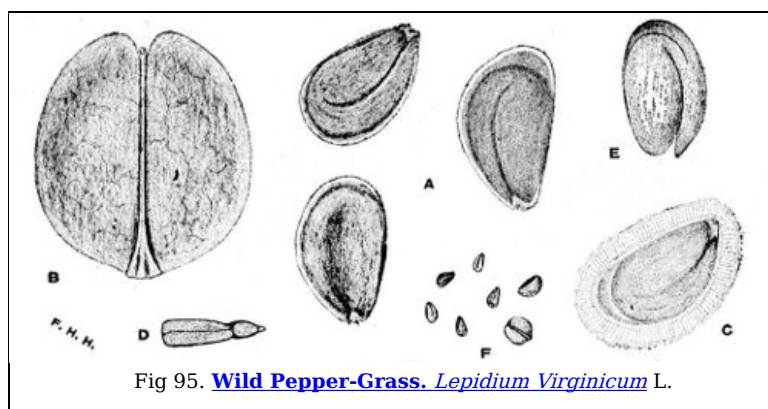


Fig 95. **Wild Pepper-Grass.** *Lepidium Virginicum* L.

Wild Pepper-Grass. *Lepidium Virginicum* L. Petals white, pods flat, nearly circular; seeds granular, dull, reddish yellow, flat, ovoid with one edge straight, the other rounded, usually with a slight wing on the broad end and on the round edge. 1.5-1.8 mm. long. Mucilaginous when wet. Cotyledons accumbent.

When mature, large plants become tumble weeds. Apparently native to this country.

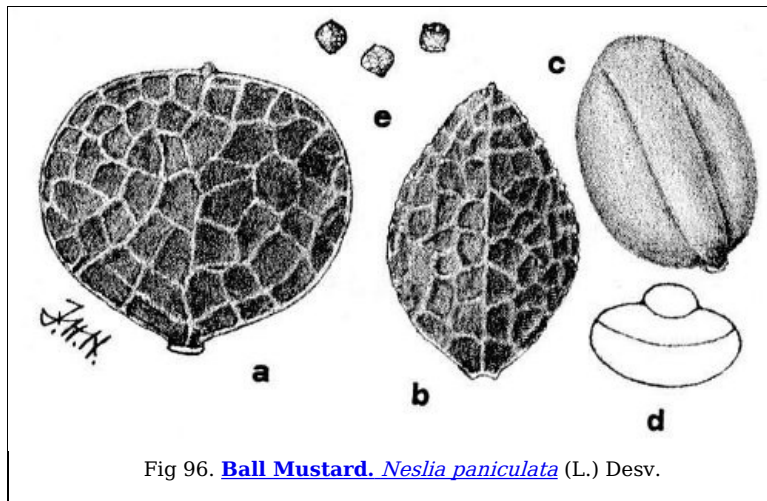


Fig 96. **Ball Mustard.** *Neslia paniculata* (L.) Desv.

Ball Mustard. *Neslia paniculata* (L.) Desv. Small fruits, greenish to light yellowish-brown, globular, 2 mm. in diameter, covered with net-veined ridges; 1-2 seeded, cotyledons incumbent. Not yet known in Michigan but may arrive any time. Native of Europe.

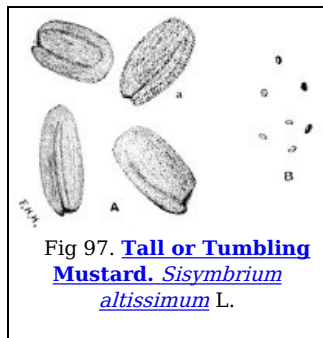


Fig 97. **Tall or Tumbling Mustard.** *Sisymbrium altissimum* L.

Tall or Tumbling Mustard. *Sisymbrium altissimum* L. Flowers cream-color; pods long and narrow; seeds reddish yellow, oblong, about 1.5 mm. long, the apex winged. Mucilaginous when wet. Cotyledons incumbent. Introduced from Europe. One of the worst weeds in the northwest.

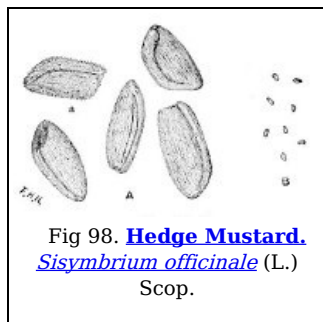


Fig 98. **Hedge Mustard.** *Sisymbrium officinale* (L.) Scop.

Hedge Mustard. *Sisymbrium officinale* (L.) Scop. Flowers yellow, seeds reddish brown or yellow, oblong, while lying on the flat side, circular in outline at the middle as viewed from the edge, straight on one side from the middle tapering to each end. 1-1.5 mm. long. Mucilaginous when wet. Cotyledons incumbent. Introduced from Europe.

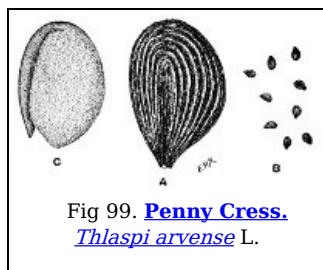


Fig 99. **Penny Cress.** *Thlaspi arvense* L.

Penny Cress. *Thlaspi arvense* L. Flowers white; pods thin, double convex, nearly circular; seeds deep reddish brown, flat-oval or ovate, covered on each side by 12-14 curved ridges which originate and terminate at the narrow extremity. 1.5-2 mm. long. Cotyledons accumbent. When eaten by cows the milk and meat has a disagreeable taste. A bad weed, especially in the north-west. Introduced from Europe.

ORPINE FAMILY. CRASSULACEAE.

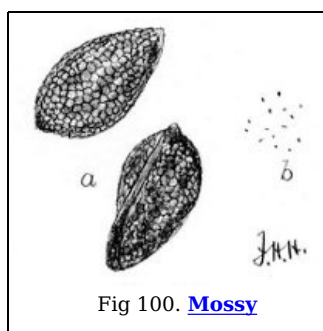
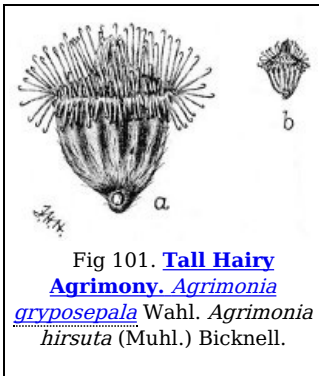


Fig 100. **Mossy**

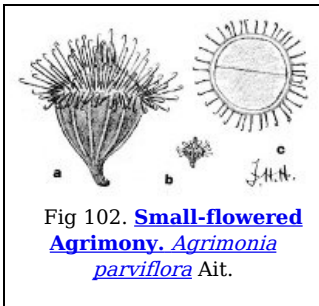
Mossy Stonecrop. *Sedum acre* L. Seed light, reddish-yellow, somewhat glossy, obovate to oblong, pointed at the base, slightly anatropous, compressed, 6-7 mm. long. This mossy little plant is persistent when once established in sandy soil. Introduced from Europe.

ROSE FAMILY. ROSACEAE.

Tall Hairy Agrimony. *Agrimonia gryposepala* Wahl. *Agrimonia hirsuta* (Muhl.) Bicknell. Flowers yellow. Bur, consisting of calyx and two included fruits inside of which are two seeds; lower part of bur, top-shaped, rough, grooved, above which are numerous hooked prickles in several rows, the whole 7-10 mm. long. Native of woods in this country; seeds mottled brown, flat on one side, 2.5 by 2.5 mm. not found mixed with grass seed. Several other species are nearly as troublesome as this one. Seldom found out of the woods.



Small-flowered Agrimony. *Agrimonia parviflora* Ait. Flowers yellow; fruit 5-6 mm. long and nearly as wide including the hooked bristles; bristles few, erect or spreading, scarcely any recurved; seeds light brown, broad oval, 2.7 by 2.5 mm. with a rounded point at the base more pronounced than in the former species. Shady places.

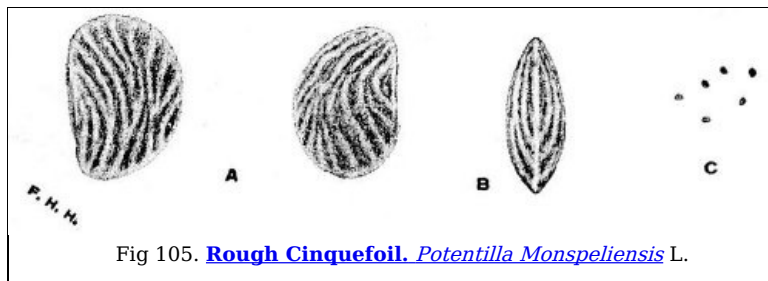


Silvery Cinquefoil. *Potentilla argentea* L. Flowers yellow, achenes dull white to brown, unsymmetrically ovoid or short kidney-shaped, slightly flattened, 0.5-0.7 mm. long, smooth or marked by a few longitudinal curved ridges, some of them forked. Introduced into Michigan from Europe or possibly from the eastern states. Thrives in sandy land.

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One kind of Cinquefoil or Five-finger. *Potentilla Canadensis* L. Achene unsymmetrically ovoid, light straw-color to brown, ridges indistinct, short, wavy, branched and broken up, (these ridges are different from those of *P. argentea* or *P. monspeliensis*) 1 mm. long, the achene is less flattened and narrower in proportion. Native from Me. to Ga. Miss.



Rough Cinquefoil. *Potentilla Monspeliensis* L. Flowers yellow; achenes nearly white to light brown, unsymmetrically ovoid, or short kidney-shaped, slightly flattened, 1 mm. or less in length, clearly marked by a few longitudinal curved ridges, the longer ones forked. Indigenous to Michigan, thriving on moist or wet land.

PULSE FAMILY. LEGUMINOSAE.

Ax Seed. Ax Wort. *Coronilla scoparioides* Koch. Seed reddish brown, oblong, slightly flattened and curved, 4-5 mm. long, 1.5 mm. wide, with a circular scar in a depression on the middle of one edge, and a slight ridge the entire length of both sides. Introduced from Europe, not yet a prominent weed in Michigan.

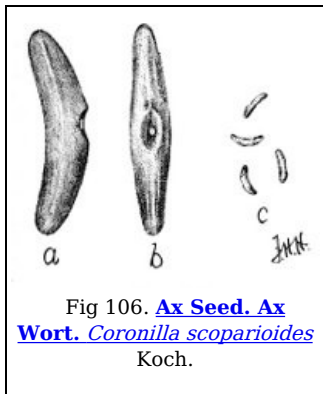


Fig 106. **Ax Seed. Ax Wort.** *Coronilla scoparioides* Koch.

Bird's-foot Trefoil. Ground Honeysuckle. Bloom-fell. *Lotus corniculatus* L. Seed light brown occasionally mottled with black, shining, spherical to ovoid, slightly compressed near one edge, 1-1.2 mm. in diameter, the compressed portion (raphe) extending half to three-fourths the length of the seed to the hilum or scar, above this the seed is narrower. Introduced from Europe. Seldom met with in this country.

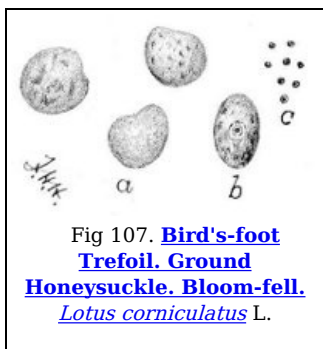


Fig 107. **Bird's-foot Trefoil. Ground Honeysuckle. Bloom-fell.** *Lotus corniculatus* L.

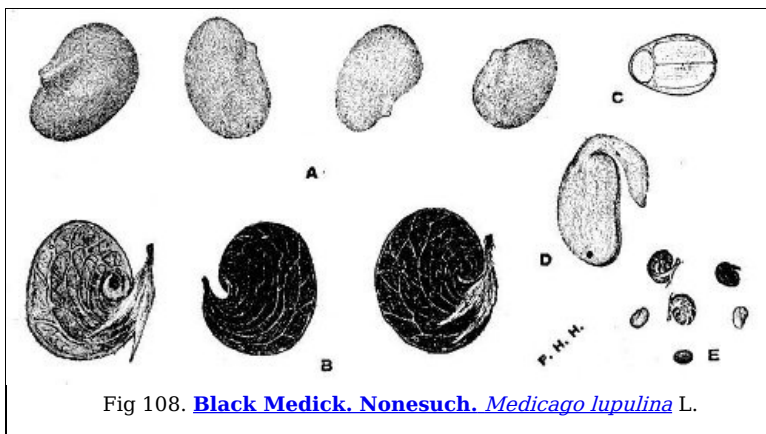


Fig 108. **Black Medick. Nonesuch.** *Medicago lupulina* L.

Black Medick. Nonesuch. *Medicago lupulina* L. Flowers light yellow; pods black, oval, much flattened, spirally coiled, causing the two extremities to nearly meet; 2-2.8 mm. long; seeds smooth, dull yellow to green, oval, flattened, kidney-shaped, with a tubercle near the middle of the concave edge or like the figure, 1.5-1.8 mm. long. Introduced from Europe and becoming frequent in grass land. Its worst feature is to supply seeds that may be mistaken for and mixed with seeds of alfalfa and red clover. The seeds differ from those of alfalfa in being more commonly egg-shaped than kidney-shaped in outline. The scar is nearer the small extremity in these seeds than in those of alfalfa. For pasture this is less valuable than white clover.

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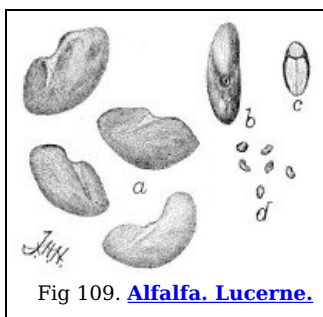


Fig 109. **Alfalfa. Lucerne.**

Alfalfa. Lucerne. *Medicago sativa* L. Seeds varying much in shape and size owing to their crowding in the pod when young, yellowish green to light brown. The cuts give a good idea of the variety of shapes; surface dull or somewhat glossy, often kidney shaped, with the scar in a depression near the middle, the tips may be truncate or acute or rounded, 2-2.5 mm. long in cross-section, oval; when viewed from one edge it is seen to be bent or warped in various ways, half anatropous, often seen with a slight depression extending along one edge from the scar to one end, larger seeds more often flattened than are the shorter. A prominent forage plant, the seeds of which are often adulterated.

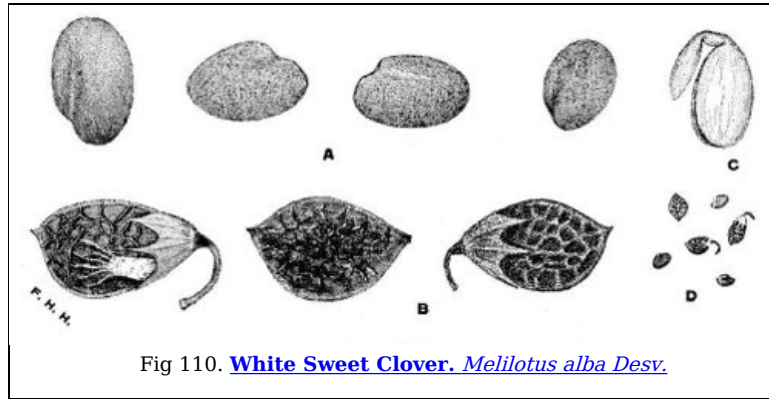


Fig 110. **White Sweet Clover.** *Melilotus alba* Desv.

White Sweet Clover. *Melilotus alba* Desv. Flowers white; pods straw-color to brown, coarsely and irregularly reticulate-ridged or wrinkled; seeds smooth, dull, yellowish or greenish, more strictly elliptical-oblong in outline than those of red clover and alfalfa, bearing the broad, shallow notch near one extremity; 2-2.2 mm. long. Introduced from Europe. Seeds used to adulterate those of alfalfa.

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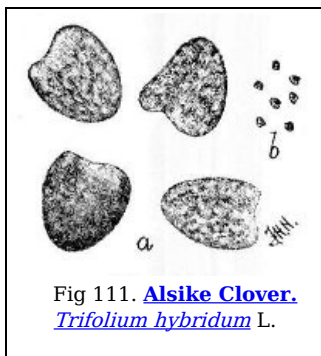


Fig 111. **Alsike Clover.** *Trifolium hybridum* L.

Alsike Clover. *Trifolium hybridum* L. Seeds dull yellowish green to very dark green, some of them mottled, lighter about the seed scar, flattened, one of the rounded edges thicker than the other, and between the two a slight groove on each side; seed rounded at one end, the other truncate with the seed scar in the middle of the truncate end. Some seeds are half anatropous, resembling in shape those of red clover; 1.3-1.2 mm. in diameter. When compared with white clover, these seeds are larger and thicker. Introduced from Europe.

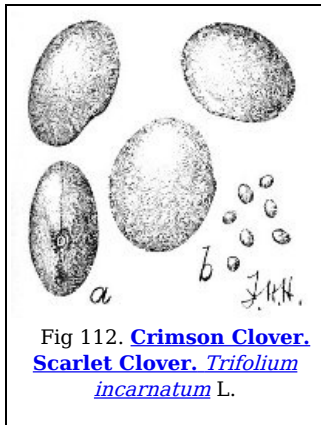


Fig 112. **Crimson Clover. Scarlet Clover.** *Trifolium incarnatum* L.

Crimson Clover. Scarlet Clover. *Trifolium incarnatum* L. Seed smooth, shining when not old, color light yellow to reddish yellow or brown, oval, scar about one-third the distance from the narrow end, three-fourths anatropous, 2-2.5 mm. long, very slightly compressed.

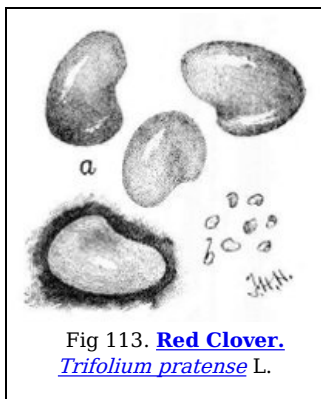


Fig 113. **Red Clover.** *Trifolium pratense* L.

Red Clover. *Trifolium pratense* L. Seeds usually dull, pure light yellow to purple, flattened, ovoid, having the seed scar near the middle of one edge or below the middle, half anatropous, a slight depression on each side from the scar toward the broad end, the short edge thinner than the long edge, 1.5-1.8 mm. long by 1. x 1.4 mm. wide. Very common. Introduced from Europe.

Mammoth Clover is a variety or race or red clover, the seeds of which are indistinguishable from the seeds of red clover. As a rule they are darker in color and rather smaller. Red clover and mammoth clover are usually much mixed.

Low Hop-clover. *Trifolium procumbens* L. A low, yellow-flowered annual, often becoming a tumble-weed at maturity. Seeds plump, shining, straw-colored to light brown, broad oval, very slightly flattened, 1 mm. long, three-fourths anatropous, i. e., the scar is a very little distance from one end of the seed. A little way back of the scar on each side is a

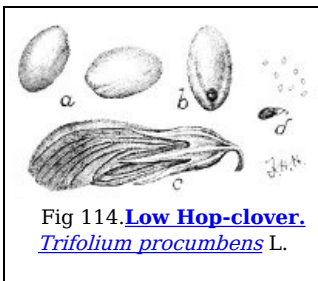


Fig 114. **Low Hop-clover.**
Trifolium procumbens L.

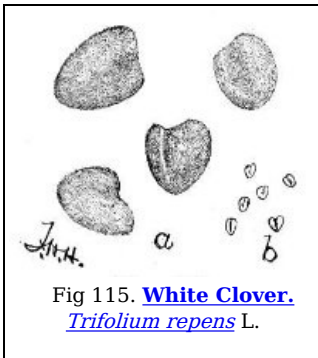


Fig 115. **White Clover.**
Trifolium repens L.

White Clover. *Trifolium repens* L. Seeds scarcely shining, yellow to light brown, flattened, one of the rounded edges thinner than the other, and between the two a slight groove on each side, one end rounded, the other truncate with a slight depression in the center containing the seed scar 1.-1.2 mm. long to 1 mm. wide. The seeds that are truncate at one end are anatropous, some of them resembling those of red clover are half anatropous. Common and well known, possibly native to the northern country.

GERANIUM FAMILY. GERANIACEAE.

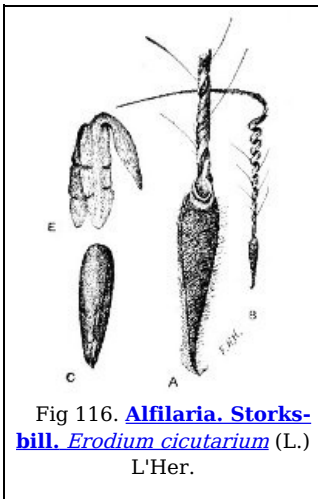


Fig 116. **Alfilaria. Storks-bill.** *Erodium cicutarium* (L.) L'Her.

Alfilaria. Storks-bill. *Erodium cicutarium* (L.) L'Her. Flowers pink; achenes reddish brown, hairy, lance-shaped, the smaller end curved, hard, sharp, the larger end when mature bearing an awn spirally coiled for half its length, the sickle like apex turned to one side.

Achenes 5-6 mm. long, the coiled portion and cycle-like apex each 10-15 mm. long. True seed light brown, ovoid-lanceolate 2.5-2.7 mm. long. Introduced from Europe.

This plant is not yet common in our state, but, judging from its behavior in the botanic garden, it is destined soon to become a bad weed. On the desert ranches of Arizona, Nevada and elsewhere, it furnishes much pasture.

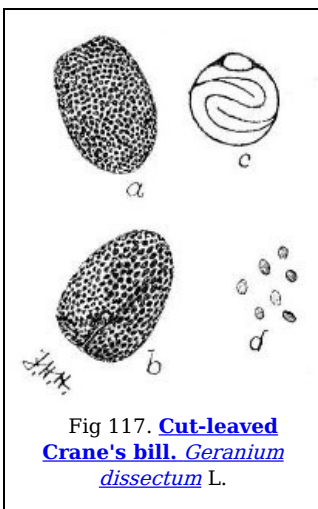


Fig 117. **Cut-leaved Crane's bill.** *Geranium dissectum* L.

Cut-leaved Crane's bill. *Geranium dissectum* L. Seed light brown, broadly oval or ovoid, surface deeply pitted requiring 25-30 pits to form one row transversely about the surface. Seed scar at the larger end from which extends a slight vertical ridge reaching nearly one-third the length of the seed. Introduced from Europe, becoming common.

Small-flowered Crane's bill. *Geranium pusillum* Burm. f. Flowers minute, pink, pubescent under a lens, slightly compressed, oval with the apex near one side of one end, about 2 mm. long, the beak nearly twice as long; seed reddish brown, smooth, oval, slightly flattened, 1.7-1.9 mm. long. Introduced from Europe, a bad weed when once established.

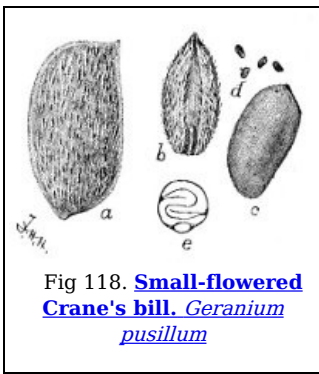


Fig 118. **Small-flowered Crane's bill.** *Geranium pusillum*

SPURGE FAMILY. EUPHORBIACEAE.

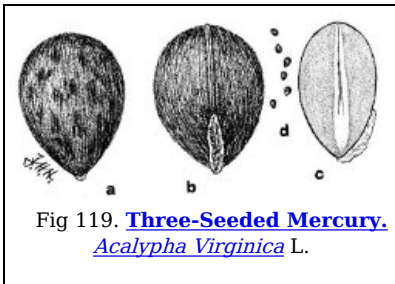


Fig 119. **Three-Seeded Mercury.** *Acalypha Virginica* L.

Three-Seeded Mercury. *Acalypha Virginica* L. Seeds 1.3-1.8 mm. long oval or obovoid, dull, light to dark reddish brown or gray, mottled with black spots, surface covered with numerous irregular vertical lines, a ridge (hilum) extending from the pointed end for about one-third the length, continuing to the broad extremity as a dark line (raphe). Native to this country. Moist land.

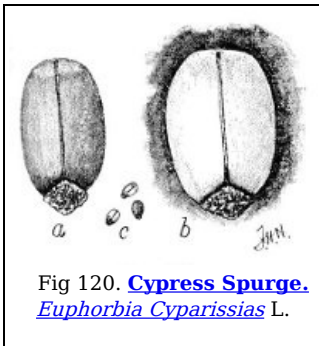


Fig 120. **Cypress Spurge.** *Euphorbia Cyparissias* L.

Cypress Spurge. *Euphorbia Cyparissias* L. Seeds dull, light lead or ash-colored, oval or oblong, circular in transverse section, 1.5-2 mm. long, not including an irregular yellowish appendage (caruncle) at the base, a dark verticle line (raphe) extending along one side. Introduced from Europe. Thriving on thin sandy soil.

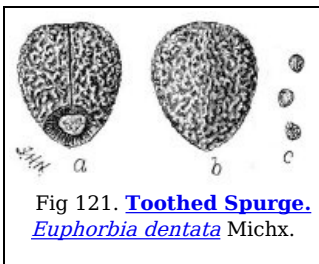


Fig 121. **Toothed Spurge.** *Euphorbia dentata* Michx.

Toothed Spurge. *Euphorbia dentata* Michx. Seeds ash colored, obovoid, or globose, inconspicuously four-angled, base obtuse, irregularly tuberculate, 1 mm. or more long. It thrives in the Botanic Garden and very likely may soon spread onto Michigan farms.

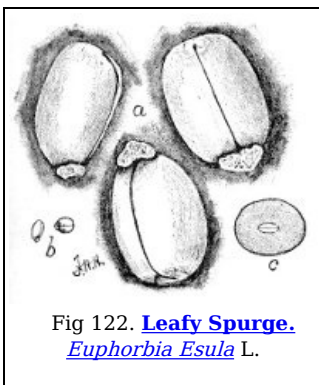


Fig 122. **Leafy Spurge.** *Euphorbia Esula* L.

Leafy Spurge. *Euphorbia Esula* L. Seeds dull, light drab colored, broad-oval, narrowed at one end, nearly circular in transverse section, 2.3 mm. long, not including a wrinkled bunch (caruncle) at the base, a dark vertical line (raphe) extending above one side opposite which is another ridge the color of the seed. Introduced from Europe.

Euphorbia hirsuta (Torr). Weigand. Seeds lead colored, obovoid approximately square in transverse section with one side narrower than the others, 4-10 irregular transverse ridges on each side, the raphe standing along one corner, about 1.2 mm. long by 7 mm. wide. Sandy soil.

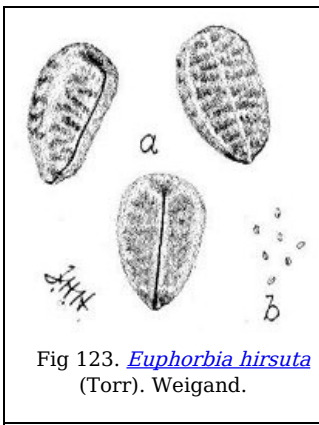


Fig 123. *Euphorbia hirsuta* (Torr). Weigand.

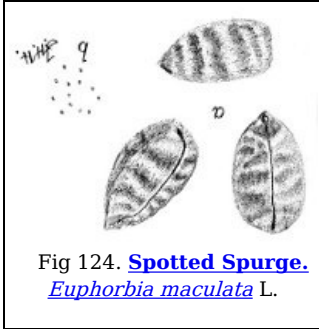


Fig 124. **Spotted Spurge.** *Euphorbia maculata* L.

Spotted Spurge. *Euphorbia maculata* L. Seeds obovoid-oblong, nearly square in cross-sections, minutely pitted and transversely wrinkled with 2-5 broken wavy ridges, a fine dark vertical line (raphe) along one corner, color reddish drab, .6-.8 mm. long. Probably introduced from west of the Rocky Mountains.

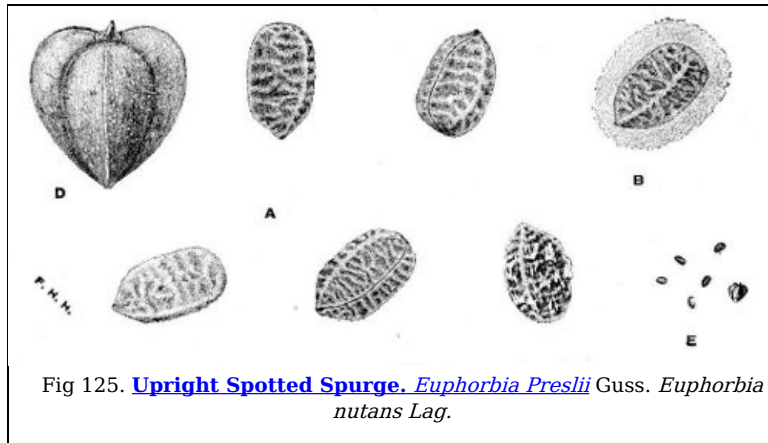


Fig 125. **Upright Spotted Spurge.** *Euphorbia Preslii* Guss. *Euphorbia nutans* Lag.

Upright Spotted Spurge. *Euphorbia Preslii* Guss. *Euphorbia nutans* Lag. Seeds lead-colored obovoid-oblong, with 4 unequal sides as seen in cross-section, pitted and transversely wrinkled, with 2-5 broken wavy ridges, a fine dark, vertical line (raphe) along one corner, 1-1.3 mm. long. Native of eastern North America. Introduced in seeds of red clover.

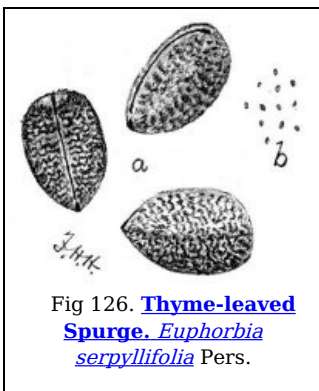


Fig 126. **Thyme-leaved Spurge.** *Euphorbia serpyllifolia* Pers.

Thyme-leaved Spurge. *Euphorbia serpyllifolia* Pers. Seed ash-colored, obovoid, four-angled or nearly square in cross-section, the surface covered with four or five more or less broken obtuse transverse ridges, a slender, dark line (raphe) extending from end to end on one corner. Dry soils, like railway tracks.

CASHEW FAMILY. ANACARDIACEAE.

Poison Ivy. *Rhus Toxicodendron* L. Berry nearly white, globular, about 5 mm. in diameter, drupe kidney-shaped, concave on both edges, 3 by 4.5 mm. in diameter, 2 mm. thick. To some people very poisonous to the touch; a woody shrub.

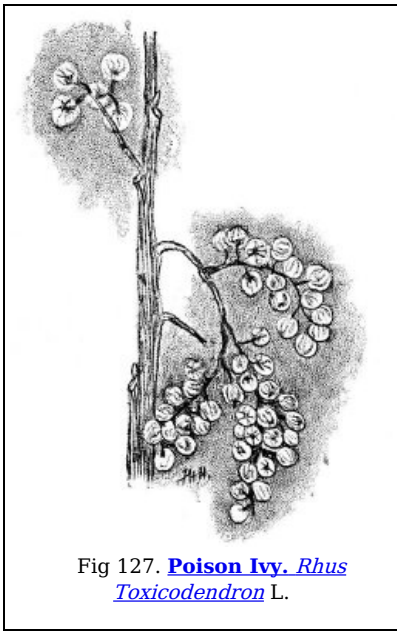


Fig 127. **Poison Ivy.** *Rhus Toxicodendron* L.

MALLOW FAMILY. MALVACEAE.

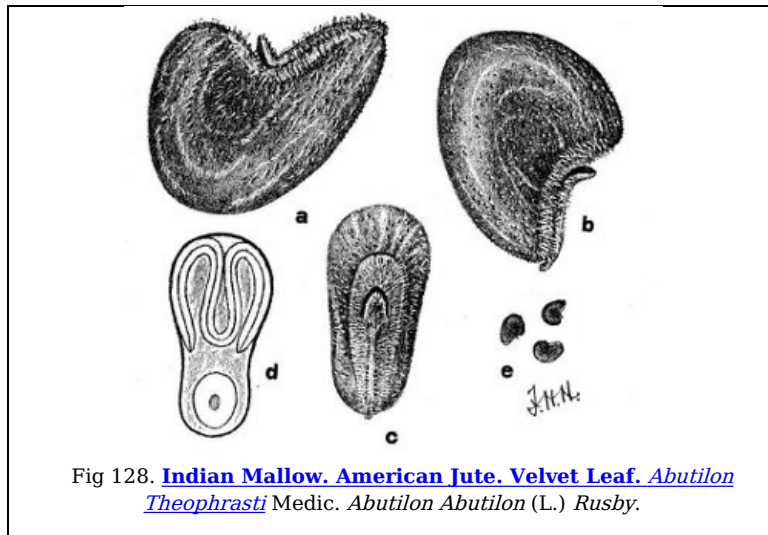


Fig 128. **Indian Mallow. American Jute. Velvet Leaf.** *Abutilon Theophrasti* Medic. *Abutilon Abutilon* (L.) Rusby.

Indian Mallow. American Jute. Velvet Leaf. *Abutilon Theophrasti* Medic. *Abutilon Abutilon* (L.) Rusby. Flowers yellow; seeds brown, flattened, 3.5-4 mm. long, ovoid excepting a piece cut from one side of the smaller end with 3-4 curved rows of minute slender objects on each side, the raphe extending from the pointed end to the notch on one side (half anatropous). Naturalized from northern Asia.

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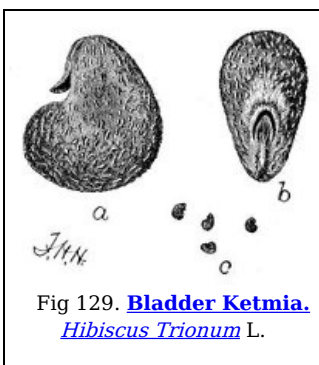


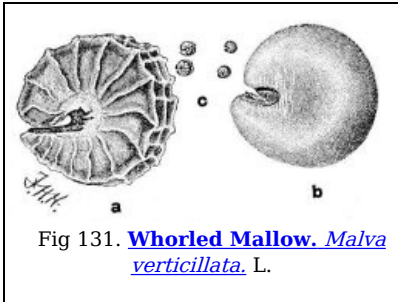
Fig 129. **Bladder Ketmia.** *Hibiscus Trionum* L.

Bladder Ketmia. *Hibiscus Trionum* L. Seed brown, the surface dotted with numerous, ragged, light-colored pimples. Think of the shape as obovoid, and then bent somewhat to the side. As now found the seed is triangular in outline with rounded corners, considerably thinned toward one corner near which is the seed scar in the midst of a depression. Each side of the triangle is about 2 mm. long. Introduced from Europe. Not yet a prominent weed in Michigan.

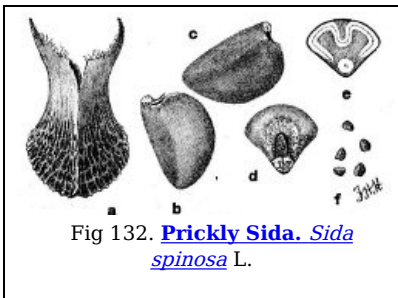


Fig 130. **Cheeses. Running Mallow.** *Malva rotundifolia* L.

Cheeses. Running Mallow. *Malva rotundifolia* L. Flowers white; cluster of 12-15 fruits flattened, circular with depression on each side, ovary circular, wedge-shaped, very slightly roughened, with radiating ridges; seeds light brown, nearly smooth, flattened, 1.4-1.7 mm. in diameter, wedge shaped, nearly circular with a small notch on the thin edge. Naturalized from Europe.

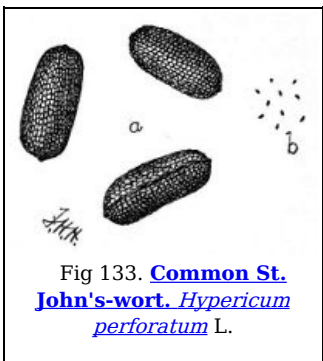


Whorled Mallow. *Malva verticillata* L. Flowers white; cluster of 10-12 fruits flattened, circular with depression on each side, carpel circular, wedge-shaped, about three rows of irregular shallow pits on the wide edge, radiating ridges on each flat side; seeds light brown, nearly smooth, flattened, wedge-shaped, ovate or nearly circular, 1.5-1.7 mm. long, with a small notch on the thin edge. Introduced from the west.



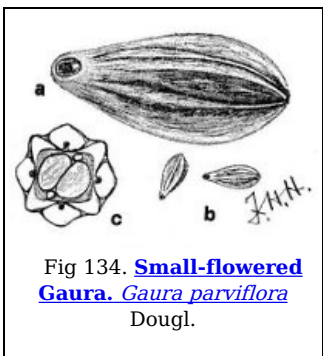
Prickly Sida. *Sida spinosa* L. Seed smooth, dull brown or reddish brown, having one side round and two sides flat or more or less concave, all edges obtuse while lying on one flat side, broadly ovoid, with one side nearly straight, scar at the larger end in the midst of a slight depression, 1.5-1.8 mm. long. Not yet common in Michigan. Introduced from the tropics.

ST. JOHN'S-WORT FAMILY. HYPERICACEAE.



Common St. John's-wort. *Hypericum perforatum* L. Seed dark brown, mottled with about twenty-four vertical rows of small scars, short oblong, 1 mm. long, a little more or less, circular in cross-section, a slight point at one or both ends. Troublesome in old meadows and pastures. From Europe.

EVENING-PRIMROSE FAMILY. ONAGRACEAE.



Small-flowered Gaura. *Gaura parviflora* Dougl. Achenes greenish brown, at first glance, having the appearance of barley, linear, swollen in the middle, more or less grooved or channeled, 6-8 mm. long. Introduced from the South.

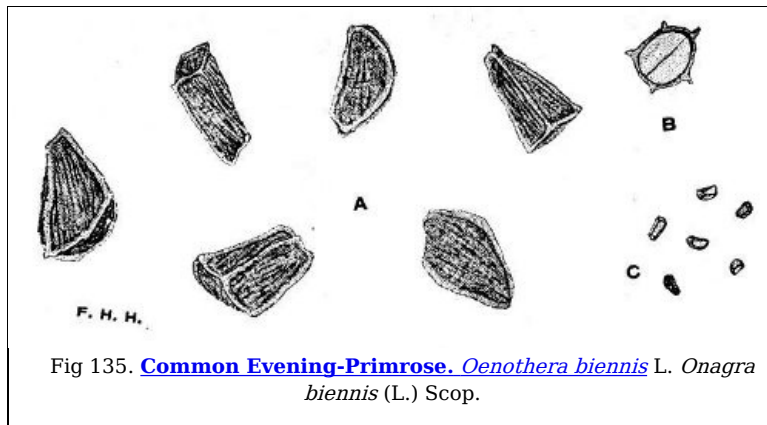


Fig 135. **Common Evening-Primrose.** *Oenothera biennis* L. *Onagra biennis* (L.) Scop.

Common Evening-Primrose. *Oenothera biennis* L. *Onagra biennis* (L.) Scop. Flowers yellow; seeds reddish brown or darker, surface dull, minutely ridged, very irregular in shape owing to crowding in the pod, more or less pyramidal and four or five sided, the angles acute or with a wing-like border, 1.-1.5 mm. long. Native to this country.

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PARSLEY FAMILY. UMBELLIFERAE.

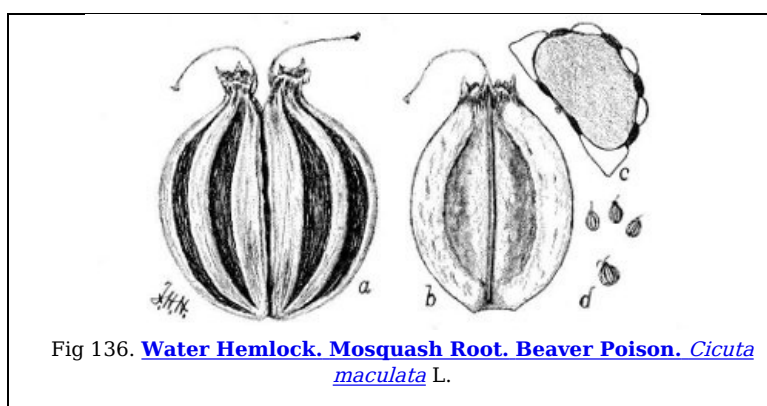


Fig 136. **Water Hemlock. Mosquash Root. Beaver Poison.** *Cicuta maculata* L.

Water Hemlock. Mosquash Root. Beaver Poison. *Cicuta maculata* L. Achenes, when young grow in couples joined by their flat sides, broadly oval, somewhat flattened, a single one-half oval, 2.7-3.2 mm long, with five corky yellowish white vertical stripes alternating with four brown oil tubes, the flat side with two wide light corky stripes including two brown oil tubes. The roots are very poisonous. Native to Michigan and elsewhere. Moist or wet lands.

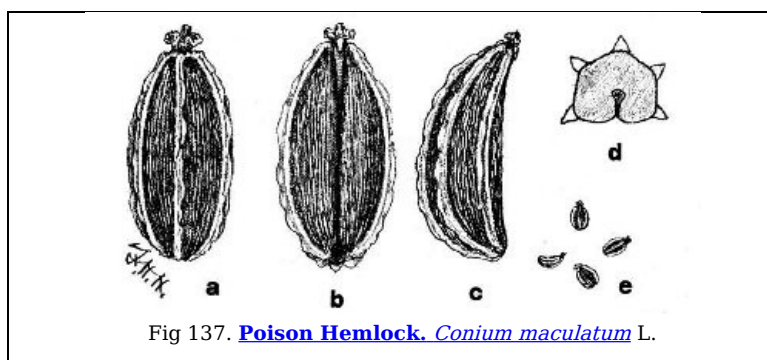


Fig 137. **Poison Hemlock.** *Conium maculatum* L.

Poison Hemlock. *Conium maculatum* L. Flowers white, achenes growing in pairs, light brown, oval, flat on one side, five ribs extending from one end to the other, between them the surface abounds in minute vertical projections, achene about 3.5 mm. long. Difficult to identify. Introduced from Europe.

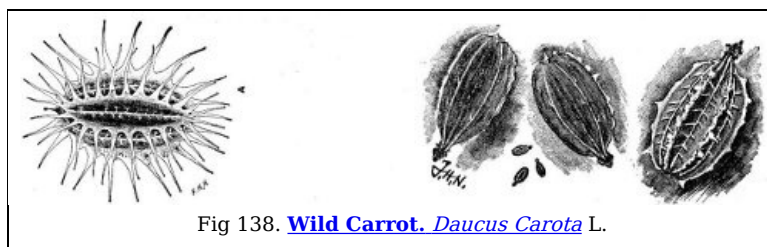


Fig 138. **Wild Carrot.** *Daucus Carota* L.

Wild Carrot. *Daucus Carota* L. Flowers white; achenes light brown, striped with white, oval, flattened, bearing numerous frail spines along the edges and in two rows lengthwise of one face, tips of spines diverging, often hooked, about 3.5 mm. long not including the spines. Introduced from Europe. This is the cultivated carrot escaped from fields and gardens. A great pest in old meadows.



Fig 139. **Wild Parsnip.**
Pastinaca sativa L.

Wild Parsnip. *Pastinaca sativa* L. Flowers yellow; achenes growing in pairs, 5-6 mm. long, with flat sides together, light brown, broad oval, much flattened, surrounded by a narrow thin ridge, 9-curved shallow ribs on one side. Introduced from Europe.

MILKWEED FAMILY. ASCLEPIADACEAE.

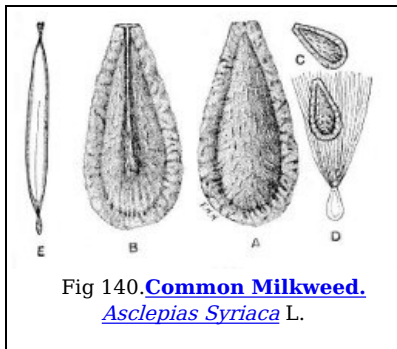


Fig 140. **Common Milkweed.**
Asclepias Syriaca L.

Common Milkweed. *Asclepias Syriaca* L. Pods 8-12 cm. long, covered with soft spiny processes; seeds dull light brown, much flattened, narrowly obovate, 6.5-8 mm. long, the small end truncate, surrounded by a broad wrinkled wing-margin or hem. The concave side bears a slender vertical ridge (raphe) for two-thirds of its length; the convex side bearing fine, short ridges. Before escaping from the pods, the small end of the seed contains a cluster of spreading silky hairs (coma) 2-3 cm. long. Native of this country. Often troublesome and conspicuous in light soil, occasionally becoming small, pale, with slender branches and dying.

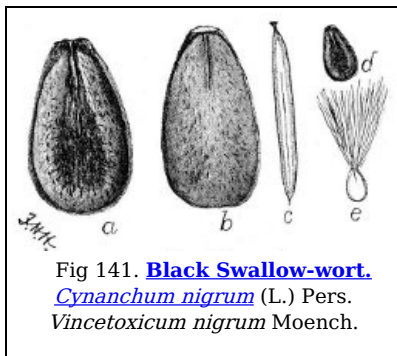


Fig 141. **Black Swallow-wort.**
Cynanchum nigrum (L.) Pers.
Vincetoxicum nigrum Moench.

Black Swallow-wort. *Cynanchum nigrum* (L.) Pers. *Vincetoxicum nigrum* Moench. Smooth pods of the vine about 5 cm. long; seeds brown when dry, much flattened, concave, obovate, 6-8 mm. long, nearly surrounded by a wing margin or hem, the small end truncate. The concave side bears a slender vertical ridge (raphe) for over half its length, both sides bearing fine short ridges. Before escaping from the pods, the small end of the seed contains a cluster of spreading silky hairs. Introduced from Europe; not yet common, but it is persistent where once started.

MORNING GLORY FAMILY. CONVULVACEAE.

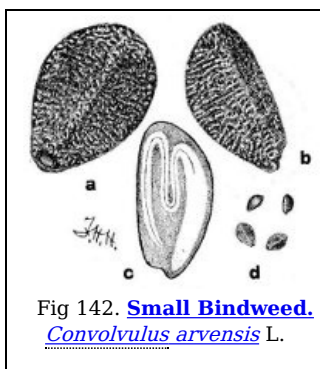


Fig 142. **Small Bindweed.**
Convolvulus arvensis L.

Small Bindweed. *Convolvulus arvensis* L. Color of seeds dull dark brown, coarsely roughened, oval, 3-4 mm. long, one face convex, the other face sloping to the edges from a broad, central ridge, becoming mucilaginous when soaked in water. Introduced from Europe. Seldom, if ever, seeding in Michigan. On dry, poor land.

Hedge or Great Bindweed. *Convolvulus sepium* L. Pod nearly globose, about 8 mm. in diameter, usually covered by the bracts and calyx; seeds dull black or dark brown, roughened, oval, about 5 mm. long, one face convex, the other face sloping to the edges from a central ridge. Native to this country. Seldom seeding in Michigan. On low land.

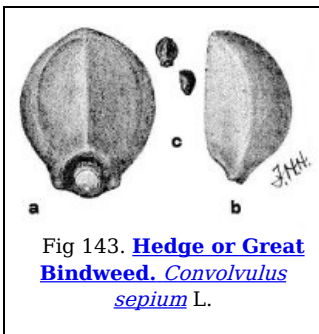


Fig 143. **Hedge or Great Bindweed.** *Convolvulus sepium* L.

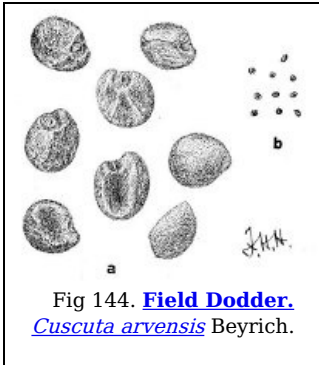


Fig 144. **Field Dodder.** *Cuscuta arvensis* Beyrich.

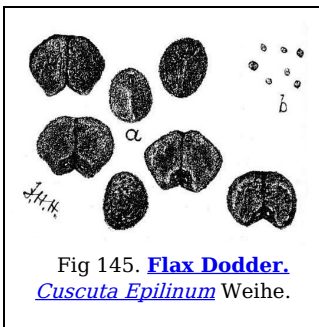


Fig 145. **Flax Dodder.** *Cuscuta Epilinum* Weihe.

Field Dodder. *Cuscuta arvensis* Beyrich. A pale yellow leafless parasitic vine; seeds dull, yellowish brown, minutely pitted, considerably resembling those of red clover, broad oval, ovoid or spherical, .7-1 mm. long, one side rounded the other often with two flat surfaces terminating in a ridge. Not uncommon with alfalfa.

Flax Dodder. *Cuscuta Epilinum* Weihe. Stems very slender, yellow or red, a parasitic vine; seeds dull, yellowish to dark brown, minutely pitted, nearly spherical, oval, ovoid, 1-1.5 mm. long. Introduced from Europe.

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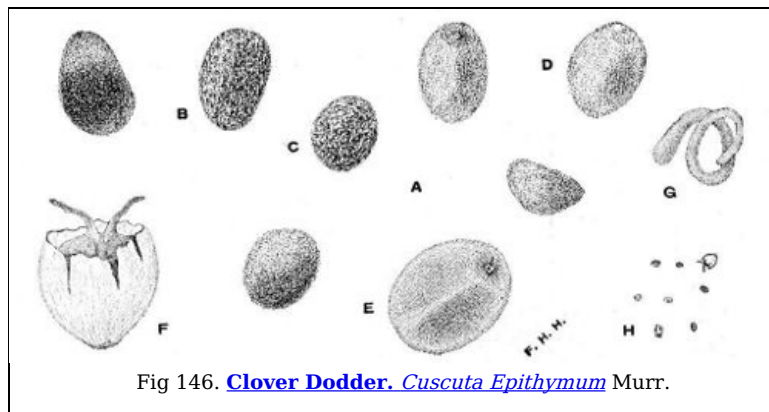


Fig 146. **Clover Dodder.** *Cuscuta Epithymum* Murr.

Clover Dodder. *Cuscuta Epithymum* Murr. Stems very slender, a parasitic vine; seeds oval to spherical, dull, pitted, color yellowish, light to dark brown, light green to purple, about 2 mm. long. Introduced from Europe. Occasionally found on red clover.

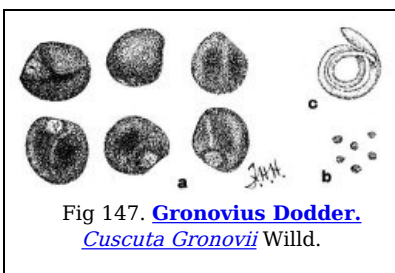


Fig 147. **Gronovius Dodder.** *Cuscuta Gronovii* Willd.

Gronovius Dodder. *Cuscuta Gronovii* Willd. Seed light to dark brown, surface minutely granular, free from gloss, a few spherical, most of them indented as they dry or variously angled where they crowded against each other in the pod, 1.5-1.7 mm. in diameter. Species of dodder are difficult to distinguish one from the other. This is common on low land, where it draws nourishment from a great variety of plants, such as willows, balsams, nettles.

Spanish Dodder. *Cuscuta planiflora* Tenore. Color light to dark pink, purple buff, olive green; surface well roughened, almost reticulated, in shape flattened on one side, ovoid, oval angled, indented in great variety, 0.7-1.2 mm. long.

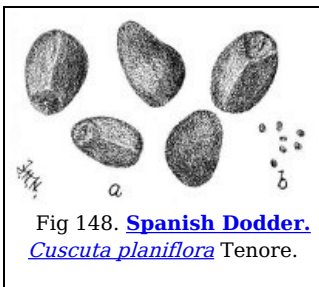


Fig 148. **Spanish Dodder.**
Cuscuta planiflora Tenore.

BORAGE FAMILY. BORAGINACEAE.

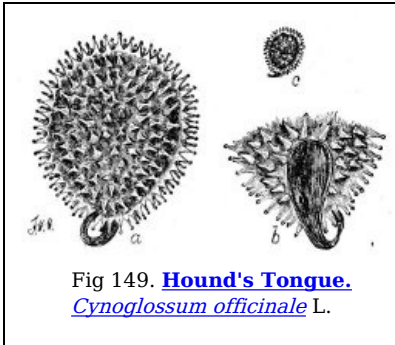


Fig 149. **Hound's Tongue.**
Cynoglossum officinale L.

Hound's Tongue. *Cynoglossum officinale* L. Flowers reddish purple; ovary brown deeply 4-lobed separating into four achenes, 5-7 mm. long, flattened, broadly ovate or circular, excepting a slight extension at one end, lower side having an ovate scar, nearly half as long as the achenes, all the rest of the surface clothed with straight, stiff, cap-shaped hairs, bearded on all sides. Introduced from Europe. Very objectionable in pastures.

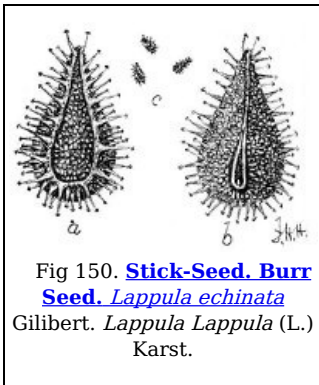


Fig 150. **Stick-Seed. Burr Seed.** *Lappula echinata*
Gilibert. *Lappula Lappula* (L.)
Karst.

Stick-Seed. Burr Seed. *Lappula echinata* Gilibert. *Lappula Lappula* (L.) Karst. Flowers blue, ovary deeply 4-lobed separating into four warty achenes, each one brown, about 2.5 mm. long, slightly flattened, ovate with wedge-shaped apex; the upper side bearing a few stiff straight, diverging cap-shaped hairs, bearded on all sides; lower side destitute of hairs, bearing a straight ridge from the point to the middle of the large end. Introduced from Europe. Very objectionable in pastures.

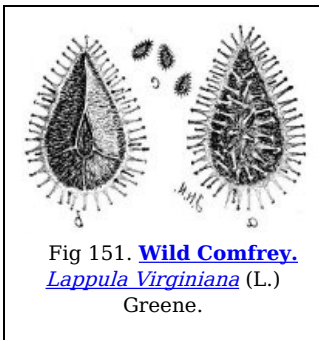


Fig 151. **Wild Comfrey.**
Lappula Virginiana (L.)
Greene.

Wild Comfrey. *Lappula Virginiana* (L.) Greene. Flowers blue; ovary deeply 4-lobed separating into four brown achenes, about 3 mm. long, flattened on upper side, broadly ovate, the apex wedge-shaped, the upper side clothed with stiff straight cap-shaped hairs, bearded on all sides; lower side a low 4-sided cone, nearly smooth with a concave triangular scar. Native to rich woodlands.

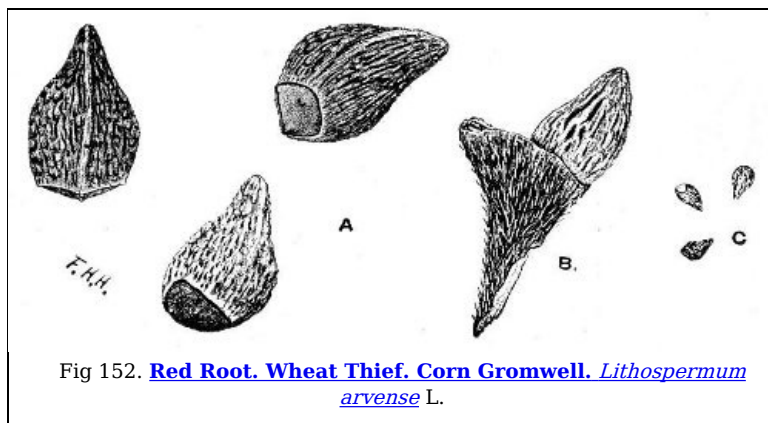


Fig 152. **Red Root. Wheat Thief. Corn Gromwell.** *Lithospermum arvense* L.

Red Root. Wheat Thief. Corn Gromwell. *Lithospermum arvense* L. Flowers white; ovary 4-divided separating into four hard, conical-ovoid achenes, each dull gray, erect, wrinkled, 2.5-3

mm. long, convex on the back, keeled on the inner side, base obliquely truncate, containing two minute white tubercles. A prominent weed of high rank in fields of winter wheat.

VERVAIN FAMILY. VERBENACEAE.

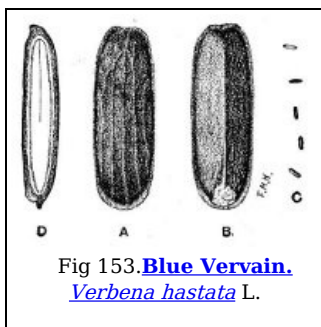


Fig 153. **Blue Vervain.**
Verbena hastata L.

Blue Vervain. *Verbena hastata* L. Achenes crowded, four together until mature, dull, reddish brown, flattened, oblong, 1.7-2 mm. long, bordered by a narrow margin, the outer face convex, bearing 3-5 small vertical ridges branching and uniting at the apex, forming a distinct network, the inner face sloping to the margin from a central vertical ridge; a light colored scar is seen on one side of the base. Native to this country. Not important.

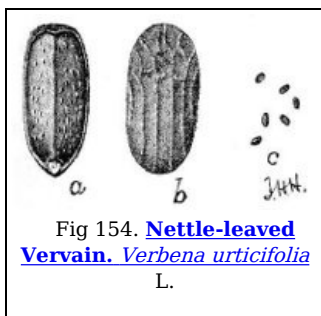


Fig 154. **Nettle-leaved Vervain.**
Verbena urticifolia L.

Nettle-leaved Vervain. *Verbena urticifolia* L. Achenes 1.6-1.8 mm. long, very closely resembling the last above mentioned. The achenes of this one are a trifle shorter and broader, more nearly oval than oblong. Native to this country. Not common in fields.

[Pg 154]

MINT FAMILY. LABIATAE.

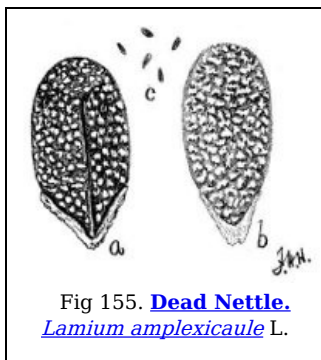


Fig 155. **Dead Nettle.**
Lamium amplexicaule L.

Dead Nettle. *Lamium amplexicaule* L. Achenes light brown, conspicuously marked by white spots some of which coalesce making the surface striped crosswise, obovate-oblong, pointed at the smaller end, 1.5-2 mm. long, the outer surface rounded, the inner face angled, the concave surfaces sloping to the edges from a central vertical ridge. Introduced from Europe. Thrives in cool weather.

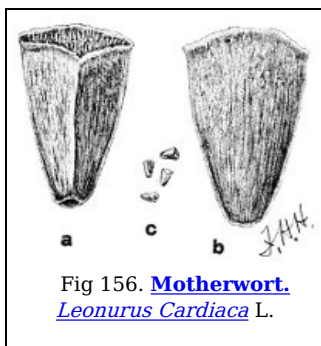


Fig 156. **Motherwort.**
Leonurus Cardiaca L.

Motherwort. *Leonurus Cardiaca* L. Achenes light brown, obovoid-oblong, rounded on one side flat on the other two sides, the truncate apex hairy, 2-2.4 mm. long. Introduced from Europe. Waste places.

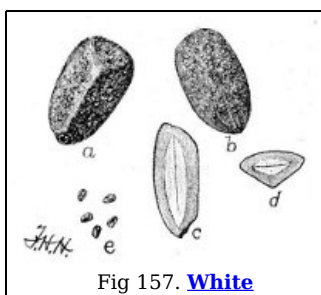


Fig 157. **White**

White Hoarhound. *Marubium vulgare* L. Achenes dull, varying from light to dark brown, sometimes finely roughened by numerous minute tubercles, slightly flattened, oval or obovoid, about 2 mm. long, outer surface convex, inner face angled sloping to the edges from a central vertical ridge, edges of achenes often slightly margined, surface lightly grooved. Introduced from Europe. A weed in northern Michigan where snow protects it in winter.

Hoarhound. *Marubium vulgare* L.

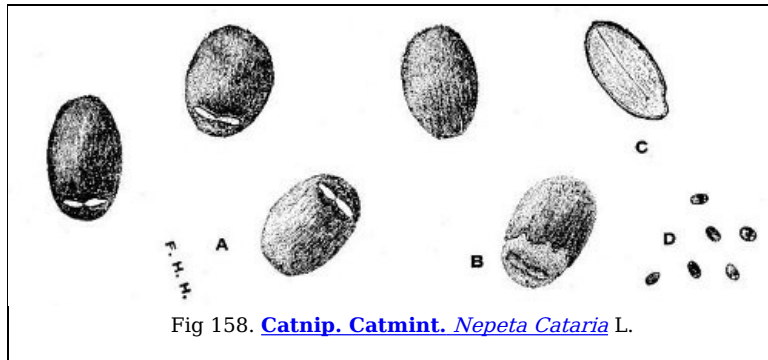


Fig 158. **Catnip. Catmint.** *Nepeta Cataria* L.

Catnip. Catmint. *Nepeta Cataria* L. Achenes dull, light reddish brown to nearly black, with two laterally placed cavities near the base, each filled with white spongy tissue, broadly oval, slightly flattened, 1.3-1.7 mm. long. Introduced from Europe. Scarcely a weed.

[Pg 155]

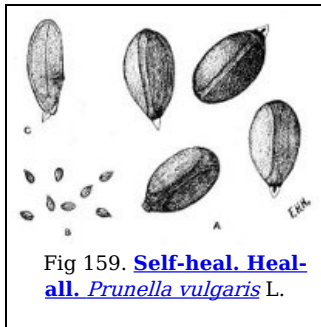


Fig 159. **Self-heal. Heal-all.** *Prunella vulgaris* L.

Self-heal. Heal-all. *Prunella vulgaris* L. Achenes light to dark brown, slightly roughened, having a diffused luster, slightly flattened, oval or oblong, the base tapering to a small whitish, triangular appendage, outer side convex having dark verticillate lines, the other face sloping to the edges from a central ridge, becoming mucilaginous when soaked in water. Native to this country.

NIGHT SHADE FAMILY. SOLANACEAE.

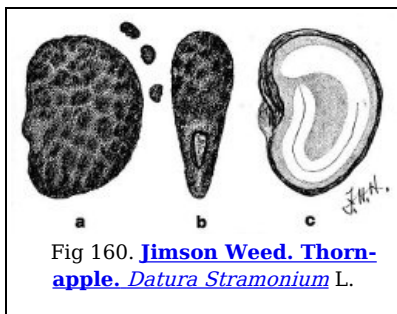


Fig 160. **Jimson Weed. Thorn-apple.** *Datura Stramonium* L.

Jimson Weed. Thorn-apple. *Datura Stramonium* L. Pods ovoid, densely prickly, about 4 cm. long; seeds black to brown, flattened, with 6-10 slight irregular elevations, the whole surface covered with minute shallow pits, short kidney shaped, i. e., one edge nearly straight or slightly notched, the remainder of the margin making about two-thirds of a circle. 3-3.5 mm. long. Most likely introduced from Asia. A coarse, poisonous weed found in waste places.

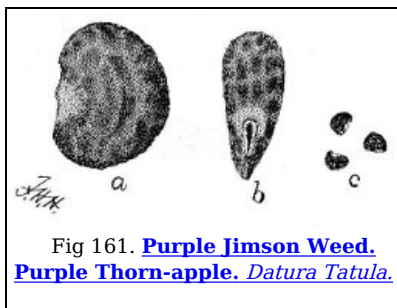


Fig 161. **Purple Jimson Weed. Purple Thorn-apple.** *Datura Tatula*.

Purple Jimson Weed. Purple Thorn-apple. *Datura Tatula*. The color of the stems are purple, the flowers and pods nearly the same as those last above; seeds of the two scarcely if at all unlike. Naturalized from tropical America. Waste places.

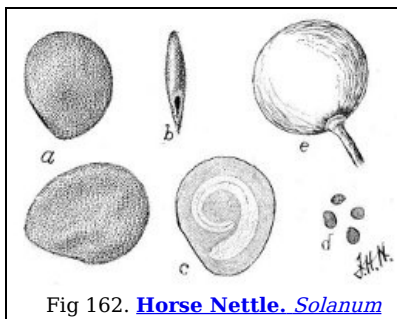
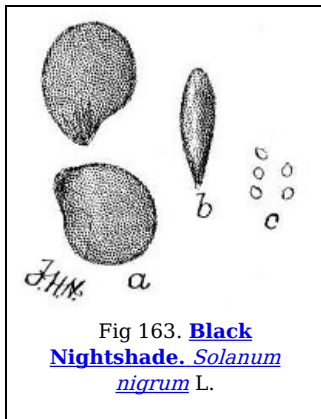


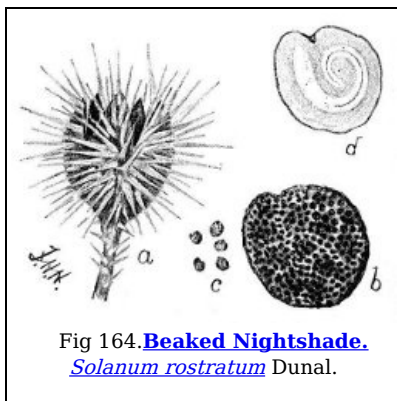
Fig 162. **Horse Nettle.** *Solanum*

Horse Nettle. *Solanum Carolinense* L. Berry orange-yellow, 1.6 to 2 cm. in diameter; seeds lemon yellow, slightly double convex, obovate 2.1-2.9 mm. long, surface finely granular all over. Native of the southwest U. S. It spreads rapidly by long roots.

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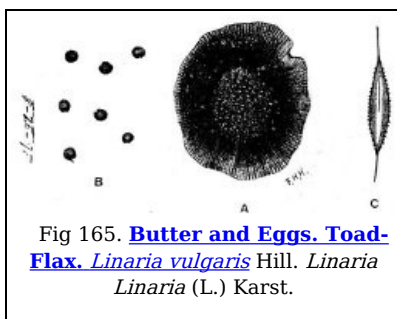


Black Nightshade. *Solanum nigrum* L. Berry black, smooth, globose, 8-10 mm. in diameter; seeds finely granular, dull, yellowish to light brown, flattened, unsymmetrically ovate, about 1.5 mm. long. Native to this country. I have the best of authority for saying that these berries when ripe make good pies, whether the uncooked fruit is poisonous there is less proof. Of little importance.



Beaked Nightshade. *Solanum rostratum* Dunal. Fruit surrounded by a persistent prickly calyx about 2 cm. long; seeds flattened, irregularly undulate or wrinkled, dark brown or black, usually ovate or circular in outline, 2-2.5 mm. in diameter, surface covered with small pits. Introduced into Michigan from the southwest. A coarse prickly weed.

FIGWORT FAMILY. SCROPHULARIACEAE.



Butter and Eggs. Toad-Flax. *Linaria vulgaris* Hill. *Linaria Linaria* (L.) Karst. Flowers yellow and orange; seeds dark brown or black, flat, circular or oval, surrounded by a broad wing-margin, the wing notched and covered by numerous fine radiating ridges, the surface of the seed roughened by numerous projecting points, seed, including its wing, 1.5-2 mm. long. Introduced from Europe. A vigorous weed in meadows, spreading by seeds and by root stocks.



Moth Mullein. *Verbascum Blattaria* L. Flowers yellow; pod 6 mm. diameter; seeds light to dark brown, .5-1 mm. long, columnar, lateral surface slightly angular and 6-sided, base truncate or obliquely so and broader than the rounded apex, thus somewhat thimble-shaped, each lateral face deeply pitted in longitudinal rows, the pits in contiguous rows, alternating. Introduced from Europe. A vile weed in meadows and pastures.

Velvet-Leaved Mullein. *Verbascum Thapsus* L. Flowers yellow; pod 6 mm. high; seeds cannot be distinguished with certainty by means of the ordinary lens from those of moth mullein. The pitted surface seems to predominate in *Verbascum Blattaria*, while the grooved surface seems to be more common in the seeds of *V. Thapsus*. Introduced from Europe. Common in thin pastures.

Wall Speedwell. *Veronica arvensis* L. Pods heart-shaped; seeds dull, light yellow, flattened, oval, .7-1.1 mm. long on one side appearing as though the two ends had been brought together by bending. From Europe.

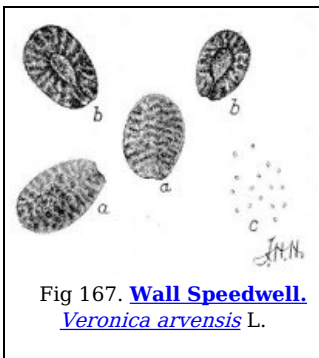


Fig 167. **Wall Speedwell.**
Veronica arvensis L.

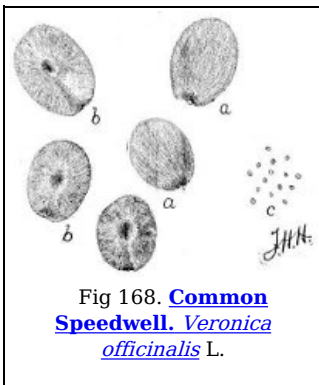


Fig 168. **Common Speedwell.**
Veronica officinalis L.

Common Speedwell. *Veronica officinalis* L. Pods heart-shaped; seeds dull, pale yellow, flattened, broadly oval to broadly obovate, .8-1.2 mm. long, with a small scar near the middle of one side, from which extends a faint line (raphe) to one extremity. Appearing as though introduced.

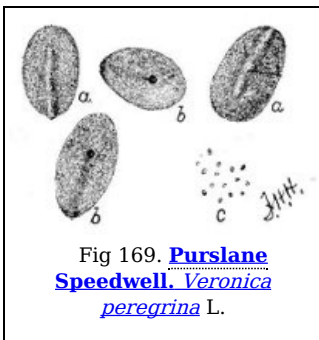


Fig 169. **Purslane Speedwell.**
Veronica peregrina L.

Purslane Speedwell. *Veronica peregrina* L. Pods heart-shaped; seeds dull, light reddish yellow, flattened, oval to broadly obovate .5-.8 mm. long, with a small scar a little above the middle of one side, from which extends a dark line (raphe) to one extremity. Most likely native to this country.

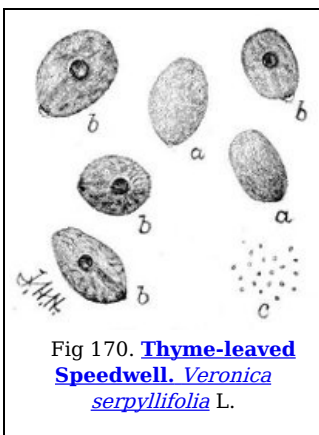


Fig 170. **Thyme-leaved Speedwell.**
Veronica serpyllifolia L.

Thyme-leaved Speedwell. *Veronica serpyllifolia* L. Pods broadly heart-shaped; seeds pale yellow, a trifle darker than those of *V. officinalis*, light, reddish yellow, in shape and markings much like those of *V. peregrina*, flattened, broadly oval to obovate .5-.7 mm. long, with a small scar near the middle on one side, from which extends a dark line (raphe) to one extremity.

Apparently native to this country.

Seeds of the Veronicas are very difficult to distinguish from one another.

PLANTAIN FAMILY. PLANTAGINACEAE.

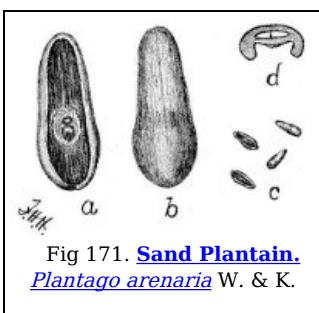


Fig 171. **Sand Plantain.**
Plantago arenaria W. & K.

Sand Plantain. *Plantago arenaria* W. & K. Seeds dark amber brown, shining, rounded on the back like the bottom of a shallow canoe, 2.5-3 mm. long, transverse groove around the middle of the back, opposite side with a groove extending lengthwise, about as wide as the ridge on either side of it; hilum in the middle of the groove. Found at Harrisville, Mich.

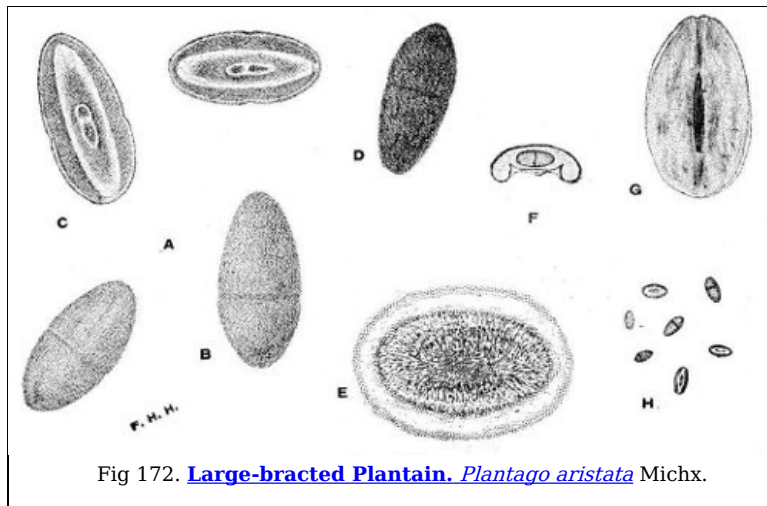


Fig 172. **Large-bracted Plantain.** *Plantago aristata* Michx.

Large-bracted Plantain. *Plantago aristata* Michx. Seeds oval, dull, light to dark brown, 2.2-3 mm. long, shaped like a shallow, thick-walled canoe with ends rounded alike, outer face marked by a shallow, transverse groove at or near the middle, a white line marking the margin at the base on the canoe inside, two white-margined pits occupying the middle of the concave side. Introduced from the west in clover seeds, not yet common.

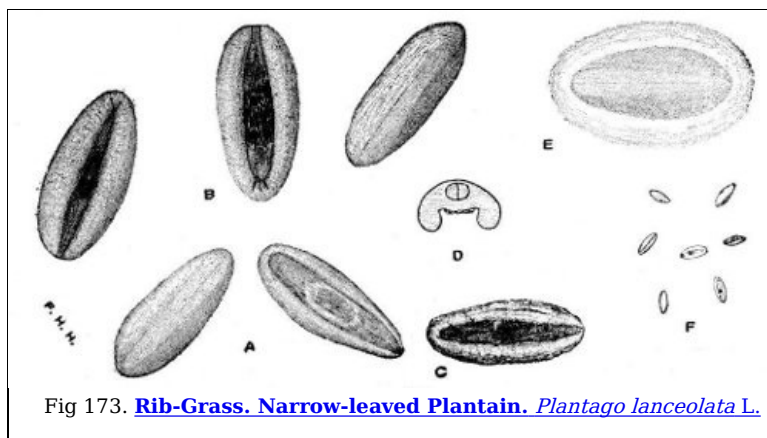


Fig 173. **Rib-Grass. Narrow-leaved Plantain.** *Plantago lanceolata* L.

Rib-Grass. Narrow-leaved Plantain. *Plantago lanceolata* L. Seeds shining, amber-colored to brown, oval, 2-2.5 mm. long, shaped like a shallow, thick-walled canoe with ends rounded alike, a dark scar occupying the middle of the narrow concave side, a faint, transverse groove across the convex side near the middle sometimes apparent. Often found mixed with clover seeds from which it is very difficult to separate. Introduced from Europe.

[Pg 159]

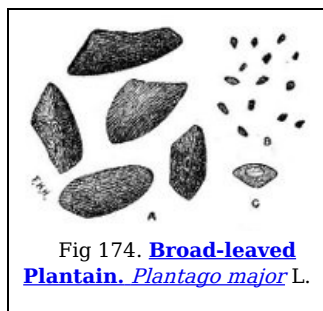


Fig 174. **Broad-leaved Plantain.** *Plantago major* L.

Broad-leaved Plantain. *Plantago major* L. Seeds, light to dark brown or very nearly black, 1-1.5 mm. long, slightly flattened, with acute edges very variable in shape, oval, oblong, rhomboidal and trapezoid, the surface roughened by slender, colored ridges, appearing under the lens as slightly wavy lines, radiating from the scar. The clear light green color of the lower end of the leaf-stem is an easy mark to distinguish this plant from another broad-leaved plantain, *P. Rugelii* in which the base of leaf is red. Introduced from Europe. About door yards.

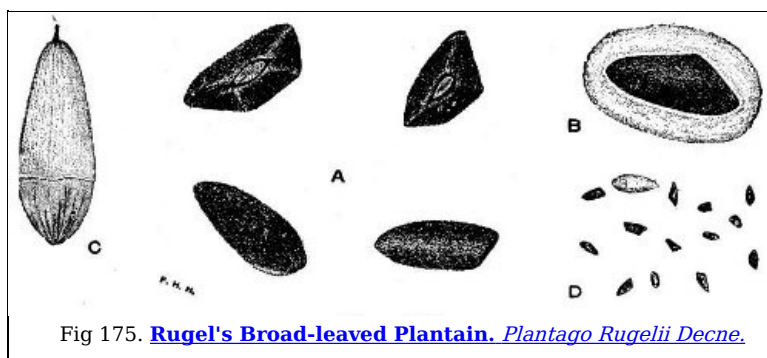


Fig 175. **Rugel's Broad-leaved Plantain.** *Plantago Rugelii* Decne.

Rugel's Broad-leaved Plantain. *Plantago Rugelii* Decne. Seeds dark brown to black, much like those of *P. major*, but larger, 1.5-2.5 mm. long slightly flattened, with edges acute, very

variable in shape, oval oblong, rhomboidal, surface minutely roughened and dull, but wholly without ridge or lines as in *P. major*. Native of this country. Lower end of leaf-stalk red, and not clear green as in *P. major*. A vile pest in clover fields.

MADDER FAMILY.

Blue Field Madder. *Sherardia arvensis* L. The parts often called seeds are in reality the half-fruits ripened, each one bearing at the apex three, white, pointed, persistent calyx lobes, the inner face showing a vertical groove, and in some of the fruits the calyx is broken off. Surface dull brown, clothed with small white hairs, obovoid, 2-2.5 mm. long. Introduced from Europe, not often found in the northern states.

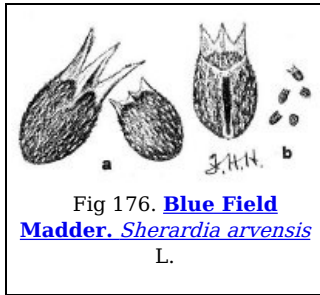


Fig 176. **Blue Field Madder.** *Sherardia arvensis* L.

[Pg 160]

TEASEL FAMILY. DIPSACACEAE.

Wild Teasel. *Dipsacus sylvestris* Huds. Achene brown, minutely hairy, 4 mm. long, oblong, square in cross-section, with four vertical ribs on the angles and four on the sides. Seed suspended, anatropous, supplied with endosperm. Introduced from Europe. A weed requiring two years from seed to seeding.

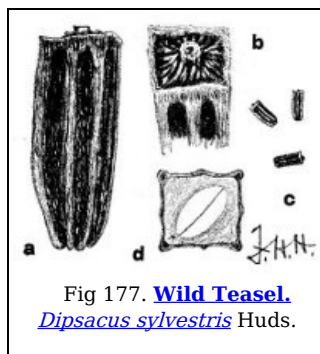


Fig 177. **Wild Teasel.** *Dipsacus sylvestris* Huds.

COMPOSITE FAMILY. COMPOSITAE.

Yarrow. Milfoil. *Achillea Millefolium* L. Flowers white; achenes white to gray, finely striate lengthwise, flattened, oblong, tapering at the lower end, straight or curved. 2-2.3 long. Most likely introduced from Europe.

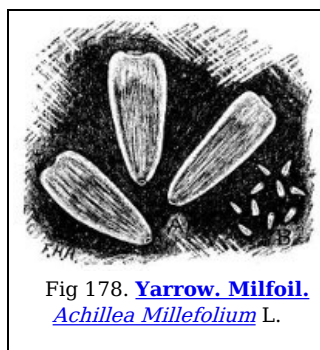


Fig 178. **Yarrow. Milfoil.** *Achillea Millefolium* L.

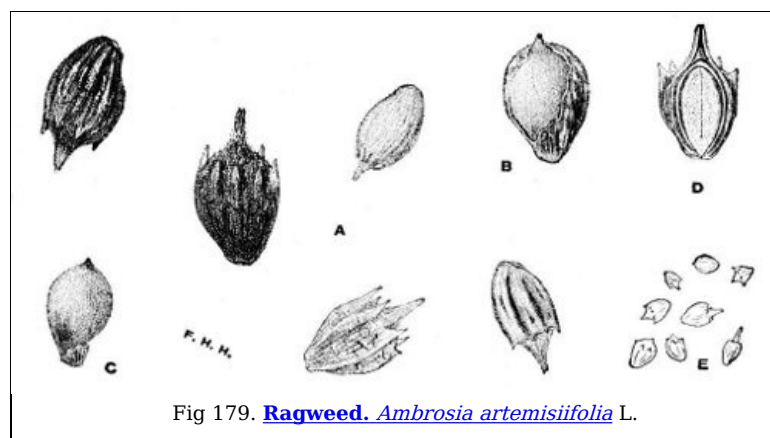
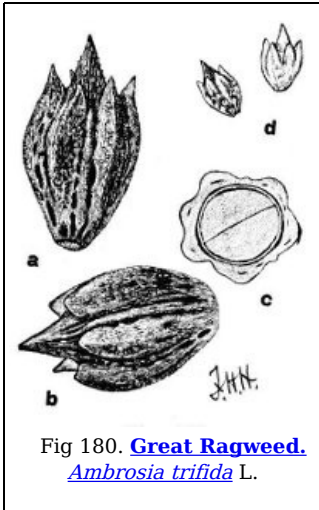


Fig 179. **Ragweed.** *Ambrosia artemisiifolia* L.

Ragweed. *Ambrosia artemisiifolia* L. Achenes hard, straw-colored to light brown or black, top-shaped, broadly oval, 2.5-3 mm. long, besides the beak 1.5 mm. long, the sides irregularly ridged



Great Ragweed. *Ambrosia trifida* L. Achenes hard, brown, more or less mottled, top-shaped, 7-8 mm. besides the stout beak 2-3 mm. long, sides with 5 stout ridges terminating in 5 short teeth. Native to the United States. River bottoms, low land, sometimes 15 ft. high.

Fig 180. **Great Ragweed.**
Ambrosia trifida L.

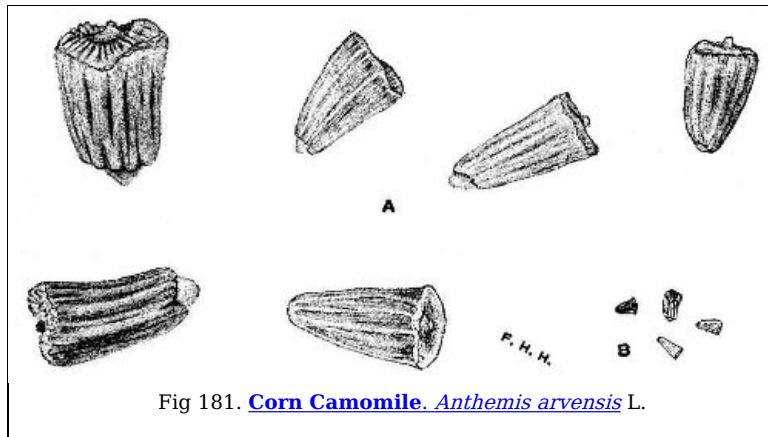


Fig 181. **Corn Camomile.** *Anthemis arvensis* L.

Corn Camomile. *Anthemis arvensis* L. Achenes very variable, creamy white to light brown, oblong, wedge-shaped in outline, circular to four-angled in cross-section, more or less ribbed lengthwise, a ripple-shaped scar at the narrow end; apex truncate with a minute projection in the center, often with a narrow ridge about the margin. About 1.7 mm. long. Introduced from Europe. Seldom troublesome in Michigan.

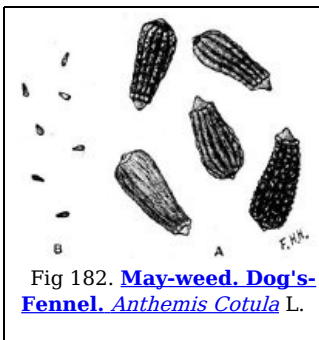


Fig 182. **May-weed. Dog's-Fennel.** *Anthemis Cotula* L.

May-weed. Dog's-Fennel. *Anthemis Cotula* L. Outer flowers white; achenes straw color to light brown, obovoid (large end uppermost) to oblong, circular in outline, 1.3-1.8 mm. long, with 10 warty ribs. Introduced from Europe. Old roads and waste places.

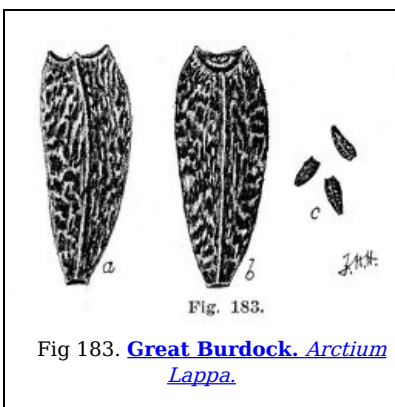


Fig. 183.
Fig 183. **Great Burdock.** *Arctium Lappa*.

Great Burdock. *Arctium Lappa*. So far as I have seen the achenes of this species, when compared with *A. minus*, are darker colored, rather longer, the ribs more distinct.

Smaller Burdock. *Arctium minus* Beruh. Possibly only a variety of *A. Lappa* L., but the prevailing plant in central Michigan. I see no way of distinguishing the achenes of one from the other; but it makes little difference as one burdock is as bad as another.

Flowers purple; achenes dull brown, often spotted with black, straight or curved, slightly flattened, oblong-prismatic with 3-5 narrowly ridged angles, and occasionally other smaller ridges, 4.5-6 mm. long. Introduced from Europe.

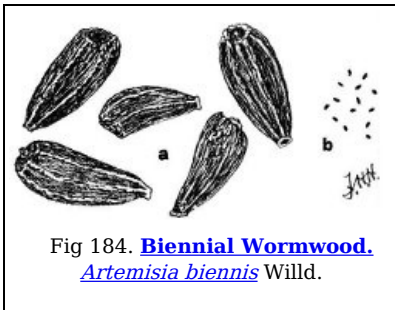


Fig 184. **Biennial Wormwood.**
Artemisia biennis Willd.

Biennial Wormwood. *Artemisia biennis* Willd. Achenes dark brown, smooth, somewhat flattened, 3-4 angled, obovate, narrowed at the base .8-1.3 mm. long. Native in the northwestern United States and introduced east with grass seeds. Moist land.

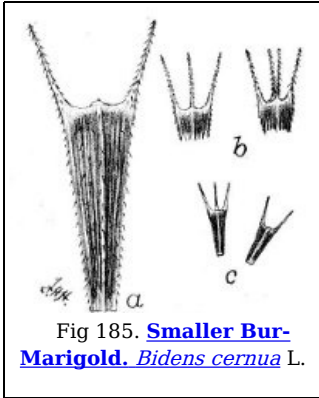


Fig 185. **Smaller Bur-Marigold.** *Bidens cernua* L.

Smaller Bur-Marigold. *Bidens cernua* L. Flowers yellow; achenes 4-6 mm. long, dull brown, the awns lighter, flattened, 4-angled, wedge-shaped, awns 2-4, barbed downward as also are the ribs. Native of this country. Low lands.

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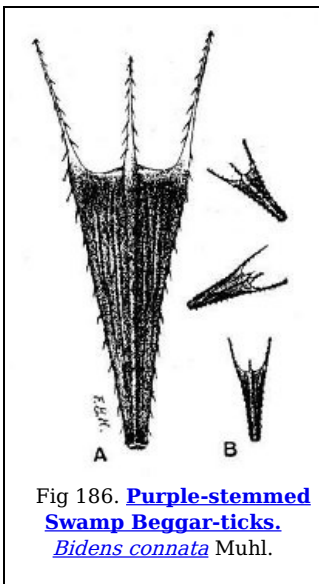


Fig 186. **Purple-stemmed Swamp Beggar-ticks.**
Bidens connata Muhl.

Purple-stemmed Swamp Beggar-ticks. *Bidens connata* Muhl. Flowers orange; achenes brown, wedge-shaped or obovate, hairy, tubercled, flattened, 4-angled, 4-toothed, 4-6 mm. long, achenes and teeth downwardly barbed. Swamps, common.



Fig 187. **Beggar-ticks.**
Bidens frondosa L.

Beggar-ticks. *Bidens frondosa* L. Achenes dull brown, tubercled, much flattened, obovate or oval, 6-12 mm. long, awns usually 2, spreading barbed downward. Low lands.

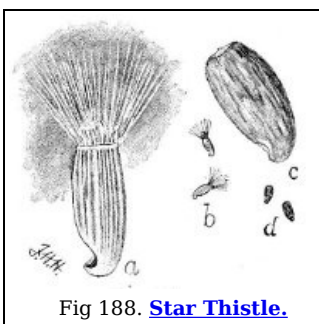


Fig 188. **Star Thistle.**

Star Thistle. *Centaurea solstitialis* L. Achene cream white to mottled brown, flattened, oval about 2 mm. long; scar of attachment in a notch of one edge above the rounded base, apex truncate with a small tubercle in the middle. Found in seeds of alfalfa. A ragged plant from Europe.

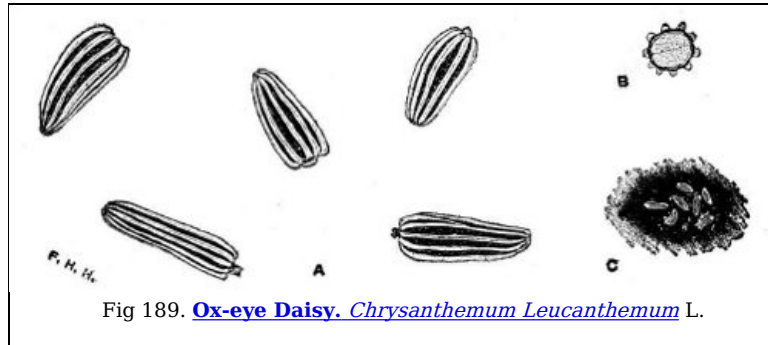


Fig 189. **Ox-eye Daisy.** *Chrysanthemum Leucanthemum* L.

Ox-eye Daisy. *Chrysanthemum Leucanthemum* L. Flowers white; achenes brown or black with ten white conspicuous vertical ribs, narrowly obovate 1.5–1.8 mm. long, bearing a tubercle at the apex. Introduced from Europe. Becoming common. A prominent weed in old pastures and meadows.

[Pg 164]

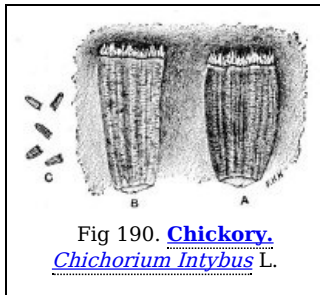


Fig 190. **Chickory.** *Chichorium Intybus* L.

Chickory. *Chichorium Intybus* L. Flowers yellow; achenes light brown, more or less mottled or spotted with black, straight or curved, 4–5 angled, flattened, apex truncate crowned with a double row of minute scales. Achenes 2.5–3 mm. long. Introduced from Europe.

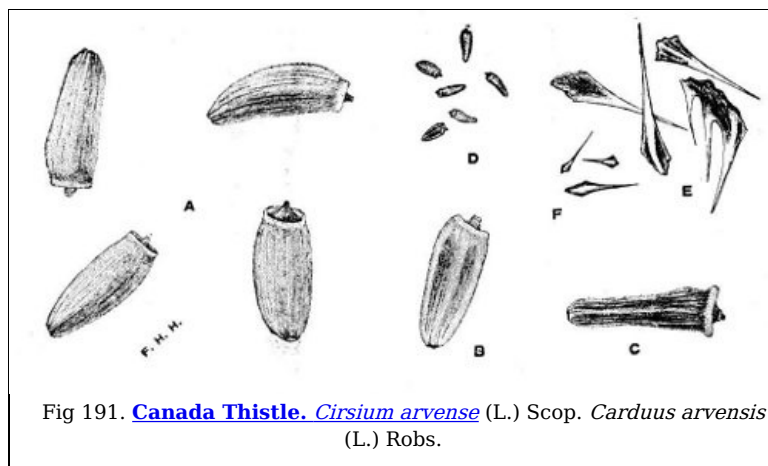


Fig 191. **Canada Thistle.** *Cirsium arvense* (L.) Scop. *Carduus arvensis* (L.) Robs.

Canada Thistle. *Cirsium arvense* (L.) Scop. *Carduus arvensis* (L.) Robs. Flowers purple or white; achenes smooth, light brown, curved or straight, narrowly obovoid or oblong, slightly flattened, 2–3 mm. long, apex truncate, cup-shaped with a tubercle in the center. Introduced from Europe. A weed of first rank.

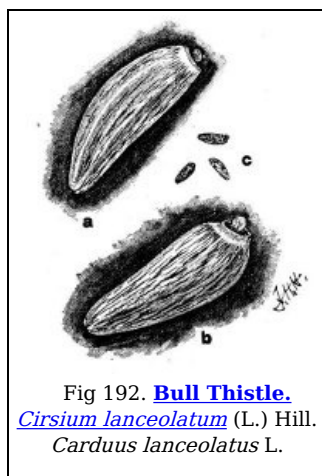


Fig 192. **Bull Thistle.** *Cirsium lanceolatum* (L.) Hill. *Carduus lanceolatus* L.

Bull Thistle. *Cirsium lanceolatum* (L.) Hill. *Carduus lanceolatus* L. Flowers purple; achenes smooth, nearly white, with sharp vertical brown stripes, slightly flattened, obovate or oblong, usually curved near the apex, 3–4 mm. long, apex truncate with a large tubercle in the center. Introduced from Europe.

[Pg 165]

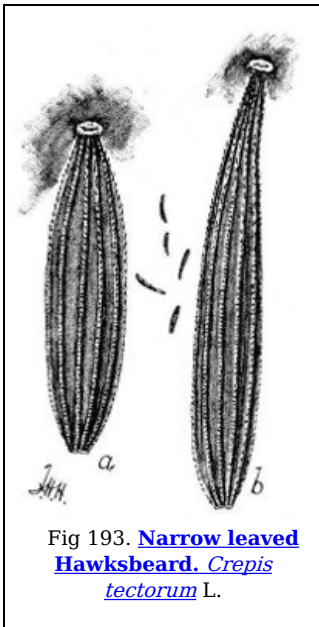


Fig 193. **Narrow leaved Hawksbeard.** *Crepis tectorum* L.

Narrow leaved Hawksbeard. *Crepis tectorum* L. Flowers yellow; achene chestnut brown, straight or curved, linear, ribs 10, smooth or rugose; 3.4 mm. long. Introduced from Europe.

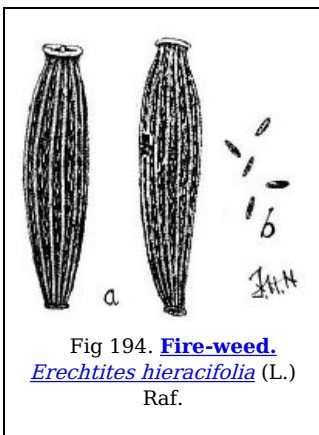


Fig 194. **Fire-weed.** *Erechtites hieracifolia* (L.) Raf.

Fire-weed. *Erechtites hieracifolia* (L.) Raf. Achenes brown, linear, 2.2-2.8 mm. long, flattened, straight or curved, having ten vertical ribs between which are minute white oppressed hairs, the extremities truncate, wider than the narrow portion beneath, the apex white with a tubercle projecting from the center of a minute cup. Native to this country. Not of much importance.

Annual Fleabane. *Erigeron annuus* (L.) Pers. Flowers white; achenes smooth, shining, brownish white, translucent, flattened, obovate or oblong, .7-.9 mm. long, bearing at the apex a whorl of very small diverging bristles, the longest ones having been rubbed off. Faint traces of a few oppressed hairs may be seen under a good lens. Native to this country and a very prominent weed in thin meadows.

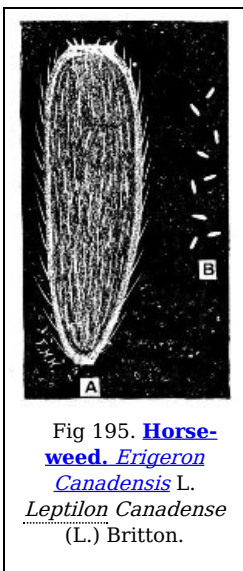


Fig 195. **Horse-weed.** *Erigeron Canadensis* L. *Leptilon Canadense* (L.) Britton.

Horse-weed. *Erigeron Canadensis* L. *Leptilon Canadense* (L.) Britton. Achenes oblong, dull cream color, much flattened, 1-1.3 mm. long, shining, smooth or containing a few minute oppressed bristles, apex truncate, bearing a whorl of bristles, the longest having been rubbed off. Native of this country. Compare the above description with that of *Erigeron annuus*. Common in waste places.

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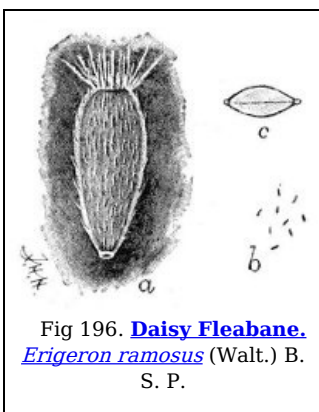


Fig 196. **Daisy Fleabane.** *Erigeron ramosus* (Walt.) B. S. P.

Daisy Fleabane. *Erigeron ramosus* (Walt.) B. S. P. Flowers white; achenes nearly identical with those last described, *Erigeron annuus*, bristles shorter, less diverging, surface bearing more minute appressed hairs when seen under a lens. Native to this country and prominent in some thin meadows.



Fig 197. **Sweet Everlasting.** *Gnaphalium polycephalum* Michx. *Gnaphalium obtusifolium* L.

Sweet Everlasting. *Gnaphalium polycephalum* Michx. *Gnaphalium obtusifolium* L. Outer scales of the head thin, white, stiff; achenes yellowish white or brown, slightly flattened, smooth, oval or oblong, .5-.7 mm. long. Native to this country. Not often troublesome.

Much practice with a good lens and careful comparisons with other small achenes will be necessary in identifying such specimens as are furnished by this species.

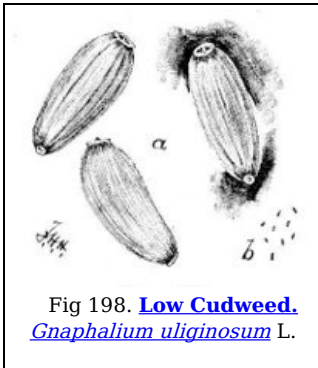


Fig 198. **Low Cudweed.** *Gnaphalium uliginosum* L.

Low Cudweed. *Gnaphalium uliginosum* L. Outer scales of the head thin, brown, more or less wooly; achenes .4-.6 mm. long, yellowish white to brown, slightly flattened, smooth, narrowly oblong .4-.6 mm. long. Achenes narrower and rather shorter than those of *G. obtusifolium*. Native to this country. Not of high rank as a weed.

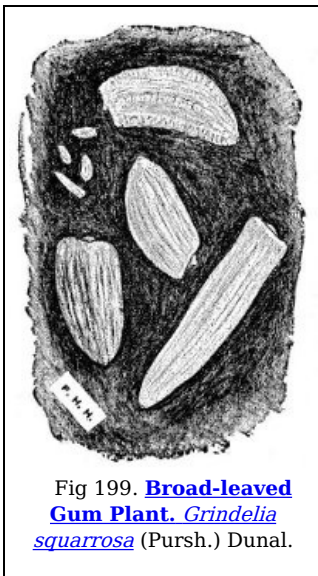


Fig 199. **Broad-leaved Gum Plant.** *Grindelia squarrosa* (Pursh.) Dunal.

Broad-leaved Gum Plant. *Grindelia squarrosa* (Pursh.) Dunal. Flowers yellow; achenes creamy white or light brown, very variable in appearance, more or less flattened, often 4-angled, straight to much curved, narrowed at the base, apex truncate, often concave with a distinct marginal rim, some of them not very unlike those of Canada thistle, some of them smooth, others finely grooved or ridged lengthwise, others somewhat wrinkled, 2.5-3 mm. long. Occasionally introduced from the west with seeds of grasses or clover. Usually not persistent in Michigan.

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Artichoke. *Helianthus tuberosus* L. Flowers yellow; achenes black, shiny more or less, slightly flattened, pubescent with very short hairs, with four obtuse angles, narrowly obovate, 6-7 mm. long, one side of the smaller end projecting beyond the other side. Native of this country; cultivated by Indians.

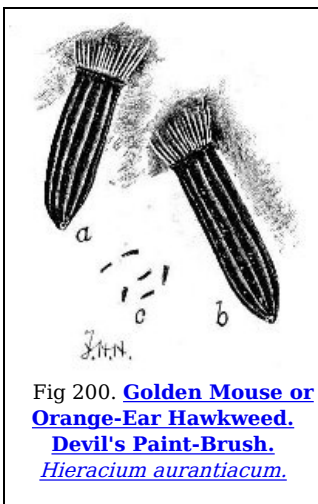


Fig 200. **Golden Mouse or Orange-Ear Hawkweed.** **Devil's Paint-Brush.** *Hieracium aurantiacum*.

Golden Mouse or Orange-Ear Hawkweed. Devil's Paint-Brush. *Hieracium aurantiacum*. Flowers orange yellow; achenes jet black, oblong, straight or curved, apex truncate, base abruptly tapering, cylindrical, the sides bearing 10 narrow, vertical ridges. Introduced from Europe. In Eastern New York and Western Massachusetts meadows abound in large areas of this vile weed, 1.8-2.2 mm. long.

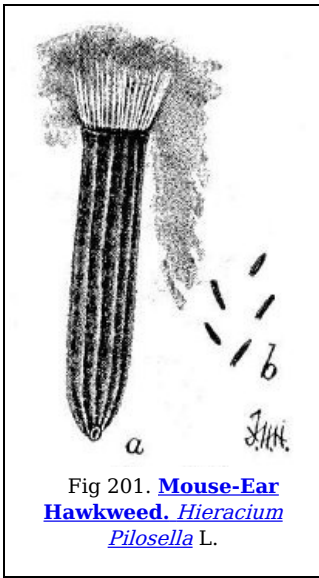


Fig 201. [Mouse-Ear Hawkweed. *Hieracium Pilosella* L.](#)

Mouse-Ear Hawkweed. *Hieracium Pilosella* L. Flowers yellow; achenes jet black, oblong, straight or curved, apex truncate, base abruptly pointed, cylindrical or narrowly oval, the sides bearing 10 narrow vertical ridges. Introduced from Europe. The achenes very closely resemble those of the orange hawkweed. It doesn't matter much, for the habits are the same, and one is about as noxious as the other. Introduced from Europe.

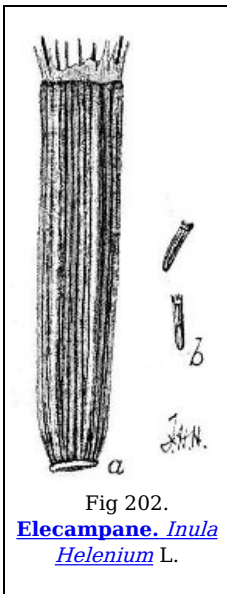


Fig 202. [Elecampane. *Inula Helenium* L.](#)

Elecampane. *Inula Helenium* L. Flowers yellow; achenes light brown, straight or curved, linear, flattened, 4-5 mm. long, 4 sided with 5-8 obscure vertical ridges on each side, apex concave, the margin bearing a circle of short stiff bristles, the remains of longer ones. Introduced from Europe. Not common.

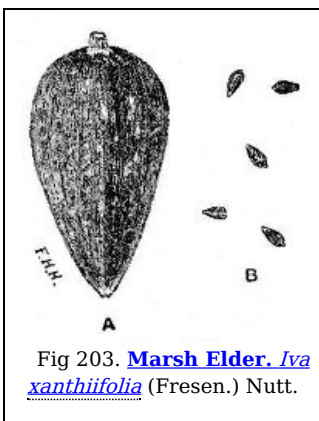


Fig 203. [Marsh Elder. *Iva xanthiifolia* \(Fresen.\) Nutt.](#)

Marsh Elder. *Iva xanthiifolia* (Fresen.) Nutt. Achenes various shades of brown to black, flattened or rhombic in section, obovoid, 1.5-2 mm. long, longitudinally, striate with fine lines. Native to the upper peninsula of Michigan where it most likely was at one time introduced from the west. It has not been found in the lower peninsula, probably because it had no means of coming across Lake Michigan.

Wild Lettuce. *Lactuca Canadensis* L. Flowers yellow; achenes black or nearly so, flattened, oval, bearing 3 ribs, the lateral ones sometimes double, the middle one slender, surface abounding in minute transverse ridges as seen under a lens, the remains of a beak sometimes remaining. Native of this country. Other species of Lettuce are more or less troublesome.

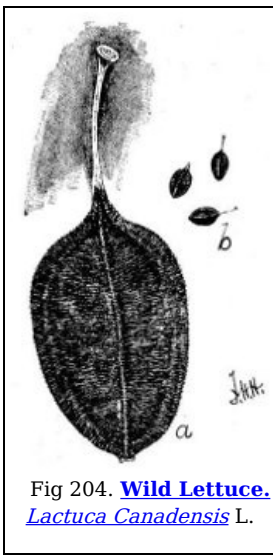


Fig 204. **Wild Lettuce.**
Lactuca Canadensis L.

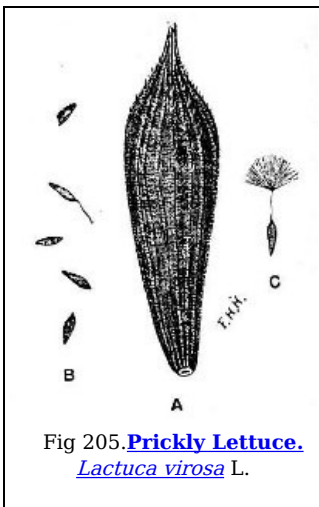


Fig 205. **Prickly Lettuce.**
Lactuca virosa L.

Prickly Lettuce. *Lactuca virosa* L. For many years erroneously called *Lactuca scariola*. Flowers yellow; achenes dull, dark brown, mottled with black, flattened, bearing 5-7 rough, vertical ridges, interspersed by as many smaller ones; oblong, obovate, widest toward the tapering apex. 3-3.5 mm. long. Some of the leaves turn one edge up and the other down. Introduced from Europe and has proved itself a remarkable traveller.

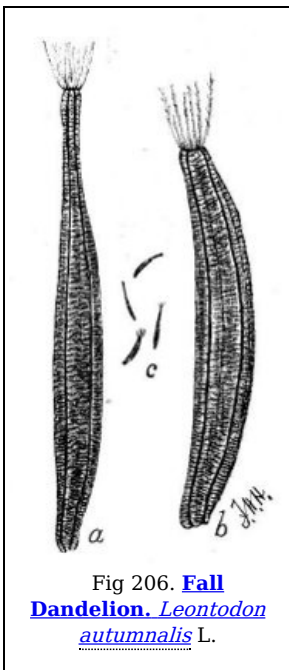
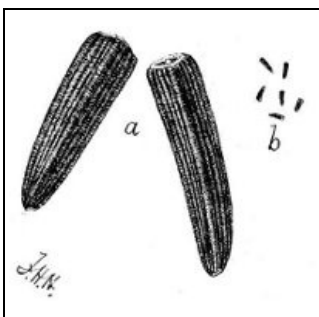


Fig 206. **Fall Dandelion.** *Leontodon autumnalis* L.

Fall Dandelion. *Leontodon autumnalis* L. Flowers yellow; achenes light brown, linear, with 5 broad, rounded ribs; achene 4-6.5 mm. long, straight or curved, the outer traversed, with low transverse ridges. Introduced from Europe.

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Black-eyed Susan. Yellow Daisy. *Rudbeckia hirta* L. Achene purple-brown to black, slightly tapering from base to apex 1.5-1.8 mm. long, base abruptly pointed, apex truncate, in cross section nearly square, having 5-7 slender vertical ridges on each side besides a larger one at each of the four corners. Widely distributed in meadows and pastures.

Fig 207. **Black-eyed Susan. Yellow Daisy.**
Rudbeckia hirta L.

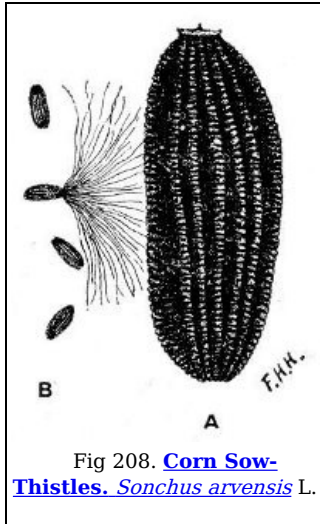


Fig 208. **Corn Sow-Thistles.** *Sonchus arvensis* L.

Corn Sow-Thistles. *Sonchus arvensis* L. Flowers yellow; achenes dull, dark reddish brown, oblong, extremities blunt, slightly flattened, bearing four coarse, fold-like ridges, with two smaller ridges between each of the two large ones, transversely wrinkled, 2.5-3 mm. long. This species is a perennial spreading by roots-stalks as well as by seeds. Introduced in Europe.

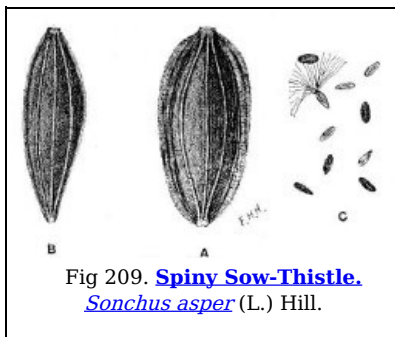


Fig 209. **Spiny Sow-Thistle.**
Sonchus asper (L.) Hill.

Spiny Sow-Thistle. *Sonchus asper* (L.) Hill. Flowers pale yellow; achenes dull straw-color to reddish brown, much flattened, obovate, oblong, extremities blunt, each side bearing 3-5 vertical ridges, surface nearly smooth, 2.5-3 mm. long. Introduced from Europe.

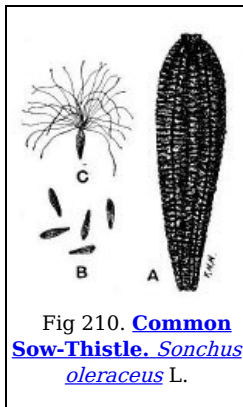


Fig 210. **Common Sow-Thistle.** *Sonchus oleraceus* L.

Common Sow-Thistle. *Sonchus oleraceus* L. Flowers pale yellow; achenes reddish brown, linear, oblanceolate, 3 mm. long, flattened extremities blunt, 5 uneven wrinkled ridges on each side. Introduced from Europe.

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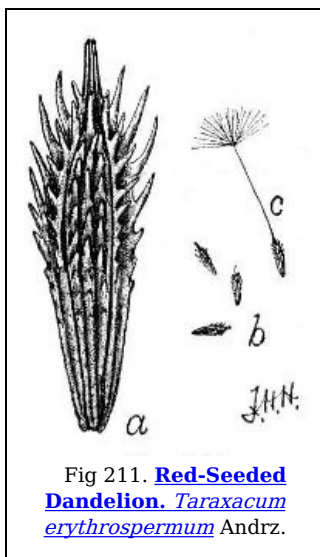


Fig 211. **Red-Seeded Dandelion.** *Taraxacum erythrospermum* Andrz.

Red-Seeded Dandelion. *Taraxacum erythrospermum* Andrz. Achene bright red or red reddish brown, flattened, oblanceolate, 3 mm. long, 1 mm. wide or less, the red beak 1 mm. long, prickles often extending nearly to the base along twelve vertical ribs, the achenes narrower, shorter, much darker in color, with prickles extending farther down the ribs, the short beak longer; the plant is earlier, often smaller, when compared with the other species.

Doubtless this is more common than has been reported, having been overlooked. Introduced from Europe.

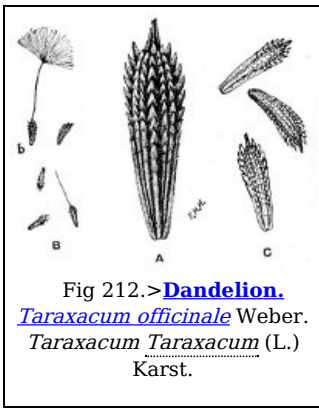


Fig 212. > **Dandelion.**
Taraxacum officinale Weber.
Taraxacum Taraxacum (L.)
 Karst.

Dandelion. *Taraxacum officinale* Weber. *Taraxacum Taraxacum* (L.) Karst. Flowers yellow; achenes dull light to dark brown, flattened oblanceolate, thread-like beak two to three times as long as the achene, the stout colored beak 0.5 mm. long. The most conspicuous character of the achenes lies in the barb-like-toothed edges and ridges of each of the similar faces, extending along the upper half. Achene, 3-4 mm. long, having twelve longitudinal ridges, 1.2 mm. wide. Introduced from Europe. Troublesome on thin lawns.

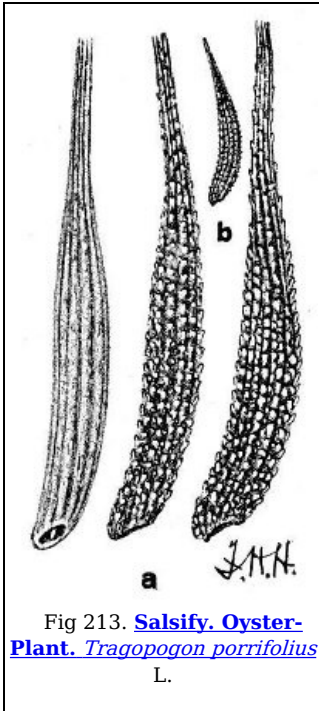


Fig 213. **Salsify. Oyster-Plant.** *Tragopogon porrifolius* L.

Salsify. Oyster-Plant. *Tragopogon porrifolius* L. Flowers purple; achenes dull light brown, nearly cylindrical; apex tapering, mostly terminating in a slender beak which is often longer than the body of the achene. Achene straight or curved, 10-ribbed, 12-18 mm. long, outermost coarsely roughened by upwardly directed, whitish, scale-like projections. Native of Europe.

Meadow Salsify. Yellow Goat's Beard. *Tragopogon pratensis* L. Flowers yellow; achenes dull, light brown, nearly cylindrical, apex tapering, mostly terminating in a slender beak. Achene straight or curved, 10-ribbed, 12-15 mm. long, the inner ones of the head smooth, the outer-most coarsely roughened by upwardly directed, whitish, scale-like projections. Introduced from Europe.

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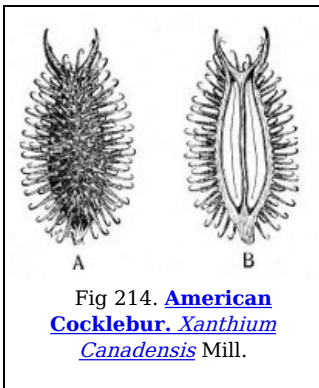


Fig 214. **American Cocklebur.** *Xanthium Canadensis* Mill.

American Cocklebur. *Xanthium Canadensis* Mill. Achenes or burs reddish brown, oblong, circular in section, two-beaked, about 20 mm. long, covered with stout hooked prickles. Each bur encloses two seeds. Native of this country.

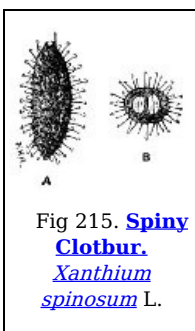


Fig 215. **Spiny Clotbur.** *Xanthium spinosum* L.

Spiny Clotbur. *Xanthium spinosum* L. Bur oblong, light brown, very slightly flattened, 10-13 mm. long, the beaks weak and small, small hooked prickles 3-4 mm. long, each bur contains two seeds. Introduced from Europe.

Broad Cocklebur. *Xanthium strumarium* L. Bur dark brown, oval, circular in sections 12-22 mm. long, beaks stout, nearly straight, spines about 5 mm. long, surface of burs and base of spines clothed with minute hooked prickles. Naturalized from Europe.

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AC-CUM´BENT, leaning or lying upon, applied to cotyledons when the caulicle (radicle) is folded against their contiguous edges, shown as [Symbol: 0== rotated 90 deg. clockwise].

A-CHENE´, achenium, a small, dry, one-seeded, indehiscent fruit, likely to be mistaken for a seed.

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A-CU´MIN-ATE, ending in a prolonged tapering point.

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AWN, a bristle-shaped appendage.

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BARBED, furnished with rigid points or short bristles, usually reflexed like the barb of a fish-hook.

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Co´MA, a tuft of hair on a seed.

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DEL'TOID, shaped like the Greek letter delta; triangular.

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EL-LIP'TIC-AL, oblong and rounded at the ends; longer than oval.

EM'BRY-O, the little plant forming a part of the seed, usually consisting of caulicle, one or more cotyledons and a plumule.

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FE´MALE FLOW´ER, one having pistils only, but no stamens; pistillate flower.

FER´TILE, producing fruit, or reproductive bodies of any kind.

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Floral glume

FLO´RET, a single flower of a head or cluster, especially in Compositae.

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GLUME, one of the outer floral envelopes in grasses or sedges. The term as now used includes the bracts (empty glumes) which subtend a spikelet and the lower of the two bracts subtending the individual flower (flowering or floral glume, lemma).

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GRAIN, the caryopsis or fruit of Gramineae; any small seed.

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HAS´TATE, like the head of a halberd—applied to leaves which have a spreading lobe on each side of the base.

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Hillman, F. H., graduate of the College in 1888; expert draftsman of the seed Division of Washington, D. C., [103](#)
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HI´LUM, the scar or point of attachment of a seed.

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IN-CUM´BENT, leaning or lying upon; applied to cotyledons when the caulicle is folded against the track of one of them, shown as [Symbol: || o].

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IN-DIG´E-NOUS, native and original to the region.

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IN´VO-LU-CRE, a set of bracts immediately subtending a flower or inflorescence.

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KEEL, the joined pair of petals in a papilionaceous corolla; a projecting ridge along the back of an organ.

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LAN´CE-O-LATE, tapering abruptly towards the base and gradually towards the apex, like the head of a lance.

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LIN´E-AR, very narrow with the margins parallel or nearly so.

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OB-LAN´CE-O-LATE, lanceolate in form, but tapering toward the base more than toward the apex.

OB´LONG, longer than wide with nearly parallel sides. Compare Oval.

OB-O´VATE, a flat body broader toward the apex than the base. See Ovate.

OB-O´VOID, a solid body broader towards the apex than the base. See Ovoid.

OB-TUSE´, having a rounded end or apex; blunt.

Oenothera, [147](#)
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O´VAL, about twice as long as broad, with regular curved outlines, broadly elliptical.

O´VATE, like a longitudinal section of an ordinary hen's egg, with the attachment, if any, at the broad end.

O´VOID, the shape of a hen's egg and attached, if at all, at the large end.

Ovoid spike rush, [118](#)
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PA´LE-A, PA´LET, the upper bract which with the floral glume incloses the flower in grasses.

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PU-BES´CENT, clothed with soft and rather short hairs.

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RA´PHE, the adherent funiculus connecting the hilum and chalaza in anatropous or amphitropous ovules or seeds.

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RE-TIC´U-LATE, in the form of network.

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ROOT, the descending axis which is destitute of leaves or nodes.

ROOT STOCK, rhizome, a stem usually subterranean and more or less thickened, producing young branches.

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SPIKE´LET, a small or secondary spike, as found in grasses.

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STRI´ATE, striped with parallel ridges and grooves.

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TRUN´CATE, terminating abruptly, as though cut off or flattened at the end.
Compare Premorse and Succise.

TU´BER-CLE, a swollen part or a root due to bacteria. Usually applies to such as possess the power to fix nitrogen; a little tuber.

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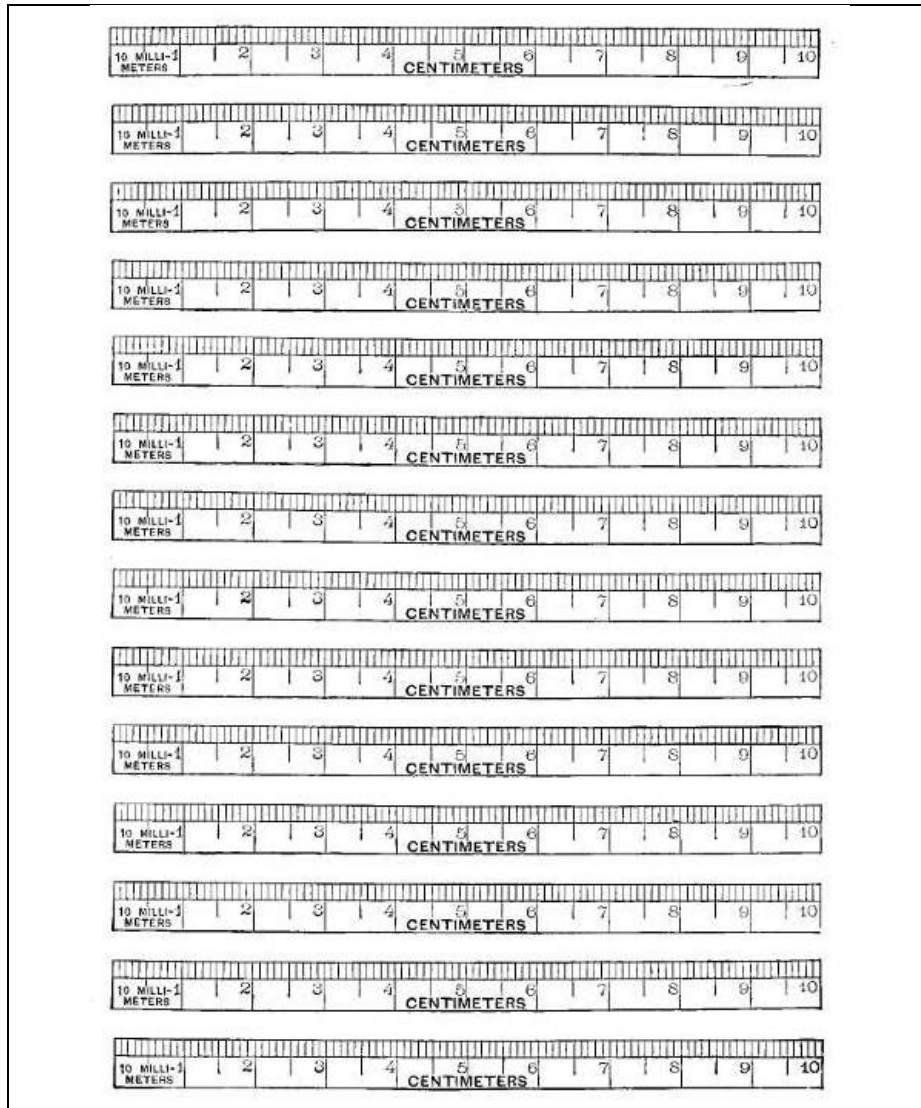
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☞ If not familiar with the decimal scale used in recording measurements in this volume, the [Pg 183] reader can clip out one of those found below and use it for measuring.



Transcriber's Notes

Added descriptive title to all illustrations, as original had only a figure number.

Use the first phrase to find the change.

Page [103](#)

'a dollar is almost indispensable in'

Changed 'indispensible' to 'indispensable'.

Page [103](#)

'they annoy the gardner.'

'gardner' may be 'gardener'. Unchanged.

Page [105](#)

'enormous number of weeds.'

'weeds' may be 'seeds'. Unchanged.

Page [114](#)

'three obscure longitudinal'

Changed 'obcure' to 'obscure'.

Page [119](#)

'Urtica gracilis'

Changed 'Utrica' to 'Urtica'.

Page [120](#)

'Polygonum Convolvulus'

Changed 'Concolvulus' to 'Convolvulus'.

Page [120](#)

'elliptical to obovoid,'

Changed 'ellipical' to 'elliptical'.

Page [121](#)

'base obtuse or bearing'

Changed 'abtuse' to 'obtuse'.

Page [122](#)

'Rumex Acetosella'

Changed 'Rumux' to 'Rumex'.

Changed 'Actosella' to 'Acetosella'.

Page [124](#)

'faintly evident radiating striation'

Changed 'striatian' to 'striation'.

Page [125](#)

'one side a groove leads to near'

Changed 'grove' to 'groove'.

Page [125](#)

'Chenopodium hybridum'

Changed 'hybrium' to 'hybridum'.

Page [126](#)

'Acnida tuberculata'

Changed 'tubercalala' to 'tuberculata'.

Page [131](#)

'Purslane. Pussley.'

Changed 'Purselane' to 'Purslane'.

Page [131](#)

'nearly circular, each side covered with 5-6 curved rows of tubercles, giving the appearance of having the two extremities bent together,'

These two lines were reversed in original.

Page [131](#)

'in outline, hem-like margin,'

Changed 'hemlike-like' to 'hem-like'.

Page [134](#)

'scar (hilum) is a whitish,'

Changed 'whittish' to 'whitish'.

Page [136](#)

'Lepidium Draba'

Changed 'Lepidum' to 'Lepidium'.

Page [138](#)

'slightly anatropous,'

Changed 'anatroupous' to 'anatropous'.

Page [138](#)

'Agrimonia gryposepala'

Changed 'cryposepala' to 'gryposepala'.

Page [141](#)

'long by 1.×1.4 mm. wide.'

'1.×1.4 mm.' maybe '1.-1.4 mm.'. Unchanged.

Page [142](#)

'are half anatropous'

Changed 'anathropous' to 'anatropous'.

Page [144](#)

'verticle line (raphe)'

'verticle' may be 'vertical'. Unchanged.

Page [147](#)

'ST. JOHN'S-WORT FAMILY. HYPERICACEAE.'

'HYPEPICACEAE' changed to 'HYPERICACEAE'.

Page [150](#)

'Convolvulus arvensis'

Changed 'Convolvulus' to 'Convolvulus'.

Page [153](#)

'four hard, conical-ovoid'

Changed 'connical' to 'conical'.

Page [153](#)

'long, bordered by a narrow margin,'

Changed 'bordred' to 'bordered'.

Page [155](#)

'convex having dark verticle lines,'

'verticle' may be 'vertical'. Unchanged.

Page [156](#)

'dull, yellowish to light brown,'

'grown' changed to 'brown'.

Page [156](#)

'.5-1 mm. long, columnar,'

Changed 'columnar' to 'columnar'.

Page [157](#)

'Purslane Speedwell'

Changed 'Purselane' to 'Purslane'.

Page [157](#)

'with certainty by means of'

Changed 'certainty' to 'certainty'.

Page [157](#)

'oval to broadly obovate,'

Changed 'obvate' to 'obovate'.

Page [159](#)

'shape, oval, oblong, rhomboidal'

Changed 'rhombodial' to 'rhomboidal'.

Page [164](#)

'Chickory. Chichorium Intybus'

'Chicory' and 'Cichorium' are the generally accepted spellings today. Unchanged.

Page [165](#)

'Leptilon Canadense'

Changed 'Leptiton' to 'Leptilon'.

Page [165](#)

'extremities truncate,'

Changed 'extremeties' to 'extremities'.

Page [167](#)

'brown, straight or curved,'

Changed 'stright' to 'straight'.

Page [167](#)

'Iva xanthiifolia'

May be 'xanthifolia'. Unchanged.

Page [167](#)

'or rhombic in section,'

Changed 'rhombicin' to 'rhombic in'.

Page [168](#)

'Leontodon autumnalis'

Changed 'autunalis' to 'autumnalis'.

Page [169](#)

'spreading by roots-stalks'

'root-stocks' and 'roots-stalks' used interchangeably. Unchanged.

Page [169](#)

'Introduced in Europe.'

May be 'Introduced from Europe.' Unchanged.

Page [170](#)

'Taraxacum Taraxacum'

Changed 'Taraxacum Taraxicum' to 'Taraxacum Taraxacum'.

Page [170](#)

'faces, extending along'

Changed 'exending' to 'extending'.

Page [173](#)

'ending in a prolonged tapering point.'

Changed 'prolonge' to 'prolonged'.

Page [175](#)

'Clover dodder, 151'

Changed '51' to '151'.

Page [177](#)

'Lithospermum,'

Changed 'Lithospernum' to 'Lithospermum'.

Page [177](#)

'Hoary alyssum,'

Changed 'allyssum' to 'alyssum'.

Page [178](#)

'lanceolate in form,'

Changed 'laceolate' to 'lanceolate'.

Page [178](#)

'Ox-eye daisy,'

Changed 'daisey' to 'daisy'.

Page [181](#)

Tall mustard, 137

Changed '237' to '137'.

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