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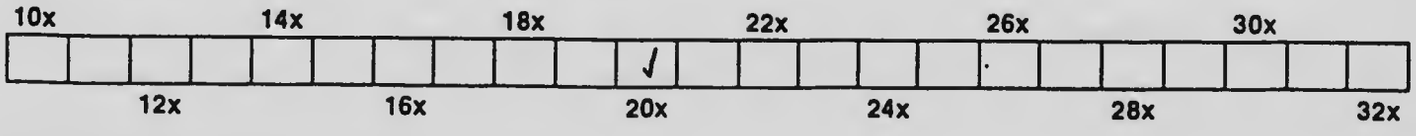

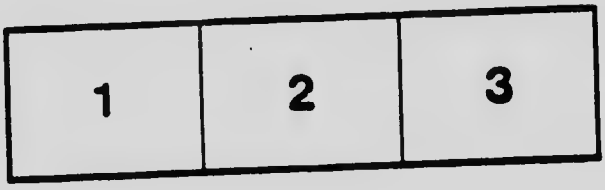

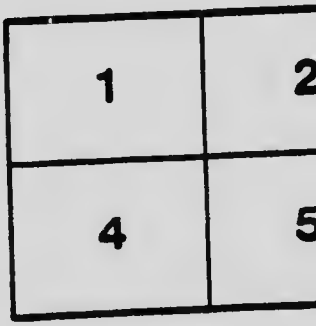

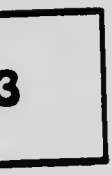

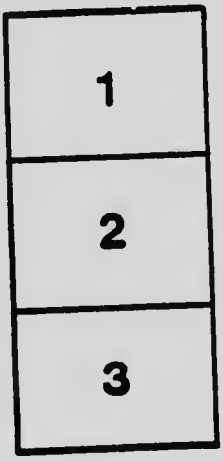

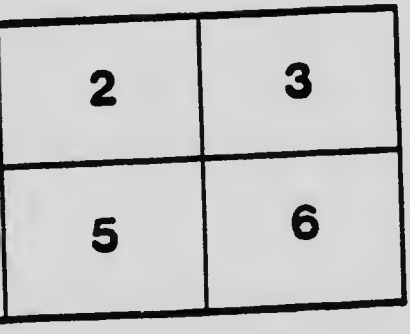

COMMON WEEDS OF CANADA

A Pocket Guide

By
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Fredericton, N.B.

TORONTO
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1910

PREFACE

The whole land
Is full of weeds; her fairest flowers choked up,
Her fruit trees all unprun'd, her hedges ruin'd,
Her knots disorder'd, and her wholesome herbs
Swarming with caterpillars.

—SHAKESPEARE, *Richard II*

I will go root away
The noisome weeds, that without profit suck
The soil's fertility from wholesome flowers.

—SHAKESPEARE, *Richard II*

The object in publishing this little Pocket Guide to the Common Weeds of Canada, is to provide farmers, teachers, and students with the information necessary for the identification and eradication of our common weeds.

The loss to the individual farmer, and to the country as a whole, occasioned in various ways by weeds, is very great. In the future, weeds must necessarily receive greater attention than they have received in the past.

In most cases the botanical names used in this book are those sanctioned by the International Botanical Congress, held at Vienna in 1905 but in some instances old familiar names are retained.

The drawings for the illustrations were made by my friend and former pupil, Mr. Geo. H. Crawford, of Kingston, N.B.

I heartily thank those who have in different ways assisted in the preparation of this little treatise.

Helpful criticisms, and suggestions for a new edition will be thankfully received.

I hope that this little book will, by its *doing*, establish its right to exist.

D. W. H.

FREDERICTON, N.B., March, 1910.

Common Weeds of Canada

What are Weeds?

A weed is a plant in the wrong place.

It is somewhat difficult to explain in a few words what a weed is. A plant under certain conditions may possess a marked utilitarian value, and the same species under other conditions be considered a pest and injurious to farm crops. A farmer calls any plant a *weed* whose growth interferes with that of the crop to which the soil for the time being is devoted. All weeds are plants, but all plants are not weeds. A weed has all the parts of a plant, grows like other plants, and reproduces itself; but it is a plant that is not wanted because it is out of its proper place. In the mind of a farmer a weed has no proper place; but there is no doubt that every plant in Nature's great collection is, at some time, and in some place, of use in the world.

Although we associate with the term weed the idea of uselessness, the plants themselves may be those which are ordinarily grown on the farm; but the fact of their occurrence where they are not wanted condemns them. Useful fodder grasses may overrun and reduce the value of a hoe-crop; potatoes or buckwheat left on the ground one year may occasion trouble during succeeding years. Cultivated plants out of place are called *relative weeds*; plants which possess no apparent value, and are injurious to crops, are called *absolute weeds*.

Any native wild plant, under special circumstances, may increase and become a *noxious* weed; but there is no doubt that most of our troublesome and aggressive weeds have been introduced from other countries, chiefly from the British Isles. As our country grows older and more thickly settled more

weeds are introduced, and greater and more suitable areas are prepared for their growth.

Weeds were not a serious menace in this country fifty years ago; to-day, in all parts of Canada, they are a source of constant and very considerable loss to the farmer. Wide-awake farmers are beginning to realize the fact that for too long a time weeds have been neglected, because most persons have not been aware of their noxious nature and their power to spread. "One year's seeding, seven years' weeding." Many farmers have only a limited knowledge of common plants. Many could not name correctly more than a score of our most common and troublesome weeds; yet there are about 200 common weeds, and over one hundred of these are classed as *noxious*. If farmers possessed a good working knowledge of our common weeds, they would take more interest in and better understand methods of eradication, and no doubt they would actually eradicate a great number—thus helping their own and their neighbors' farms. Again, a new noxious weed would be recognized on its first appearance and immediately eradicated, and its spread to other farms prevented. If farmers could be shown the amount of damage that weeds may occasion, self-interest should be an incentive to destroy as many as possible. "A weed is any troublesome or unsightly plant that is at the same time useless or comparatively so."

Duration of Weeds

A knowledge of the natural length of life of a weed is very important when methods of extermination are considered. The nature of the plant should be understood, and for this purpose plants are classed as annuals, biennials or perennials.

ANNUALS.—Annuals are plants that complete their life from seed to seed in one year, or in one single growing period. Seeds germinating in the spring produce young plants which grow flowers and mature seeds before winter. The mother plant

then dies, and is perpetuated by the seeds which usually remain dormant until the next spring, when they germinate and grow. As a rule, annuals have fibrous roots and extraordinary powers of seed production; they set off against their shortness of life the power to produce a great many seeds. A single plant, such as Wormseed Mustard, may produce 25,000 seeds. If every seed produced by a plant reached the germinating stage the country would soon be over-run by weeds. As it is, a plant may give rise to several hundred new plants, and thus annuals may soon over-run a piece of land. The shoots or leaves of an annual develop quickly, and smother all slow-growing crops. Winter annuals are plants which are biennial in habit. Seeds such as those of the Shepherd's Purse, Peppergrass and Pennycress, ripen in the summer, produce a certain growth before the winter sets in, and complete their development in the following spring.

BIENNIALS.—Biennials are plants that take two growing seasons to complete the life cycle. The seed germinates in the spring or summer, and during that season produces a plant with a fleshy tap-root, a contracted stem, and usually a rosette of leaves which lie close to the ground. The plant remains dormant during the winter, and the following spring and summer, by means of the food stored in the tap-root, gives forth new shoots or stems which bear leaves and flowers and mature seeds. After ripening the seeds, the whole plant dies. Burdock, Mullein, Evening Primrose, etc., are biennials.

PERENNIALS.—Perennials are plants that may live several years, and during that period give rise to several generations of plants. Perennials are propagated in several ways. Like biennials and annuals they multiply by means of seeds, and very often possess the power of vegetative reproduction. Some root deeply; others have a root-system near the surface. The most difficult to eradicate are those which extend long underground stems beneath the surface of the ground, as Canada Thistle and Perennial Sow-thistle. Couch and Yarrow are

shallow-rooted perennials. Couch sends out lo underground stems from different points, on whi buds and shoots develop and break their way u wards through the soil, ultimately producing ste with leaves and flowers. Each node with its b and roots may become a separate plant even wh separated from other parts of the underground ste Thus Couch cannot be eradicated by the same mea employed for the eradication of annuals We se therefore, that it is highly important to understar the nature of weeds, as to whether they are annual biennials, or perennials, and whether they have tap-root or a creeping underground stem.

How Weeds Grow

Plants display a great variety in the manner growth, as regards roots, stems and leaves, etc and a knowledge of their peculiarities is of grea importance because these points must be consid ered in devising effective methods of eradicatior Most annuals have ascending or erect stems—tha is, the stems rise vertically from the ground. Man grow several feet high and shade useful plants Others have procumbent or prostrate stems. Th stems are too weak to stand upright, and conse quently they fall flat on the ground. Chickweed and Knotgrass belong to this class. The stems however, may branch out in all directions and thus cover large areas of surface with their leaves. As cending or assurgent stems are those which rise obliquely upwards, the stem being too weak to stand erect. When prostrate stems, such as those of Silverweed, strike root as they grow on or below the ground, they are called creeping or repent stems. The stolons or runners take root at the nodes or tips. These plants may cover large areas of ground, and it is almost impossible to mow them. Stems which rise by clinging to other objects for support are called climbing stems. Some, such as Virginia Creeper, and the common Pea, rise by means of tendrils. Some, such as Virgin's Bower, by their

twisting leaf-stalks. Others, such as Poison Ivy, by means of rootlets. Twisting stems are those which rise by coiling themselves around other stems or supports like the Morning Glory and Bindweed.

Climbing and twining weeds do damage by preventing the proper development, and the exposure of the leaves of field or garden plants to the light and air. Such weeds must be attacked in the early stages of their growth, as later, after they have become fully attached to crops, there is no practical means for suppressing them without doing injury to the growing crops.

Some plants, such as Common Plantain and the Dandelion, have short contracted stems, with rosettes of leaves spread out on the ground at the base of the stem. The rosettes shade and kill out all plants beneath them. Rhizomatous weeds are those which possess a rhizome or creeping underground stem, sometimes called a rootstock, from which shoots, called offsets, arise. Rhizomatous weeds, such as Couch and Coltsfoot, are perennials, and are among the worst weeds of the farm. Most biennials, such as Burdock, Dock, and Ragwort, have long roots, called tap-roots, which descend vertically and sometimes to a considerable depth.

How Weeds Spread

Ten of our most noxious weeds are native plants. Nearly all have been brought to us from other countries, either directly or indirectly. Man has been responsible for the introduction of foreign plants, but natural agencies have assisted in the spread of weeds from farm to farm. There are many ways in which weed seeds are carried, all of which may be classified in two groups, natural agencies and human agencies.

Natural agencies:

1. By Winds.—Many small seeds are light enough to be blown away; and many are rendered buoyant by a ring of downy hairs, called a pappus, which is attached to the fruit containing the seed or seeds. By means of the light pappus the seeds may be waft-

ed a long distance even by a gentle breeze, and by strong wind carried many miles. Dandelion, Canada Thistle, Sow-thistle, Willow-herb, and many others, produce seeds or roots which possess the tufts of fine silky hair. A few of these plants, allowed to flower and seed, would soon stock a whole parish with their offspring. Some seeds, like those of Dock and Wild Parsnip, are winged, or the pod containing the seed, as in Pennycress, exposes an extended surface by means of which the seeds are easily carried through the air by winds. Some plants are rolled or tumbled along the ground, as in the case of Tumble Weed. The seeds drop from the seed cases and are spread far and wide. Even in the winter time seeds are carried by the drifting snow. The examination of a snow-drift will often show the presence of many seeds.

2. By Water.—Seeds that float on water are carried to and fro by winds until they are washed ashore, or find a lodgment somewhere, and begin to grow. Streams may carry even heavy seeds from high to lower grounds. The rills and streams which are present everywhere, after heavy rains in the spring, carry many seeds far from the parent plant. Darwin maintained that seas might carry seeds over one thousand miles, by the movement of the water and the seeds not lose their germinating vitality. In this way he accounts for the distribution of many plants found far from their native haunts. Nearly all the seeds of aquatic plants are distributed by means of water. Thus, in addition to the agency of winds, water plays an important part in the dispersal of weed seeds.

3. By Birds and Other Animals.—The fruits of Cleavers, Burdock, Agrimony, Stickseed and other plants, possess little hooks which cling to the bodies of animals, especially to the wool of sheep. We are all familiar with the fruits of Beggar-ticks, which cling so persistently to our clothes. These barbed fruits may also cling to the feathers of birds. Thus seeds may be carried long distances until they become disentangled or rubbed off by some means.

Authorities say that about ten per cent. of all flowering plants possess seeds which are dispersed by means of barbed or cleaved processes.

Seed-eating birds and herbivorous animals swallow whole many seeds. The latter may pass through the digestive system of the animal without injury; and reaching the ground, perhaps many miles from the parent plant, germinate and produce new plants. Darwin picked from the excrement of one small bird twelve kinds of seeds which were perfect in form, and nearly all of which germinated. Every person has seen plants distributed by means of the excrement of farm animals. Even in the dirt which clings to the feet of the birds and other animals, seeds are scattered far and wide. Small animals, such as ants and locusts, assist in the dispersal of seeds.

Human agencies:

1. By Impure Seed.—The farmer buys impure grain, grass, clover and other farm seeds, and in this way many weeds are introduced and spread over the farm. Hay imported for fodder may contain many weeds. So many bad weeds are being introduced and spread by means of impure grass and clover seed, that in order to protect the farmer, the "Seed Control Act of 1905" was passed by the Dominion Parliament. Under this Act no person shall sell, offer, or expose, or have in his possession for sale, any seeds of cereals, grasses, clovers, or forage plants, unless they are free from certain noxious weed seeds, or contain only a certain number of weed seeds in each one hundred seeds sold. The Act is intended to provide the means by which the users of seeds may protect themselves against the introduction of noxious weeds on their lands.

2. By Farmyard Manure.—Stable manure, bought from city stables, often contains many weed seeds which are carried to different parts of rural districts. Manure brought from other sections should be rotted or piled and allowed to heat thoroughly before it is applied to clean land. Many weed seeds are killed by this treatment, but many remain quite

uninjured, and when the manure is spread on t land weeds spring up in abundance.

Many biennials and perennials which contain ri stores of food in their tap-roots and stems are capal of ripening their seed without contact with the so if they be pulled in an immature condition. If su plants are not burned, but thrown on the manu heap, hundreds of their offspring are ultimately ca ried back to the land. "An ounce of prevention worth a pound of cure." Litter of fodder, wh thrown on the manure pile, will add to the numb of weed seeds in the manure.

3. By Farm Implements.—Weeds are frequent distributed by waggons, harrows, seeders, threshi machines or other agricultural implements, and ca ried from farm to farm or community to communit A threshing machine which has been used on a far where through ignorance or neglect weeds aboun contains numerous seeds in the chaff, foul seed, an other litter remaining in the machine. When th machine is moved to another farm many of thes seeds are shaken out. Threshing machines shoul be thoroughly cleaned before being moved to anothe farm or community.

By Railroads and Vessels.—Many of our wors weeds reached this country from Europe in the ba last of vessels. The ballast is thrown from the ves sel at some seaport, the weed seeds germinate an produce flowers and seeds, the seeds are carrie inland, and soon the weed infests the country. Rag wort, *Senecio Jacobæa*, which has over-run som sections of Nova Scotia, was introduced in that way Weeds also follow the lines of railway, the seed being dropped from cars as the train moves along Grain, fodder, and litter of various kinds, are scat tered along the track, and at stations where grain and animals are unloaded, and cars cleaned, many weed seeds are planted. In this way seeds are car ried from one country to another, and from one province to another.

Notwithstanding all efforts to prevent their in- troduction and distribution, weeds will certainly

gain a foot-hold, from time to time, on the farms of the most careful; but every farmer should become acquainted with the different kinds that are most noxious, and the best methods of eradication.

Objections to Weeds

1. WEEDS ABSORB SOIL MOISTURE.—One of the essentials in the success of growing farm crops is the conservation of soil moisture in order that the growing plant may have a constant and sufficient supply. Without soil moisture there can be no growth. Every effort is made to supply the plant with the required amount of moisture. Nature supplies most by means of the refreshing rains; man sometimes supplies it direct by sprinkling, irrigation and other means; but the conservation of the water already in the soil, by proper cultivation, is the great problem for the farmer. Weeds absorb a large amount of this water, and it is evaporated from their leaves and thus lost to the soil. An average mustard plant pumps from the soil about fourteen ounces, or seven-tenths of a pint of water, per day; and a sunflower may absorb thirty-three ounces in one day. Plants of all kinds take up considerable amounts of water from the soil and transpire it into the air. The amount transpired is generally in proportion to the surface of the leaf, but thin leaves transpire more than thick ones. Where weeds are present they compete for the water supply of the soil and reduce the amount available for the crop. This accounts for the stunted character and reduced yield of crops over-run by them. The reduction of yield due to the presence of weeds may reach 50%. Many consider this waste of moisture the most serious injury done by weeds.

2. THEY USE PLANT FOOD.—Through their roots plants may take up a large quantity of food from the soil. Many weeds are very heavy feeders, as is shown by their rank and very rapid growth. Analyses of plants of different kinds show a high percentage of potash and phosphates, and sometimes of nitrogen.

These are the foods which are supplied plants in form of manure or expensive chemical fertilizer Weeds, on account of their extensive root-system may collect a large portion of the food which othe plants require and obtain, if weeds are not present Weeds deprive a crop of a large amount of availabl plant food and rob succeeding crops as well.

3. THEY CROWD, CHOKE, AND SHADE USEFUL PLANTS.—Weeds take up a great deal of space that should be occupied by useful plants; and since they usually grow more vigorously and are more prolific than useful plants, they crowd, shade, and partly choke the seedlings of the desired crop, and prevent the access of adequate heat and fresh air. Black Bindweed often covers completely many plants among which it grows.

In some useful plants, such as carrots and parsnips, germination is slow, and the seedlings during early life develop slowly. If weeds are allowed to compete with such slow-growing root-crops the young plants are soon smothered and the yield in autumn is very small. Weeds such as Dock, Plantain and Chickweed, which creep on the surface, effectually cover large areas of ground which should belong to the crop; weeds such as Bindweed, which climb or wind around the stems of plants in order to place their own leaves in a favorable position, press the leaves of the plants supporting them and prevent their proper development. Again, many weaker-stemmed crops, such as cereals, are often pulled to the ground by the weight of climbing or winding weeds. In general, weeds prevent the development and decrease the value of farm crops.

4. THEY INCREASE LABOR AND EXPENSES.—Weeds are a source of great loss to the farmer as they require much labor, time, and expense, to eradicate or keep them in check. A farmer may have to change a good, established rotation, or even grow a less profitable crop, in order to keep in check some bad weed which has a good start. This may mean extra labor and expense. Even after cultivation, hoeing, or weeding, many weeds may be har-

vested with cereals and their seed mixed with the grain when the crops are threshed. This means extra labor in cleaning the grain, or other seeds, before it can be put on the market; otherwise, its market value is reduced.

The farmer purchasing seed for seeding purposes keeps in view the possible danger of spreading weeds over the farm by means of impure seed, and the price he is prepared to pay for the latter is in proportion to its impurities.

Again, weed seeds in wheat or other grain, may impart a dark color or an objectionable taste or offensive odor to the flour made from the grain; hence the miller avoids grain containing objectionable weed seeds. Weeds reduce the profits of the farm.

5. WEEDS HARBOR INJURIOUS INSECTS AND FUNGI. —Weeds afford breeding and feeding places for insects which may be injurious to the farmer's crops. Every year insects do a great deal of damage. What they destroy in America every year is worth millions of dollars. Whatever tends to increase the number of insects is the enemy of the farmer. Weeds also harbor injurious fungi such as rusts, smuts, etc., and these depreciate the value of the crop.

6. WEEDS ARE SOMETIMES POISONOUS TO STOCK. —Ragwort, *Senecio Jacobæa*, is the cause of what is known in this country as the Pictou Cattle Disease. Cattle eating the weed sicken and die. This plant has caused the death of thousands of cattle and even horses. Other weeds cause sickness and death among animals.

7. WEEDS OFFEND THE EYE AND DEGRADE THE TASTE FOR FARMING.—"A thing of beauty is a joy forever." Nothing so offends the eye or taste of a person, who has an appreciation of beauty in things, as a weedy garden, lawn or field. As a rule, weeds are not attractive, often they are repulsive, and never do they lend beauty to a lawn, garden or field-crop.

In general, every weed should be considered a thief, a murderer, an intruder—to say the least,

something not wanted; and every means should b employed to keep fields, yards, lanes, and roadside free from them.

Extermination of Weeds

Farmers are becoming more and more intereste in different methods and means for the eradicatio of weeds. Experts have been devoting much tim to the study and investigation of weeds, and ever effort has been made to meet the growing deman for accurate information on the subject. If weed cannot be completely exterminated, they may b brought under subjection; but to combat ther successfully, it is necessary to study their life-his tories and habits of growth—their powers of repro duction by whatever means—how they dispers themselves over the land—the character of thei roots and stems, and the soil most suitable for thei development. The more one studies weeds, th better able is he to find out their weaknesses an plan for their destruction.

Weeds differ so much from each other that there is no one method of eradication for all. Often in dividual weeds require individual treatment. How ever, there are some general methods of externina tion that may be outlined.

1. WEEDS SHOULD NOT BE ALLOWED TO SEED.—The only way to prevent the seeding of weeds is t destroy the plants before the flowering takes place Many weeds flower after a few weeks' growth; hence the necessity, if they are to be successfully con trolled, of beginning early when the plants are young The younger the plants, the more easily they are subdued. If hoeing and weeding are put off, as is often the case, until the weeds are several weeks old many plants will have flowered and produced seed which has fallen to the ground. Even cutting off the inflorescence of the plant once may not be suffi cient, because many plants will send out new shoots from the stem or root left, and these shoots will flower and mature seeds. Some plants, such as Coltsfoot, produce flowers and mature seeds before

leaves appear, and are usually overlooked until it is too late. Prevention of seeding, therefore, although a great deal may be accomplished in this way, will not of itself result in the complete extermination of weeds. The method is chiefly applicable to roadside and fence weeds where methods of cultivation would be impracticable—and farmers should not forget that roadsides and yards require attention as well as fields and gardens.

2. WEEDS SHOULD NOT BE SOWN.—In discussing "How Weeds Spread," mention was made of the dispersal and introduction of weeds by means of impure grain and garden seeds. It is very important that seed purchased should be as clean as possible, and the Dominion Seed Control Act was passed in order to protect the farmer. But the farmer is often to blame for purchasing impure seed because it is cheap.

Mention was made of the introduction of weeds by means of seeds in manure. The farmer should pay special attention to the manure-heaps, and the disposal of screenings, sweepings and other refuse likely to contain weed seeds.

3. WEED SEEDS ALREADY SHED OR SOWN SHOULD BE DESTROYED.—Seeds may be buried deeply by plowing so that they cannot get warmth and air enough for proper germination. If they do germinate the weak seedlings may not be able to reach the surface of the ground. Many seeds may be destroyed in this way; but some, such as those of Mustard, Wild Oats and Clover Dodder, will germinate if brought to the surface even after many years of burial. If long-lived seeds are buried they may cause injury to future crops.

Instead of trying to kill weed seeds—a most difficult task—it is often wise to encourage their growth by preparing a seed-bed suitable for their germination. When the plants are a few inches high they may be destroyed by harrowing or hoeing.

4. IF POSSIBLE, WEEDS SHOULD BE TOTALLY REMOVED.—If there are not many weeds, or should the area infested be small, the most complete eradi-

cation is brought about by the actual removal o the plant. This may be done by hand-pulling o by digging up with implements. In a field th plants may be plowed out and then collected b harrows, and burned. In a field-crop, where seed ing of the weeds must be prevented to insure agains trouble in the future, as, for instance, Wild Mustard in a grain field, the only practical way is to go throug the field and hand-pull the weeds. Mustard ma be sprayed with good results.

5. Burial of Weeds.—Burial of plants by plow ing or deep cultivation will destroy seedlings o biennials and perennials and most annuals, ever though the latter are well developed. Burial is not sufficient to kill established biennials and peren nials, because they lay away in their tap-roots and rootstocks such stores of food that they are able to put forth buds and give rise to new shoots.

6. Spudding and Cutting Weeds.—Nearly all plants are destroyed by spudding or cutting the stems near the surface of the ground. One or more cuttings will usually result in the starvation of the root. Any development of leaves is prevented and the plant is thus deprived of a supply of carbonic acid gas and oxygen from the air. Starvation may also be brought about by building straw-stacks or manure piles over small patches, by salting the plants, by putting sheep on permanent pastures, and by persistent and thorough cultivation. Any culti- vation which merely breaks up the rootstocks and allows them to produce new leaves is worse than useless. Cultivation must prevent growth above ground. If the stem of the plant is not cut low and frequently, several new shoots may take the place of the one removed, and more harm than good is done. Annuals cut in the spring, and again later, usually die, the stem having become exhausted. Biennials and perennials are not killed so easily by cutting. Their roots and stems are well stored with food and may give rise to new shoots; but repeated cutting will kill any plant when the stores of food become exhausted in trying to develop new shoots.

Cutting or spudding the root below the ground will soon kill all annuals and biennials, as the root left is seldom able to produce buds. Many perennials have underground stems which bear buds; and cutting off the stems, either below or above ground, is useless. Even the true roots of some perennials give rise to buds. Cutting the underground stems of Couch does a great deal of damage, because every separate portion may produce a new plant. On cultivated land, cutting by means of the plow, hoe, cultivator, or other implement, cutting with scythes and spuds on pastures and meadows, or close feeding by sheep, will destroy most annuals and biennials.

7. ELIMINATION OF WEEDS BY DRAINAGE.—Weeds that flourish only on land where there is a superabundance of water may be got rid of wholly or in part by draining the land. Drainage will rid the land of sedges, rushes, horsetails, and many troublesome weeds which cannot adapt themselves to a soil which is not water-logged and acid.

8. APPLICATION OF MANURES AND OTHER SUBSTANCES.—Wild Mustard plants in grain fields can be killed, and the grain uninjured, by spraying with a two per cent. solution of copper sulphate (10 pounds of dissolved bluestone in 50 gallons of water.)

Salt supplied in liberal quantities will destroy Orange Hawkweed and other weeds, and will sometimes improve the character of the soil. Salt can be used with good results on dooryards and gravel walks. Salt, coal oil, or acid, will kill any plant, if applied so as to come in contact with the freshly cut stem or root. Sulphuric acid, carbolic acid, or arsenite of soda, if applied as a spray, will kill growing weeds.

Manure and nitrate of soda stimulate leafy growth of grasses and the latter may choke out many weeds which are not so much influenced by nitrogen.

Weeds, which grow only on barren, infertile soils, are eliminated by the application of manures. Lime applied to a pasture or meadow will stimulate the growth of clovers, and at the same time may check the growth of many useless plants.

Dense, sod-forming grasses, or crops like b
wheat, clover, cowpeas or millet, will often gro
dense as to exclude the light and smother out we

Mineral manures, such as common salt, l
gypsum, superphosphate of lime, and basic
may be employed to reduce weeds; but, on
whole, the use of chemicals as weed destroyers
not given much satisfaction. The cost of the ch
icals and the expense of applying them are great.
few drops of carbolic acid, applied at the base
main stem, with an ordinary machine oil can, is
best method that has, as yet, been devised for kil
weeds with chemicals.

9. ERADICATION OF ANNUALS.—Established
nuals are best destroyed by thorough and frequ
cultivation of stubble-ground after harvest, of
plowed for the following year, and among hoed cr
such as potatoes, carrots and turnips. The se
are induced to germinate in the seed-bed thus p
pared and cultivation kills the seedlings as they
pear. In this way weed seeds are pretty well clear
out to a depth of eight or ten inches. Below t
depth few weed seeds can germinate. Thousands
seedlings may be destroyed by the cultivator, a
every seedling killed means one weed less. Ma
seedlings are killed by autumn frosts.

Annual weeds thrive best in land which has be
broken, but not occupied, hence all land should
occupied by profitable crops.

In general, prevention of seeding, frequent sh
low cultivation, and mowing fields and roadside
will keep in check most annuals.

10. ERADICATION OF BIENNIALS.—Prevention
seeding, etc., as for annuals, will also destroy bienni
if they have not as yet stored up too much nouris
ment in their tap-roots or rootstocks. Cultivati
with different farm implements, in arable land,
cutting biennials below the crown, in sod land, w
destroy them. The best time to spud is in the fa
of the year. It can then be done most effectivel
and with least labor. The biennials then have com
pleted the first year's growth and the stems and roo

are as yet tender. The rosettes of leaves close to the ground will indicate the presence of the weed; and, if it be cut just below the rosette, it will not survive.

Biennials are usually most abundant along roadsides, in old pastures, and in waste places—and in those places they are usually most neglected. Weeds in such places should be destroyed by mowing and spudding.

11. ERADICATION OF PERENNIALS.—There are two classes of perennials: (*a*) those with underground creeping stems, as Canada Thistle; (*b*) those with roots that do not spread underground, such as Chicory and Plantain. It is necessary to study the habits of perennials if they are to be combatted successfully. For shallow-rooted perennials frequent shallow cultivation, as for biennials and annuals, is the most effective method of destroying them. By plowing or cultivating lightly, the roots are exposed to the sun and dry up and die. The cultivation should be in the summer, early after the harvest, and throughout the autumn, in stubble and sod ground; and during spring and summer among the hoed crops. For deep-rooted perennials, spudding and cutting so as to prevent foliage, thus starving the roots, is the best method.

The treatment which weeds should receive must necessarily vary considerably according to the character of the soil, climate, and weeds. What may be a proper treatment under some conditions may not answer under other conditions, and special weeds require special treatment.

In general, all weeds can be destroyed by the use of brains and the ordinary implements of the farm, plus much hard work.

Group No. 1—Grass Family.

BARNYARD GRASS, OR COCK'S-FOOT.

Panicum Crus-galli, (L).

Root.—Fibrous. **Stem.**—Thick, stout culm, branching from the base, 1-2 feet high. **Leaves.**—Broad and flat, smooth, but rough-margined, numerous. **Flowers.**—Green, ⅛ inch, in one to three inch, crowded, numerous spikelets in dense panicles; each spikelet contains one fertile and one sterile flower; 3 glumes or husks; palea, or chaff, smooth and polished. **Fruit.**—A grain. **Seeds.**—Short, about ⅛ inch long, flat on one side and rounded on opposite side, light-gray color and shiny. **Duration.**—Annual. **Flowering.**—July—August. **Seeding.**—August—September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds and animals, also as an impurity in grain seed. **Eradication.**—Pull; prevent seeding; cultivate.

BARNYARD GRASS, OR COCK'S-FOOT
Panicum Crus-galli, (L.)

Barnyard Grass is a coarse, weedy grass growing in barnyards and in low rich grounds. It is of little agricultural value.

OLD-WITCH GRASS.

Panicum capillare, (S).

Root.—Fibrous. **Stem.**—Ascending, hollow culm, 12-18 inches high. **Leaves.**—Sheaths and leaves very hairy. **Flowers.**—Very small green flowers in large, loose, a.. ' very compound panicle; flower-stalks become very brittle and easily broken off by winds. **Fruit.**—A grain. **Seeds.**—Small, about $\frac{1}{12}$ inch long, grayish-brown, smooth and shiny, oval in outline with pointed ends. **Duration.**—Annual. **Flowering.**—July—August. **Seeding.**—July—August. **Propagation.**—By seeds. **Dispersal.** Seeds carried by winds, etc. **Eradication.**—Prevent seeding; cultivate.

Old-Witch Grass is a native weed, abundant in gardens and cultivated land, and in waste places. It has little, if any, agricultural value.

OLD WITCH GRASS
Panicum capillare, (S)

Crab Grass, *Digitaria sanguinalis*, (Scop.), or *Panicum sanguinale*, (L), is an annual with an erect or ascending branching stem, 1-4 feet long, from a decumbent, often creeping base. Nodes and sheaths more or less hairy. Leaf-blades lax, 2-6 inches long, thin and rough to the touch. Flowers in 3-12 racemes; spikelets in pairs, 1 flowered; pedicel strongly angled; first glume present and minute; second glume about one-half as long as the pale or grayish fertile lemma. Crab Grass is a variable European plant, flowering from August to October, and found in cultivated fields and waste ground. It is quite common in Quebec and Ontario.

Smooth Finger Grass, *Digitaria humifusa*, (Pers.), or *Panicum glabrum*, (Gaud.), is closely related to Crab Grass. It has a smooth stem, or culm, 6-16 inches high, much branched below and spreading, ascending or nearly prostrate. Leaves 1-5 inches long and thin. Flowers in 2-6 racemes, which are aggregated, divergent, often curved and 1-5 inches long; spikelets solitary or in twos, the glume and sterile lemma equal, densely short, hairy between the nerves, and as long as the dark-brown fertile lemma. This species is another introduced European plant found in cultivated fields and waste ground chiefly about towns and along railways. It is an annual, flowering from August to October.

Low, or Annual Spear Grass, *Poa annua*, (L).—Annual Spear Grass has a low, rarely over 10 inches,

tufted, flattened stem, decumbent at the base and sometimes rooting at the lower nodes, with loose sheaths. Leaves very soft, flat, narrow, ending in a hood-shaped point. Flowers in a pyramidal panicle from 1-4 inches long; spikelets crowded, 3-6 flowered; lemma distinctly 5-nerved, the nerves hairy below; florets not webby at base.

Annual Spear Grass is a European grass introduced into this country and found growing in cultivated and waste ground, wherever settlements have been made. It is an annual, flowering from April to October, of little agricultural value, although stock eat the early growth with avidity.

Hedge-hog, or Bur Grass, *Cenchrus carolinianus*, (Walt.), or *Cenchrus tribuloides*, (L).—Bur Grass has a robust, flattened stem 1-3 feet high, often extensively branched, and ascending or spreading, with loose sheaths hairy along the margins. The stem and branches are terminated by simple clusters of spiny burs. Flowers in simple racemes of 8-20 involucres; spikelets 2-3 flowered, acuminate, 2-6 together, subtended by a short-pedicelled, nearly round involucre about ½ inch long, densely long pubescent, the short spines spreading or ascending; glumes shorter than lemmas; sterile lemma with a hyaline palea. This is a tropical grass found in sandy soil on river banks and along railways. It is an annual, flowering from August to September, and is quite common in Ontario.

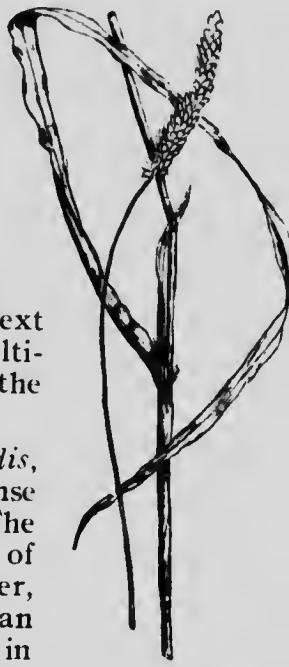
YELLOW FOXTAIL, BOTTLE GRASS, OR PIGEON GRASS.

Setaria glauca, (L).

Roots.—Perennial fibrous roots. **Stem.**—Erect, rough, 1-2 feet high. **Leaves.**—Flat, rough above and smooth beneath; a fringe of hairs at summit of ligule (part of leaf which sheaths stem). **Flowers.**—Tawny-yellow, ½ inch, in dense, close, cylindrical spike which is bristly like millet; 3 empty glumes. **Fruit.**—A grain. **Seeds.**—⅛ inch long, various shades of brown in color, with transverse wrinkles; frequently retain green color. Average plant produces 15,000 seeds. **Duration.**—Annual. **Flowering.**—July—September. **Seeding.**—August—Oc-

tober. **Propagation.**—By seeds. **Dispersal.**—Seeds in clo and grass seed; seeds carried by winds, birds, etc. **Eradicati** —Pull; hoe; cultivate.

Yellow Foxtail is a common weed in stubble, fallow or root fields. It has little agricultural value. To eradicate this weed, gang-plow stubble three inches deep, early in the fall; as soon as the seeds have had time to sprout cultivate thoroughly again, and repeat the cultivation, ribbing up the land before frost. The next spring put in a hoe-crop and cultivate thoroughly throughout the growing season.



YELLOW FOXTAIL, BOTTLE GRASS OR PIGEON GRASS
Setaria glauca, (L)?

Green Foxtail, *Setaria viridis*, (L), has a *green* and less dense spike with fewer bristles. The seeds closely resemble those of Yellow Foxtail, but are smaller, being about $\frac{1}{12}$ of an inch long, biconvex in shape, narrowly oval in outline with blunt extremities, and light-green if free from glumes. It is an annual of wide distribution, and is most troublesome in hoe-crops. Employ same method of eradication as outlined for Yellow Foxtail.

GREEN FOXTAIL
Setaria viridis, (L)

FOOL'S HAY, OR HAIR GRASS.
Agrostis scabra, (Wild).

Root.—Fibrous, creeping and interlacing. **Stem.**—Ascending, slender, 1-2 feet high. **Leaves.**—Very short and roughish. **Flowers.**—Purplish, small, in very loose panicle; one perfect flower on each spike **Fruit.**—Small grain. **Seeds.**—Very small, slender, $\frac{1}{12}$ inch long, light color, light weight. **Duration.**—Annual. **Flowering.**

—July—August. **Seeding.**—July—September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds, etc. **Eradication.**—Summer-fallow early.

Fool's Hay is widely spread and variable. It is found in gardens, in summer fallows, and on hills and mountains.

Red-top, *Agrostis vulgaris*, (With.), is closely related. Red-top, or Fine-top, is a fairly hardy perennial adapted to low lands. It is abundant in pastures and meadows.

FOOL'S HAY, OR HAIR GRASS
Agrostis scabra, (Wild)

WILD OAT
Avena fatua, (L)

WILD OAT.

Avena fatua, (L).

Root.—Fibrous, and thickened at base. **Stem.**—Erect, simple culm, smooth, 2-3 feet high. **Leaves.**—Leafy, linear, flat, rough; leaves and stems covered with white bloom. **Flowers.**—Loose panicle with spreading, nodding branchlets; spikelets long and pendulous; glumes large, long and empty; awn long and bent and covered with brown hairs. **Fruit.**—A long grain. **Seeds.**—Resembling ordinary oats, but with a long, stiff awn which is bent and twisted when dry; seeds brownish color, Average plant produces 800. **Duration.**—Annual. **Flowering.**

—July—August. **Seeding.**—July—September. **Propagatio** By seeds. **Dispersal.**—Carried in threshing machines; also impurity in grain. **Eradication.**—Seed down with oats cut for hay; follow with hoe-crop.

Wild Oats are at home in any soil that will gr cereals, and they ripen their seeds among almost a cereal crop. The seeds possess great vitality, a will germinate after remaining buried in the soil years. On a field infested with wild oats cer crops should b pped out of rotation in so far as possible; a hoe-crops, hay, and pasture shou take their place. To get the la under grass, it should be fallow during part of the season, the cu vation being frequent and shallow destroy all seeds that may ha germinated in the upper layers of t soil. The land should then be sow with early barley and seeded.

CHESS, OR CHEAT
Bromus secalinus, (L)

Our cultivated Oat, *Avena sati* (L), was introduced from Europe.

CHESS, OR CHEAT.
Bromus secalinus, (L).

Root.—Fibrous. **Stem.**—Erect, simp round, smooth, ½ to 3 feet high. **Leaves** Broadish, flat, pointed, ribbed, rough edges and on under surface, downy abov **Flowers.**—Dark green spikelets of chara teristic shape, in open and spreading pa icle; flowers laid broadly over each other in two ranl each spikelet 7-10 flowered; glumes empty, unequal and acut awnless. **Fruit.**—A grain. **Seeds.**—¼ inch long, resembling small oat. Average plant produces 1,000. **Duration.**—Wint annual. **Flowering.**—June. **Seeding.**—July. **Propagation.** By seeds. **Dispersal.**—An impurity in grain. **Eradication.** Avoid fall-sown crops; hand-pull; sow a crop which can harvested early.

Chess usually appears in crops sown in the fal It is a weed naturalized from Europe. The ide that chess is a degenerate form of wheat is erron eous and without foundation. Chess will matur seed under adverse conditions, even though th

plant be only a few inches high. The seed possesses great vitality, and is often found in wheat and rye. Flour made from chess is dark-colored, and has narcotic principles. Follow methods of eradication as for Foxtail.

COUCH, QUACK, ETC., GRASS.

Agropyron repens, (L).

Root.—White, jointed, creeping rootstocks which penetrate far and deeply into the ground and possess great vitality; perennial. **Stem.**—Ascending, leafy, 1½-3 feet high. **Leaves.**—Flat, roughish above; upper ones broader than those springing from the root. **Flowers.**—4-8 green-flowered, alternate spikelets, in a spike 3-8 inches long; glumes empty, equal and opposite. **Fruit.**—A grain. **Seeds.**—About ½ inch long, and slender, somewhat resembling oats. **Duration.**—Perennial. **Flowering.**—June—July. **Seeding.**—July—September. **Propagation.**—By seeds and offsets from underground stems. **Dispersal.**—By seeds in grain and hay; by running rootstocks; often carried through cultivation. **Eradication.**—Plow shallow in summer; employ hoe-crops.

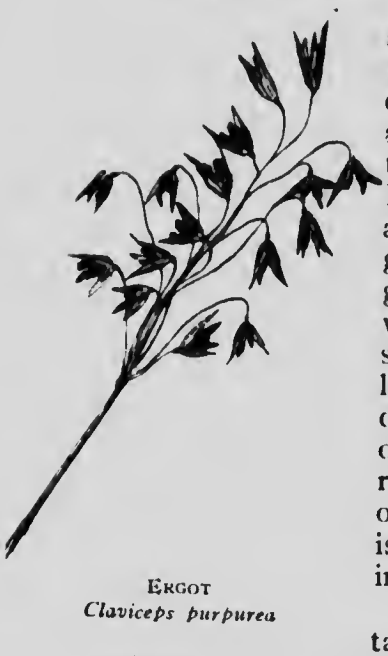
COUCH, QUACK, ETC., GRASS
Agropyron repens, (L)

Couch, Quack, Twitch, or Skutch Grass has a very bad reputation. Whatever value it may have for fodder purposes, its habit of taking and keeping possession of the soil makes it extremely objectionable. It is found in fields, gardens and hoe-crops everywhere. It flourishes best in loamy soils, from which it is especially difficult to eradicate.

To exterminate couch the creeping underground stems must be removed as completely as possible, and to do this requires judgment and discretion in the use of implements. Each piece of underground stem is capable of independent existence, so that if cut up by the plow by harrowing when the ground is wet or by other means, the pest is multiplied and spread. In a bad case, after plowing, the application of a heavy drag harrow brings out all the larger

pieces. After being collected with a light harrow t
stems should be burned. Hoe-crops of various kin
shallow cultivation, or a bare fallow on whi
Buckwheat may be sown and plowed under, will he
to eradicate the weed. A well-manured and carefu
cultivated rape-crop is effective as a means of d
stroying the grass. Close grazing will help.

Ergot, *Claviceps purpurea.*—Ergot is a fung
which attacks the ovaries of grass
and cereals. In the flowers of ry
wheat, and many pasture grasse
dark purple-colored bodies knov
as "ergots" are found occupyi
the place of some of the grain
In some grasses these structur
are much larger than the natur
grains, and stand out from th
glumes in a conspicuous manne
while in wheat and in man
smaller grasses the ergots are no
larger than the grains which the
displace. Each ergot is solid, an
often slightly curved, with a fu
rowed surface. Although blac
or deep-purple on the outside, i
is white within, and waxy or oil
in character.



ERGOT
Claviceps purpurea

The substance of ergot con
tains several poisonous compound
which have often led to dangerous illnesses i
human beings, when bread made from whea
containing ergots has been used. Ergot cause
numbness, paralysis, and gangrene of the extremi
ties when animals are fed with considerable
quantities of ergoted hay—for timothy and other
grasses are subject to the fungus.

Seed of any kind in which ergot is found should
be condemned. Draining tends to diminish its
attacks; and deep plowing, to bury the fallen ergot,
is beneficial. Meadows infested with it should be
cut when the grasses are in bloom, before the fungus

has had time to mature spores. The tops of grasses should be cut off where only small patches are infested. Spores are matured in the spring and carried by insects and winds to the flowers of grasses in bloom, and by this means the disease spreads.

Group No. 2—Nettle Family.

SLENDER STINGING NETTLE.

Urtica gracilis, (Ait.)

Root.—Fibrous, with running rootstocks. **Stem.**—Slender, erect, 2-6 feet high, beset with stinging hairs. **Leaves.**—Ovate-lanceolate, pointed, serrate, 3-5 nerved from the base, nearly smooth; long petioles with a few bristles. **Flowers.**—Green, $\frac{1}{12}$ inch; flower clusters in slender spikes. **Fruit.**—Flat achene. **Seeds.**—(Of Urtica dioica—Larger Stinging Nettle) very small, rather egg-shaped in outline; surface smooth; color dull and light-brown, or sometimes whitish-brown; apex acute; base slightly contracted at the scar and dark. **Duration.**—Perennial. **Flowering.**—June—September. **Seeding.**—July—November. **Propagation.**—By seeds and offsets from rootstocks. **Dispersal.**—Seeds carried by winds; also by running rootstocks. **Eradication.**—Mow frequently.

SLENDER STINGING NETTLE
Urtica gracilis, (Ait.)

Slender Stinging Nettle is found in waste places and near dwellings, by roadsides and in moist fields. It grows luxuriantly on good land, and in such situations is difficult to eradicate. Mowing as soon as the shoots spring up in early summer, and continued later, exhausts them in time; although the best method is to dig up the rootstocks completely.

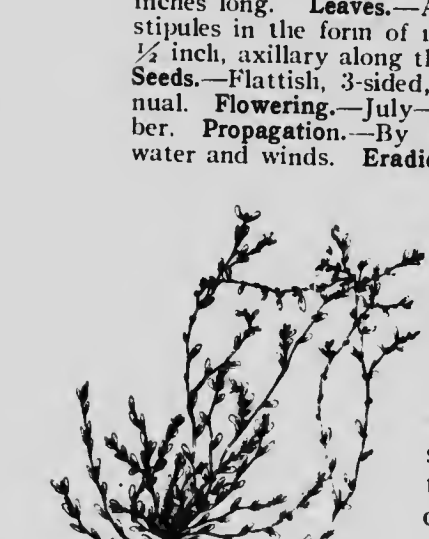
Larger Stinging Nettle, *Urtica dioica*, (L), has become naturalized in older settlements. It has a stem bristly with very stinging hairs, ovate, cordate, very deeply serrate leaves, and branching spikes of small green flowers.

Group No. 3—Buckwheat Family.

KNOTGRASS, OR DOOR-WEED.

Polygonum aviculare, (L).

Root.—Fibrous. **Stem.**—Prostrate and spreading, 12- inches long. **Leaves.**—Alternate, sessile, lanceolate or ob'o stipules in the form of membranous sheaths. **Flowers** ¼ inch, axillary along the stems. **Fruit.**—3-sided dr achen **Seeds.**—Flattish, 3-sided, dull-brownish color. **Dura**nual. **Flowering.**—July—September. **Seeding.**—July Septe ber. **Propagation.**—By seeds. **Dispersal.**—Seeds carried water and winds. **Eradication.**—Hoe and cultivate.



KNOTGRASS, OR DOOR-WEED
Polygonum aviculare, (L)

Door-weed, Knotgrass, Goosegrass, is an introduced weed with some native forms. It is very common around dwellings, in rich lowland, and in grain and other crops.

Coast Knotgrass, *Polygonum maritimum*, (L), is found on the sea-shore. It has stout, prostrate, glaucous stems, thick oval to oblong leaves, and clustered flowers in the axils of the leaves.

Polygonum pennsylvanicum (L), is found in moist soil usually in ditches or depressions in pastures. In late summer the plant can hardly escape notice. Its erect pink spikes direct attention to some neglected corner in the garden or brighten the field and roadside. The rosy divisions of the calyx persist till after the fruit has formed, pressing closely against the dark seed-vessel within.

LADY'S THUMB.

Polygonum Persicaria, (L).

Root.—Fibrous. **Stem.**—Nearly smooth, ascending, 12-18 inches high. **Leaves.**—Alternate, lanceolate; upper surface with a dark blotch in the middle; leaf sheaths with a somewhat ciliate border. **Flowers.**—Pink, ⅛ inch, in erect dense spikes on naked peduncles. **Fruit.**—Flat or 3-angled achene. **Seeds.** —Broadly egg-shaped in outline with a sharp extremity, thickly

flattened and jet black, about $\frac{1}{5}$ inch long. **Duration.**—Annual. **Flowering.**—July—September. **Seeding.**—August—September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by water and as an impurity in clover or grass seed. **Eradication.**—Pull; hoe; cultivate.

Lady's Thumb is very common in waste places, around dwellings and in rich lowlands, in grain and other crops. It is extensively naturalized, and is spreading to all parts of the country.

LADY'S THUMB
Polygonum Persicaria. (L)

Smartweed, *Polygonum Hydropiper*, (L), resembles Lady's Thumb, but is distinguished from the latter by the absence of the dark blotch on the leaf, and by its *pungent, acrid* juice. It has oblong-lanceolate leaves, nodding short spikes, and greenish-white flowers. The leaves and sepals are marked with pellucid dots or glands. The seeds are rather longer than those of Lady's Thumb, and are bluntly triangular and dull, reddish-brown in color. Smartweed is common in ditches by roadsides and in damp places everywhere.

Nodding Knotweed, *Polygonum lapathifolium*, (L), has *sheaths not fringed*, nearly smooth stem, long, tapering leaves rough on the midrib and margins, and oblong to linear erect spikes. It is a native knotweed, found in muddy places along streams and around ponds.

WILD BUCKWHEAT, OR BLACK BINDWEED.
Polygonum Convolvulus, (L).

Root. — Fibrous. **Stem.** — Angular, twining or climbing, roughish but not prickly; joints naked. **Leaves.**—Heart-shaped and partly halberd-shaped. **Flowers.**—Very small, $\frac{1}{2}$ inch, white, in loose panicled racemes; 4 or 5 flowers in a cluster and quite unlike those of Convolvulus arvensis. **Fruit.**—Dark-brown or black, triangular. **Seeds.**—Triangular nutlets resembling buckwheat of cultivation. **Duration.**—Annual. **Flowering.**—July—September. **Seeding.**—July—September. **Propagation.**—By seeds. **Dispersal.**—By seeds in grain and other seed. **Eradication.**—Summer-fallow early, and cultivate.

Wild Buckwheat is a twining annual, comm
in grain fields and waste places. It is frequentl
great nuisance in potato fields, often covering ma
square yards of the surface. It is often confus
with the more objectionable Small Bindweed, wh
it resembles in general habit of growth and sha
of its leaves.

WILD BUCKWHEAT, OR BLACK BINDWEED
Polygonum Convolvulus, (L.)

Climbing False Buckwheat, *Po*
gonum dumetorum (variety, Sca
dens), has a smooth, high, twini
stem, naked sheaths, and three
the calyx lobes winged in the fru
It is found climbing over shrubs
low rich soil, mostly in river bottom

Rough Buckwheat, *Fagopyru*
tartaricum, (L.), is found in cultivate
fields and waste grounds where it ha
escaped from cultivation.

Arrow-leaved Tear-thumb, *Pol*
gonum sagittatum, (L.), is a climbin
plant with a 4-angled stem, th
angles of which are beset with re
flexed minute prickles, by which th
plant is enabled to climb. The leave
are arrow-shaped. When stem i
drawn through the hand the prickles te flesh
hence the common name. It is comm lov
grounds, in ditches, and in swamps.

Halberd-leaved Tear-thumb, *Polygonum arifolium*
(L.), has a grooved stem, halberd-shaped, long-petioled
leaves, and flowers in short, loose racemes. It is
found in low grounds.

CURLED, SOUR, OR YELLOW DOCK.
Rumex crispus, (L.).

Root.—Strongly-developed, fleshy tap-root. **Stem.**—Quite
slender, 1-3 feet. **Leaves.**—Alternate, 6-12 inches long, lanceo-
late, with strongly wavy or curly margins. **Flowers.**—Green,
¼ inch; whorls of flowers in long, wand-like racemes. **Fruit.**
—Brown, shining, triangular grain. **Seeds.**—Triangular, $\frac{1}{16}$
inch, reddish-brown; surface smooth and faintly shining;

winged, with sharp edges. Average 17,000 seeds per plant. **Duration.**—Perennial. **Flowering.**—July—August. **Seeding.**—August—September. **Propagation.**—By seeds and offsets. **Dispersal.**—Seeds carried by winds a long distance; also an impurity in clover and other seed used on the farm. **Eradication.**—Spud, and carefully cultivate.

Curled, Sour, or Yellow Dock is a deep-rooted perennial introduced from Europe, and now common around buildings, in neglected lanes, in pastures, and in cultivated land. The docks are among the few plants whose roots have the power of producing adventitious buds. When cut up each piece of dock root is capable of sending forth a shoot, and thus behaves like an underground stem. Cutting below the crown, which will destroy most perennial or biennial plants, is of no avail with the docks. They must be pulled up and removed completely; or the roots plowed up and the pieces carefully collected and taken off the land. Seeding should be prevented, and every precaution taken to secure pure seeds of the grasses and clovers sown on the farm, as the latter often contain dock seeds. Because of the size and weight of the latter, it is practically impossible to separate them from Red Clover seeds.

CURLED, SOUR, OR YELLOW DOCK
Rumex crispus, (L)

In most cases this weed can be kept in check by the frequent introduction of well-cared-for hoe-crops into the rotation. The shorter the rotation, the better. The later sown hoe-crops, especially rape, are more effective than those sown earlier in the season. Before the hoe-crop is sown the land should be carefully cultivated with a gang-plow or broad-shared cultivator, which will cut the roots a few inches below the surface.

Bitter Dock, *Rumex obtusifolius*, (L.), is naturalized about towns and cities. Its lowest leaves are ob-

long, heart-shaped, obtuse, and only slightly wa
margined, the upper leaves oblong-lanceolate
acute, and all pale-green. The flowers are gre
small, and in loose, distinct whorls. The s
valves bear conspicuous, single, *white* grains.

FIELD OR SHEEP SORREL, SOUR GRASS, SOUR WEED.

Rumex Acetosella, (L).

Root.—Running, fibrous, branching rootstocks. **Stem**
Slender, erect, branching, 6-12 inches. **Leaves.**—Spear-sha
and characteristic, with pronounced sour ta
Flowers.—Green or red, 1/8 inch, in racemes. **Fruit**
Small, triangular nut. **Seeds.**—Long, triangu
smooth, shining when naked, but dull-brown w
invested by covering, 1/25 inch long. Average pl
produces 10,000. **Duration.**—Perennial. **Floweri**
—May—October. **Seeding.**—June—November. **Pr**
agation.—By seeds and by offsets from rootstoc
Dispersal.—Seeds carried by winds; an impurity
seed; running rootstocks. **Eradication.**—Break
sod; fertilize and re-seed.

FIELD OR SHEEP SORREL, SOUR GRASS, OR SOUR WEED
Rumex Acetosella. (L)

Sheep Sorrel is very common in sandy so
worn-out pastures, or meadows. Althou
abundant, it is not in itself a serious pe
but it is indicative of poor land. Liber
dressings of manures and composts redu
it; and applications of lime, or manures co
taining lime, are especially useful where t
weed is prevalent. It prefers acid soils, a
the lime counteracts the acidity of the so
The land should be well tilled with a broa
shared cultivator.

Group No. 4—Goosefoot Family.

LAMB'S QUARTERS, PIGWEED, OR GOOSE-FOOT.

Chenopodium album, (L).

Root.—Fibrous, with stout rootstock. **Stem.**—Upright, 1
feet high, grooved, much branched. **Leaves.**—Varying fro
ovate to lanceolate, serrate, mealy, whitish-green below ar
dark-green above. **Flowers.**—Green, 1/12 inch, in a panicle

dense cluster. **Fruit.**—An achene. **Seeds.**—Black and shining, small, 1/8 inch in diameter, nearly circular in outline and thickly flattened in shape. **Duration.**—Annual. **Flowering.**—June—November. **Seeding.**—August—November. **Propagation.**—By seeds. **Dispersal.**—By seeds, especially as an impurity in grass and clover seed. **Eradication.**—Hand-pulling and late cultivation.

Lamb's Quarters is a very common weed in cultivated grounds, in waste places, and around barns. Late cultivation is especially necessary in combating the weed, as it flowers and seeds till very late in the autumn. The land should be plowed or harrowed immediately after the harvest, and cultivated at intervals until late, when it may be ribbed up for a hoe-crop the following spring.

LAMB'S QUARTERS, PIGWEED OR GOOSEFOOT
Chenopodium album, (L)

Chenopodium urbicum, (L), has triangular, acute, coarsely and sharply-toothed leaves, and erect spikes crowded in a long and narrow paniele. It has been introduced in ballast.

Jerusalem Oak, *Chenopodium Botrys*, (L), has a sticky, low, spreading, sweet-scented stem, not mealy, and slender petioled leaves. It has been sparingly introduced along railway embankments and on sandy or gravelly beaches.

Strawberry Blite, *Chenopodium capitatum*, (L), has an ascending, branching stem, smooth leaves, and axillary head-like clusters *bright-red* in fruit, and resembling strawberries. It is found on sandy shores, in newly cleared land, and in river bottoms, but is not common.

Orache, *Atriplex hastata*, (L), and *Atriplex littoralis*, (L), are found in waste places, often associated with Lamb's Quarters.

Group No. 5 Amaranth Family.

RED-ROOT PIGWEED, OR GREEN AMARAN

Amarantus retroflexus, (L).

RED ROOT PIGWEED, OR GREEN AMARANTH
Amarantus retroflexus, (L)

Root.—Long, stout, pink. **Stem.**—Erect, st
1-6 feet high, many branches. **Leaves.**—Light-gr
ovate, wavy-margined, long-petioled, alterr
Flowers.—Green, $\frac{1}{12}$ inch, in axillary or tern
spikes, forming a panicle. **Fruit.**—Capsule o
seeds. **Seeds.**—$\frac{1}{16}$ inch in diameter, almost circul
outline, lens-shaped, shining black. **Duration.**—
nual. **Flowering.**—July—September. **Seedin**
August — November. **Propagation.** — By se
Dispersal.—Seeds distributed by winds and as
impurity in grass seed. **Eradication.**—Culti
late and burn; hand-pull in garden.

Red-root Pigweed is common in wa
places and in rich land. It is a coa
annual, which draws heavily on the sup
of food in the soil. The plants should
pulled; or mow so as to prevent ripen
of the seeds. If seeds mature and f
they should be encouraged to sprout, a
the seedlings killed by cultivation. Af
frequent cultivation during the fall
land should be ribbed up for a hoe-cr
the next spring.

Amarantus means *unfading.*

White Pigweed, or Tumble We
Amarantus albus, (L), is a prostrate
ascending annual sometimes found
waste heaps near towns or along railroa
It has greenish flowers in close axilla
clusters along the whitish stems.
seeds are carried by the wind, also in grain a
grass seed.

Group No. 6—Pink Family.

NIGHT-FLOWERING CATCHFLY, STICKY COCKLE, OR WHITE COCKLE.

Silene noctiflora, (L).

Root.—Fibrous. **Stem.**—Erect, 1-2 feet high, branching, swollen at the joints, very sticky, pubescent. **Leaves.**—Opposite, entire, lower leaves spathulate (broad and tapering towards the petiole); upper leaves, lanceolate. **Flowers.**—White or pink, 1 inch across, solitary, few, peduncled; petals 2-parted; calyx tubular and 10-ribbed; flowers opening only at night or in cloudy weather. **Fruit.**—A pod. **Seeds.**—Kidney-shaped and about same size as Alsike seeds, grayish-brown in color; surface marked with regularly arranged rows of small tubercles, which give finely granular appearance to the surface. **Duration.**—Annual and winter annual. **Flowering.**—June—August. **Seeding.**—July—September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by birds, and in clover, grass and grain seed. **Eradication.**—Pull, and cultivate.

NIGHT-FLOWERING CATCHFLY, STICKY COCKLE, OR WHITE COCKLE
Silene noctiflora, (L)

The Night-flowering Catchfly is a common weed in fields and cultivated grounds. It closely resembles Bladder Campion. The stem is covered by a viscid secretion, often so profuse that the stem and leaves are covered with small insects, entangled in it. It opens at night or during a cloudy day, and has a fragrant smell. The stem and calyx are beset with sticky hairs, which catch ants and other thieves before they reach the store of honey.

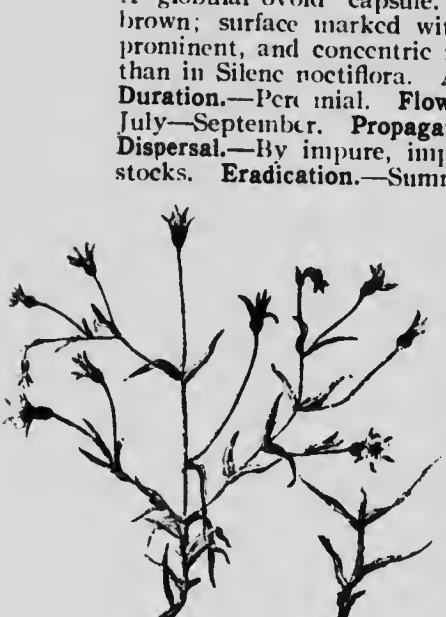
BLADDER CAMPION
Silene inflata, (S)

BLADDER CAMPION.

Silene inflata, (S).

Root.—Tap-root with rootstocks. **Stem.**—Erect, 1-2 feet high, pale or glaucous, very smooth, branching from the stem. **Leaves.**—Opposite, entire, oblong, glaucous, varying in size. **Flowers.**—

White, half-inch wide, hanging; calyx 5-toothed, much
ed; petals purple-veined; flowers in loose panicle. **Fr**
A globular-ovoid capsule. **Seeds.**—Kidney-shaped, gr
brown; surface marked with small tubercles, which are
prominent, and concentric rows more distinct and wider
than in Silene noctiflora. Average plant produces 9,000
Duration.—Perennial. **Flowering.**—June—August. **Seed**
July—September. **Propagation.**—By seeds and roots
Dispersal.—By impure, imported seed—also by running
stocks. **Eradication.**—Summer-fallow, and cultivate.



PURPLE COCKLE, PURPLE CAMPION, OR CORN COCKLE
Lychnis Githago, (Lam.)

Bladder Campion is a
turalized plant, which p
ises to become a pest in
places. It is found in m
ows and waste places ch
On account of the cree
rootstocks, its eradicatio
somewhat difficult. Pra
ally the same treatmen
will be outlined for our w
weed—Canada Thistle—
answer for Bladder Camp
A closely related spe
Silene Armeria, (L), Ga
Catchfly, is spontaneous
gardens. The latter
ovate-lanceolate leaves, g
cous stem, and pink flo
in flat cymes. It esca
from gardens.

PURPLE COCKLE, PURPLE CAMPION, O
CORN COCKLE.

Lychnis Githago, (Lam.)

Root.—Fibrous. **Stem.**—Erect, 1-2 feet high; few bran
clothed with long, soft, appressed, whitish-green hairs. **Lea**
—Red to purple, 1 inch across, solitary; calyx with long l
three or four times the length of the petals. **Fruit.**—Well-f
pods or capsules, each containing about 40 seeds. **Seed**
Dark-brown to dull-black, 1/8 inch, about the size of w
grains, irregularly rounded and sometimes somewhat triang
in outline; two face surfaces roughened with concentric row
spines. Average plant produces 500 seeds. **Duration.**—Ann
Flowering.—July—September. **Seeding.**—August—Octo
Propagation.—By seeds. **Dispersal.**—By birds in manure,

as an impurity in seed grain. **Eradication.** Pull, sow clean seed, treat as for Mustard.

Purple Cockle, or Purple Campion, or Corn Cockle, as it is called in England, is an annual introduced from Europe. It is a pernicious weed in grain fields, and is found wherever wheat is cultivated. The husks of the seed often appear as black specks in flour, which is damaged thereby. The seed is injurious to young chickens. An old writer, Gerarde, says: "What hurt it doth among Corne (wheat), the spoyle into bread, as well as in color, taste and in wholesomeness, is better known than desired."

Bouncing Bet, or Soapwort
Saponaria officinalis, (L.)

In this country corn means "maize" only. It is, therefore, better to omit the English descriptive term "Corn" as in "Corn Cockle" and "Corn Spurrey" and call the weeds Purple Cockle and Spurrey.

White Cockle, White Campion, or Evening Lychnis, *Lychnis alba*, Mill., or *Lychnis vespertina*, Sibth., is not a common weed in Canada, but is sometimes found in grain crops and meadows, chiefly about Guelph, Ont., where it is a troublesome weed. The whole plant is viscid-hairy, and has large leaves, numerous pure-white flowers, and thick rootstocks.

BOUNCING BET, OR SOAPWORT.

Saponaria officinalis, (L).

Root.—Fibrous. **Stem.**—Erect, stout, swollen at joints. **Leaves.**—Opposite, entire; lower ovate; upper lanceolate; leaves three-ribbed. **Flowers.**—Rose-colored or pinkish, ½ inch; clustered in corymbs; opening during the day; exhale strong perfume at night; regular; petals forming cylindrical tube or cup; petals with long, narrow claws. **Fruit.**—Many-seeded pods raised on short stalk. **Seeds.**—Small, with slender embryo on outside of mealy albumen and usually curved into a ring around it. **Duration.**—Perennial. **Flowering.**—July—September. **Seeding.**—August—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds, etc. **Eradication.**—Pull, and cultivate.

Bouncing Bet is found in gardens, and running

wild by roadsides. It is a smooth herb with large rose-colored flowers, which are pretty when double. The generic name, and the common name, Soapwort, are derived from *sapo*, soap, and refer to the lather which the mucilaginous juice forms with water, and which is said to have been used as a substitute for soap.

Bouncing Bet comes from England, is of a sociable turn, and is seldom found far from houses and their belongings.

COMMON MOUSE-EAR CHICKWEED.

Cerastium vulgatum, (L).

COMMON MOUSE-EAR CHICKWEED
Cerastium vulgatum, (L.)

Root.—Fibrous. **Stem.**—Prostrate, hairy, spreading, viscid. **Leaves.**—Opposite, lanceolate, oblong, rather acute in shape and appearance resembling a mouse's ear. **Flowers.**—White, ¼ inch; pedicels longer than the sepals in terminal clusters. **Fruit.**—Small capsules or pods curved upward. **Seeds.**—Very small and flattened both on the sides and edges; surface covered with short ridges or minute tubercles, reddish to dark-brown in color. **Duration.**—Perennial. **Flowering.**—May—July. **Seeding.**—July—August. **Propagation.**—By seeds. **Dispersal.**—By winds, birds, and in other seeds. **Eradication.**—Cultivate.

Field Chickweed, *Cerastium arvense*, (L.), is a common and beautiful species found on rocky hills and in pastures. It has hairy, slender, ascending stems about 6 inches high, linear leaves and few-flowered terminal clusters of small, ½ inch white flowers.

In some places Field Chickweed is a troublesome and persistent weed. In the West it is sometimes grown as a garden flower for its beauty. Pastures or meadows invaded by it should be broken up and cleaned by a short rotation.

COMMON CHICKWEED.

Stellaria media, (L.).

Root.—Fibrous. **Stem.**—Branching, prostrate, soft and brittle; marked lengthwise with one or two rows of pubescent lines (white hairs). **Leaves.**—Lower leaves ovate, on hairy petioles. **Flowers.**—Small, ¼ inch, white; petals shorter than the sepals, and 2-cleft at base; flowers numerous. **Fruit.**—Pods, splitting at the base; conic-ovoid and longer than calyx. **Seeds.**—Small, broadly oval in outline, thickly flattened in shape, with rounded edges; surface roughened with broken ridges or tubercles; reddish or dark-brown in color. **Duration.**—Annual. **Flowering.**—May—November. **Seeding.**—May—November. **Propagation.**—By seeds. **Dispersal.**—By birds, winds, and by seeds in manure. **Eradication.**—Cultivate early and thoroughly.

COMMON CHICKWEED
Stellaria media, (L.)

Common Chickweed is very common on damp grounds, in gardens and on lawns. It is an excellent example of an insignificant plant conquering in the struggle for existence. It was introduced from Europe many years ago, and has now a wider range than many indigenous species. In every section, from Atlantic to Pacific, it is a noxious and omnipresent weed.

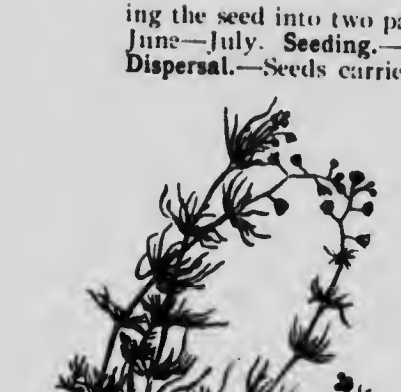
Grass-leaved or Lesser Stitchwort, *Stellaria graminea*, (L.).—A wide, branching plant, 1 to 2 feet high, with many grassy leaves in pairs along the slender stems, is an occasional weed in Eastern Canada. The flowers are white and ½ inch across; the seeds resemble those of Common Chickweed, and are sometimes found in clover seed.

COMMON SPURREY.

Spergula arvensis, (L.).

Root.—Fibrous. **Stem.**—Erect or prostrate, 6-18 inches high; whole plant covered with clammy hairs **Leaves.**—Thread like, in whorls; whorls at swollen nodes of stem; leaves one to two inches long. **Flowers.**—White, ¼ inch, in panicles. **Fruit.**—A 5-valved pod. **Seeds.**—Dull, dark-brown, or black, ⅛ inch, globular, with a distinct light-brown wing or ridge divid-

ing the seed into two parts. **Duration.**—Annual. **Flowering** June—July. **Seeding.**—July—August. **Propagation.**—By se **Dispersal.**—Seeds carried by winds and birds; seeds in hay grain. **Eradication.**—Constant culti tion; short rotation.



COMMON SPURREY
Spergula arvensis, (L)

Spurrey, called Corn Spu rey in England, has been intr duced from Europe; and some sections of the Maritim Provinces it is a pestilent we in gardens, grain fields, and damp or sandy soils. It gro rapidly, and has a serio smothering effect on all spri and summer grown crops. is best got rid of by preparin a fine tilth, in which the see germinate, and subsequent destroying the young plants b harrowing. The seeds are fr quently found in grass an clover seed.

Group No. 7—Purslane Family.

COMMON PURSLANE.
Portulaca oleracea, (L).

Root.—Fibrous and somewhat fleshy. **Stem.**—Low, pros trate, fleshy, very smooth, reddish. **Leaves.**—Wedge-shaped fleshy, entire, without stipules, clustered at ends of branches **Flowers.**—Yellow, ¼ inch, solitary; calyx 2-cleft, with the sepal keeled; open during full sunlight for a few hours in the morning **Fruit.**—A 1-celled pod or capsule. **Seeds.**—Black, kidney shaped, extremely small. An average plant produces 60,000 **Duration.**—Annual. **Flowering.**—July—November. **Seeding.**— August—November. **Propagation.**—By seeds. **Dispersal.**— Seeds carried by winds and birds; an impurity in other seeds **Eradication.**—Early cultivation.

Purslane is a garden weed easily recognized by its red, prostrate, fleshy stem and leaves. It is a pestilent weed in many Maritime Province gardens,

COMMON PURSLANE
Portulaca oleracea, (L)

but it is not found in some sections. Owing to its tenacity of life and its power of ripening its seeds long after it has been rooted out, its elimination is difficult. Careful hoeing, and constant cultivation, begun as soon as possible, will keep it under control.

Purslane has been used as a hog feed during very dry seasons, but the labor of gathering it is great.

Group No. 8—Buttercup Family.

TALL BUTTERCUP.

Ranunculus acris, (L).

Root.—Fibrous, white. **Stem.**—Erect, herbaceous, tall, with acrid colorless juice. **Leaves.**—Without stipules; blades deeply dissected, petioles spreading at the base; radical leaves with long petioles; stem-leaves alternate; all leaves "crowfoot" shape. **Flowers.**—Solitary, ¾ inch, yellow; sepals 5, and deciduous; petals 5, each with a little pit of scale on the inside of the claw; petals longer than sepals; parts of flower separate from each other. **Fruit.**—Head of dry achenes. **Seeds.**—Irregularly-oval in outline and thickly flattened; surface dull and finely roughened; dark-brown to black in color; about one-tenth of an inch in length; a short curved appendage at apex; often found as an impurity in timothy and clover seed. **Duration.**—Perennial. **Flowering.**—June—September. **Seeding.**—July—October. **Propagation.**—By seeds. **Dispersal.**—Seeds in hay, etc. **Eradication.**—By cultivation with hoe-crop.

TALL BUTTERCUP
Ranunculus acris, (L)

The Tall Buttercup is a perennial of wide d tribution in moist meadows, pastures, and wa places. It is not classed as a noxious wee In the Maritime Provinces, *Ranunculus repens*, (Creeping Crowfoot, may be regarded as a wo weed. The latter is a fibrous-rooted perenn "buttercup" with strong, leafy stolons or runne and three-lobed leaves, the segments of which a also lobed. The flower stalk or peduncle is fu rowed and the calyx erect and hairy. It sprea rapidly by means of its runners, and is abunda in the Maritime Provinces.

Group No. 9—Mustard Family.

WILD MUSTARD, CHARLOCK, OR HERRIC

Brassica Sinapistrum, (Boiss.)

Root.—Fibrous. **Stem.**—Erect, branching, and rough w stiff hairs somewhat scattered over the surface; branches chie on upper part of stem; stem purple at joints; 1-3 feet hig **Leaves.**—Lower leaves with one large terminal lobe and seve smaller lateral ones (lyre-shaped); upper leaves oblong; alterna without stipules; hairy. **Flowers.**—Yellow, showy, about tw thirds of an inch broad, with stout peduncles, which are notic able when the plant is in fruit; sepals, 4, deciduous; petals forming a cross-shaped corolla; regular; hypogynous; racemes. **Fruit.**—Nearly smooth pod; seed-bearing part long than empty beak. **Seeds.**—Dull black, ⅛ inch in diamet perfectly spherical and very much like turnip seed; under micr scope seed shows a network of fine ridges; retain their vitali for a long time when buried in the soil. Average plant produc 15,000 seeds. The seeds are borne in a characteristic po which is constricted between the seeds, thus giving it the a pearance of a rounded enlargement where each seed is enclose The appearance is termed "knotted." **Duration.**—Annua **Flowering.**—June — September. **Seeding.**—July — Septembe **Propagation.**—By seeds. **Dispersal.**—Seeds carried by birds an implements; an impurity in imported seeds. **Eradication.**— Cultivation, summer fallowing, hoed crops, spraying.

Wild Mustard, or Charlock, is all too common i our grain fields. It is particularly troublesome o light soils and especially on calcareous loams. Thoug an annual, its eradication is difficult, if it is onc allowed to seed. This may happen on overcroppe land, the proper cleaning of which is neglected

The seeds, once in the ground, live for years. As soon as they are brought to the surface, germination takes place. When the weed is once established it is difficult to rid the ground of it. When the plant is not very common, hand-pulling is the best method, provided the pulling is done before the seeds are formed. After the plants are pulled they should be dried and burned.

When fields are overrun with mustard, it is best to harrow stubble after harvest, or gang-plow and harrow. As soon as the seeds have sprouted, cultivate thoroughly and repeat the cultivation often. The following spring put in a hoe-crop and cultivate thoroughly during the growing season. Sow a crop of grain the following season, and pull the weeds by hand out of the grain crop. Then keep the field in hay or pasture two or three years.

WILD MUSTARD, CHARLOCK, OR HERRICK
Brassica Sinapistrum, (Boiss.)

Spraying with a two per cent. solution of copper sulphate (10 pounds dissolved in 50 gallons of water), or a 7½ per cent. of ferrous sulphate, will destroy mustard among cereal crops without injuring the latter. The spray should be applied at the rate of 30 to 40 gallons per acre, when the plants are young. The crop should be dry at the time of application, and for success no rain should fall for at least 24 hours afterwards.

Black Mustard, *Brassica nigra*, (L), which has sulphur-yellow flowers, a tall, smooth stem with lower leaves lyrate, and short ½-inch square pods, is found in old gardens and near dwellings.

Bird Rape, or German Rape, *Brassica campestris*, (L), is abundant in Manitoba, and in some parts of Quebec and Ontario. It very closely resembles Wild Mustard, but has only the root-leaves hairy. The upper leaves, the stem, and the long pods on spreading pedicels, are perfectly smooth and waxy like a cabbage leaf. The upper leaves clasp the stem by an auricled or ear-like base. Spraying with bluestone does not kill it.

WORM-SEED, OR TREACLE MUSTARD.

Erysimum cheiranthoides, (L).

Root.—Fibrous. **Stem.**—Slender, branching, erect, 8 inches to 2 feet high. **Leaves.**—Bright green and abundant, long, tapering at base into long petiole, covered with T-shaped hairs, lanceolate and scarcely toothed. **Flowers.**—Yellow, ¼ inch, inconspicuous; raceme elongated; structure of flower the same as in Wild Mustard. **Fruit.**—Pod a inch long and 4-angled, with one row of seeds in each cell; the little stalks (pedicels) holding the pods, oblique to the stem, but the pod erect and parallel to the stem. **Seeds.**—Very small, ⅛ inch, light-reddish color and smooth, a well-defined groove running lengthwise and sometimes obliquely across the seed, bitter. An average plant produces 25,000 seeds. **Duration.**—Annual and biennial. **Flowering.**—June—July. **Seeding.**—July—August. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by birds and implements as an impurity. **Eradication.**—Cultivate and hand-pull.

WORM-SEED, OR TREACLE MUSTARD
Erysimum cheiranthoides, (L)

Worm-seed Mustard is a native weed which is spreading quite rapidly. When the weeds are not numerous, hand-pull and burn; for fields badly infested harrow stubble ground immediately after the harvest. As soon as the seeds sprout, cultivate often and rip up the land with a double mouldboard before winter sets in. The next spring put in a hoe-crop and

cultivate thoroughly throughout the growing season; cultivate after the crop and the next spring sow to grain and clover; pull seeds by hand from grain; keep the field in hay or pasture for two or three years.

MARSH CRESS.

Nasturtium palustre, (DC.)

Root.—Fibrous. **Stem.**—Erect, 1-3 feet high. **Leaves.**—Alternate without stipules, pinnately parted; the lobes cut-toothed. **Flowers.**—Yellow, ⅛ inch; cross-shaped corolla as in Mustard; flowers in racemes. **Fruit.**—Short pod with seeds in two rows in each cell. **Seeds.**—Small, globular without a wing, or oval to round in outline, light or reddish-brown. **Duration.**— Perennial. **Flowering.**— June — September. **Seeding.**—July—October. **Propagation.**—By seeds. **Dispersal.**— Seeds carried by winds, birds, and water; in hay or grain. **Eradication.**— Cultivate thoroughly in the spring and autumn.

MARSH CRESS
Nasturtium palustre. (DC)

Marsh Cress is a member of the Mustard family, found chiefly in wet places, or on low-land grain or hay fields. It is not listed as a noxious weed, but is at least troublesome in the Maritime Provinces. It is very common along the St. John river and its branches.

Horse Radish, which has white flowers, very large, oblong, and generally crenate root-leaves, lanceolate stem-leaves, globular pods and very large roots, which are prepared as a relish, has escaped from gardens in many places.

Tower Mustard, *Arabis perfoliata*, (Lam.), is a biennial weed, well known in some parts of Canada. It has yellowish-white flowers, slender elongated racemes, erect, narrow, smooth pods, lying close to the stem, and ovate-lanceolate or oblong leaves clasping with a sagittate base.

SHEPHERD'S PURSE.

Capsella Bursa-pastoris, (Moench).

Root.—Long, deep tap-root. **Stem.**—Erect, branching, fro a few inches to 2 feet high. **Leaves.**—Root-leaves lobed ar clustered, forming a large rosette, which lies close to the groun in winter; stem-leaves clasping and arrow-shaped. **Flowers.**- Small, 1/8 inch, white; in racemes; flowers not so conspicuous a seed vessels. **Fruit.**—Triangular pod, divided down the cent by a partition, forming two cells, each of which contains fro 10 to 12 seeds. From the character of its pod the plant ol tained its scientific and common names. **Seeds.**—Reddis brown, very small, regularly oblong and flattene each side of seed marked by two distinc grooves; slight luster under microscope. Ave age plant produces 50,000 seeds. **Duration.**- Annual and winter annual. **Flowering.**—May- October. **Seeding.**—June—October. **Propag tion.**—By seeds. **Dispersal.**—Birds eat seeds an often evacuate them without digestion or injur pods when ripe open and drop seeds; an impurit in grass seeds. **Eradication.**—Prevention seeding, constant hoeing, and cultivation.

SHEPHERD'S PURSE
Capsella Bursa-pastoris
(Moench)

Shepherd's Purse is a very commo weed, naturalized from Europe.

PEPPERGRASS.

Lepidium virginicum, (W).

Root.—Fibrous. **Stem.**—Erect, 6-18 inche with many branches. **Leaves.**—Lower leave toothed or pinnatifid, tapering towards the base with a large terminal lobe and small lateral one upper leaves linear or tapering and entire **Flowers.**—White, small, 1/8 inch; petals present; slender spreadin flower stalks; flowers in racemes. **Fruit.**—Oval or circular pod with small wing at top and notched at the extremity. **Seeds.**— Flat, thin and oval, about 1/16 inch long, yellowish-red to yellow ish-brown; surface very finely roughened; single groove dow each face. Average plant produces 18,000. **Duration.**—Annual **Flowering.**—May—October. **Seeding.**—June—October. **Propa gation.**—By seeds. **Dispersal.**—By birds and winds, and as a impurity in clover seed. **Eradication.**—Prevent seeding, an cultivate thoroughly.

Peppergrass is a native plant, introduced from the South. It is sometimes common in grain fields especially after a wet spring. Where only a few plants exist, pull and burn, or cultivate carefully Care should be taken not to plow under seeds when

half or partially ripe, as the seeds will germinate even though partially mature.

Another species of Peppergrass, *Lepidium sativum*, (L), has escaped from cultivation in some sections. It has leaves variously divided or cut, numerous roundish, winged pods, and white or rose-colored flowers.

WILD RADISH
Raphanus Raphanistrum, (L)

PEPPERGRASS
Lepidium virginicum, (W)

Field Peppergrass, or Cow Cress, *Lepidium campestre*, (L), occurs in Western Ontario. The plant is a biennial with oblong lower leaves and spear-shaped stem-leaves, which have a few large shallow teeth, and an arrow-shaped base. The thick seed-pods are broadly ovate, boat-shaped, and rounded below. Each contains two seeds which are $\frac{1}{12}$ inch long, egg-shaped, and reddish-brown in color. They are sometimes found in clover seed.

WILD RADISH.

Raphanus Raphanistrum, (L).

Root.—Fleshy and fibrous. **Stem.**—Erect, branching, feet high, angular and hairy. **Leaves.**—Lyrate, rough, altern without stipules. **Flowers.**—Yellow, turning whitish or purpl veiny. **Fruit.**—Linear or oblong pod, tapering and long-beak necklace form when ripe. **Seeds.**—Reddish-brown, ⅛ in nearly round or oval in outline; surface slightly rough. **Du tion.**—Annual. **Flowering.**—June—October. **Seeding.**—Jul October. **Propagation.**—By seeds. **Dispersal.**—By anim etc., and as an impurity in seeds. **Eradication.**—Prevent se ing, and cultivate as for Mustard.

Wild Radish is an introduced plant, found the East, and in New Brunswick chiefly about Fre ericton, where it is a persistent weed. It som what resembles Wild Mustard, and should be treat as for Mustard.

Garden Radish, *Raphanus sativus*, (L), is spont neous on waste heaps and around gardens, b seldom remains longer than two years.

Group No. 10—Orpine Family.

LIVE-FOR-EVER.

Sedum Telephium, (L).

Root.—Fibrous and fleshy. **Stem.**—Erect, 1-2 feet, stout a fleshy. **Leaves.**—Alternate, without stipules, oval, toothe fleshy. **Flowers.**—Purple, ⅔ inch; sepals, petals and carpe 5 each; stamens, 10; flowers in close, compound cymes. **Fru** —Head of distinct carpels. **Seeds.**—Small and insignifican enclosed in carpels. **Duration.**—Perennial. **Flowering.**—Ju —September. **Seeding.**—September—October. **Propagation.** By seeds, and by portions of stem or root. **Dispersal.**—Seed and portions of plant carried by animals, water, etc. **Eradic tion.**—Spud, break sod, and cultivate.

The Orpine family contains few genera, but the are of wide distribution. The Garden Orpine, Live-for-Ever, has escaped from cultivation in nearl all the older settlements in Canada, and become troublesome weed by roadsides, along garden fence in pastures, and in hay fields.

Its thick, fleshy stems have vitality enough t give rise to new sprouts even when picked an

placed in a botanist's press, or thrown by the road-side—hence the common name, Live-for-Ever.

Cultivated as a bordering for flower-beds, but escaped in a number of places to moist, rocky hill-sides, where it grows in great profusion, "Mountain Moss," or Mossy Stonecrop, *Sedum acre*, (L), is found occasionally. It has thick, succulent, crowded, very small leaves, and yellow flowers. It is a spreading, moss-like plant.

Roseroot, *Sedum Rhodiola*, (DC.), is another species of sedum found on exposed cliffs, or on rocky shores.

Ditch Stonecrop, *Penthorium sedoides*, (L), is found in ditches and boggy places.

LIVE-FOR-EVER
Sedum Telephium, (L)

Group No. 11—Rose Family.

WILLOW-LEAVED, OR COMMON MEADOW-SWEET.

Spiræa salicifolia, (L).

Root. Strong, woody, branching rootstocks. **Stem.**—Shrub, 2-3 feet high, nearly smooth. **Leaves.**—Simple, alternate, wedge-lanceolate, doubly serrate; leaves assume a multiplicity of form; stipules deciduous. **Flowers.**—White or rose-colored, regular, in dense, large, terminal panicles; calyx 5-cleft, short, and persistent. **Fruit.**—5 carpels free from calyx. **Seeds.**—⅛ inch long, light-gray, three-sided, and pointed. **Duration.**—Perennial. **Flowering.**—July—October. **Seeding.**—August—November. **Propagation.**—By seeds, and by underground rootstocks. **Dispersal.**—Seeds scattered by wind and birds; by running underground stems. **Eradication.**—Pull, or grub out.

"In clouded pink or softer white," Common Meadow-sweet covers low, damp places near ponds

and margins of streams, pastures and waste pl
It crowds in fence corners and outlines dit
everywhere. It is a small shrub, and must be plo
pulled, or grubbed out.

WILLOW-LEAVED, OR COMMON MEADOW-SWEET
Spirea salicifolia, (L)

HARDHACK, OR STEEPLE BUSH
Spirea tomentosa, (L)

HARDHACK, OR STEEPLE BUSH.
Spirea tomentosa, (L).

Root.—Woody, stout, spreading. **Stem.**—Erect, 1-4 high, woody. **Leaves.**—Somewhat similar to those of mead sweet, but brownish and densely woolly on under side. **Flow** —Rose-colored, small, in dense terminal panicles; elus "steeple-shape," hence the name. **Fruit.**—Carpels, free fr calyx. **Seeds.**—Resembling those of meadow-sweet; enclo in carpels which form a follicle. **Duration.**—Perennial. **Flo ering.**—July—October. **Seeding.**—August—October. **Propa tion.**—By seeds and shoots from underground stems. **Disper** —Seeds carried by winds and birds. **Eradication.**—Pull, a grub out.

Hardhack, or Steeple Bush, is found in low ri grounds, in hilly pastures, and waste places. rose-colored "steeples" lend beauty to the autun landscape.

COMMON AGRIMONY.

Agrimonia Eupatoria, (L).

Root.—Fibrous. **Stem.**—Herbaceous, hairy, 2-3 feet high. **Leaves.**—Alternate, stipulate, interruptedly pinnate; larger leaflets, 5-7, oblong-ovate, and coarsely serrate. **Flowers.**—Yellow, regular; petals twice as long as the calyx; calyx armed with hooked bristles; flowers in slender spikes. **Fruit.**—A round bur which clings to whatever touches it. **Seeds.**—Calyx-tube tapering towards base; above, it is round and ¼ inch broad, and armed with short, hooked bristles. **Duration.**—Annual. **Flowering.**—June—September. **Seeding.**—July—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried in burs which cling to animals by hooked bristles. **Eradication.**—Cultivation, and prevention of seeding.

Agrimony is common in moist thickets, on the borders of woods, and along roadsides. It is not a noxious weed.

COMMON AGRIMONY
Agrimonia Eupatoria, (L.)

YELLOW AVENS.

Geum strictum, (Ait.).

Root.—Fleshy and fibrous. **Stem.**—Erect, hairy, 2-3 feet high. **Leaves.**—Root-leaves interruptedly pinnate; stem-leaves 3-5-foliate; leaflets ovate; leaves alternate and stipulate. **Flowers.**—Yellow; petals, longer than the calyx; calyx-lobes with five alternating bractlets; receptacle downy. **Fruit.**—Numerous one-sided carpels forming a ball of achenes tipped with hooked styles. **Seeds.**—About ⅛ inch long, green to brown in color, somewhat wedge-shaped with a prong from larger end; prong about ⅛ inch long with hook at end. **Duration.**—Annual. **Flowering.**—June—September. **Seeding.**—July—October. **Propagation.**—By seeds. **Dispersal.**—Hooked styles cling to animals and thus the achenes are carried about and scattered. **Eradication.**—Prevention of seeding, and cultivation.

Yellow Avens is a common plant in thickets and fence corners, along roadsides, and in waste places. The round balls of achenes, with their hooked styles, are conspicuous.

Water, or Purple Avens, *Geum rivale*, (L), is common around springs and in low wet places in meadows and pastures. It has nodding flowers with purplish-yellow petals and brown-purple calyx (hence local name Chocolate Plant), simple stem

2 ft. high, lyrate root-leaves, and few, lobed, sten leaves.

White Avens, *Geum album*, (J. F. Gmel.), is tw feet high, slender, branching, and smoothish downy; root-leaves pinnate, and stem-leaves divided or lobed; *petals white*, as long as the caly achenes bristly, tipped with hooked styles; *recep tacle of fruit bristly.*

YELLOW AVENS
Geum strictum, (Ait.)

ERECT, ROUGH, OR NORWAY CINQUEFOIL
Potentilla Norvegica, (L.)

ERECT, ROUGH, OR NORWAY CINQUEFOIL
Potentilla Norvegica, (L).

Root.—Fibrous. **Stem.**—Erect, 6-24 inches, branching above whole plant dark-green and hairy. **Leaves.**—Alternate, stipu late, palmate, of three leaflets; leaflets ovate-oblong and coarsely serrate. **Flowers.**—Yellow, ½ inch, in leafy cymes calyx large; petals not longer than the sepals; about 15 stamens **Fruit.**—Head of achenes on dry receptacle; styles not forming hooks as in Agrimony. **Seeds.**—Very small and somewhat kidney-shaped, light-straw to dark-brown in color; surface marked with shallow grooves and ridges which branch irregularly **Duration.**—Annual and winter annual. **Flowering.**—June September. **Seeding.**—June—November. **Propagation.**—By

seeds. **Dispersal.**—By winds, birds, and in grain seeds. **Eradication.**—Summer-fallow, and cultivate.

Erect Cinquefoil is a very common pest in meadows, pastures, dooryards, etc., throughout Canada.

Potentilla arguta, (Pursh.), has a stout brownish-hairy stem, 1-2 ft. high, pinnate leaves, of 7-11 oval, serrate leaflets downy underneath; upper part of plant clammy.

SILVERY CINQUEFOIL.

Potentilla argentea, (L).

Roots.—Fibrous, and with creeping underground stem. **Stem.**—Ascending, about 6 inches high, branched at the summit, white-woolly, spreading. **Leaves.**—Dark-green above and silvery-white below, palmate, of five leaflets, the latter deeply serrate towards the apex, with revolute margins. **Flowers.**—Yellow, ¼ inch; petals longer than sepals; flowers in cymes. **Fruit.**—Head of dry achenes. **Seeds.**—Small, resembling those of Rough Cinquefoil; surface rough, brownish in color. **Duration.**—Perennial. **Flowering.**—June—September. **Seeding.**—July—September. **Propagation.**—By seeds, and buds. **Dispersal.**—By seeds and spreading underground stems. **Eradication.**—Break sod, and cultivate.

SILVERY CINQUEFOIL
Potentilla argentea, (L)

Silvery Cinquefoil is found in pastures, lawns, dry fields, and along roadsides. It has been introduced from Europe. In some localities it is probably indigenous.

In woodland and meadows one may find many representatives of the Rose family, a group which contains our luscious strawberry and raspberry, and many genera with non-edible fruits, such as cinquefoil. Macoun's Catalogue gives over forty different species and sub-species of cinquefoil. Among these is the common Shrubby Cinquefoil, *Potentilla fruticosa*, (L), which is an erect, shrubby perennial common on the rocky margins of rivers and lakes throughout Canada. The flowers look like yellow strawberry blossoms.

SILVERWEED.

Potentilla Anserina, (L.).

Root.—Fibrous. **Stem.** Low, 6 inches, creeping, wi slender runners. **Leaves.**—All radical; interruptedly pinnat leaflets 9-19, serrate, green above and silvery-silky beneat **Flowers.**—Solitary, on long scape-like peduncles, bright yello nearly 1 inch wide. **Fruit.**—Head of achenes. **Seeds.**—Sma brownish, rough achenes. **Duration.**—Perennial. **Flowering.**— June September. **Seeding.**—July—September. **Propagatio** —By seeds, and by buds on runners. **Dispersal.**—Seeds carrie by water and animals; by slender creeping runners. **Eradica** tion. Summer-fallow, and cultivate.

SILVERWEED
Potentilla Anserina, (L.)

CANADA CINQUEFOIL, OR FIVE-FINGER
Potentilla canadensis, (L.)

Silverweed is very abundant along the coast, and on the margins of all rivers and lakes throughout Canada—also on low grounds, particularly if alkaline.

The name of the genus, *Potentilla*, from Latin *potens*, powerful, was originally given to the Silverweed, *Potentilla Anserina*, because of its supposed medicinal virtues.

Canada Cinquefoil, or Five-finger, *Potentilla canadensis*, (L.), is another species of cinquefoil very common on dry or sandy soil, in fields and open woods, by roadsides, and in waste places everywhere. Its stem is prostrate, or ascending, and silky-haired;

its leaves are palmate, showing five leaflets, hence the local name Five-finger. The flowers are yellow, solitary, and the petals larger than the sepals.

Marsh Five-finger, *Potentilla palustris*, (L), common in marshes and bogs, has an ascending stem and purple flowers.

Group No. 12—Pea, or Pulse Family.

YELLOW SWEET CLOVER, OR YELLOW MELILOT.

Melilotus officinalis, (Lam.).

Roots.—Fibrous. **Stem.** Erect, 2-4 feet high. **Leaves.**—Compound, pinnate, three-toothed leaflets, alternate and stipulate. **Flowers.**—Yellow, ⅛ inch, in slender, axillary racemes or spikes. **Fruit.**—A 1-2 seeded legume or pod, which is drooping and wrinkled. **Seeds.**—Light-brown, kidney-shaped, ⅛ inch long. **Duration.**—Biennial. **Flowering.**—June—September. **Seeding.**—July—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by birds and winds; in hay and clover seed. **Eradication.**—Cultivation; increased fertilization.

Yellow Sweet Clover is found along roadsides, in fields, and in waste places.

White Sweet Clover, *Melilotus alba*, (Desr.), which has escaped from gardens in many places, closely resembles *Melilotus officinalis*, but it has white flowers. Both plants exhale a sweet perfume, hence the name Sweet Clover.

YELLOW SWEET CLOVER, OR YELLOW MELILOT
Melilotus officinalis, (Lam.)

There are many clovers that are well known and are extensively sown. Among these are *Trifolium pratense*, (L), Common Red Clover, cultivated and found everywhere; *Trifolium repens*, (L), White or Dutch Clover, which is a naturalized clover, very common by roadsides, in pastures and meadows, and along the borders of woods; and *Trifolium hybridum*, (L), Alsike, which is found in cultivated fields and along fences.

Black Medick, *Medicago lupulina*, (L), which has yellow flowers, downy, procumbent stem, obovat-

leaflets, toothed at the apex, and kidney-shaped pods is a naturalized clover in different parts of Canada

Tick Trefoil, *Desmodium canadense*, (DC.), i quite common in dry, thick woods.

Rabbit-foot, or Stone Clover, *Trifolium arvens* (L), is a silky, branching annual with oblanceolat leaflets, and very soft-silky, grayish heads. It i naturalized from Europe, and i found in old fields and on roadside in Eastern Canada.

PURPLE-TUFTED VETCH
Vicia Cracca, (L)

PURPLE-TUFTED VETCH.

Vicia Cracca, (L).

Root.—Fibrous. **Stem.**—Erect, 1-3 fee high, downy-pubescent. **Leaves.**—Compound alternate, stipulate; leaflets 20 to 24, and oblong-lanceolate; leaf-stalk prolonged into a tendril. **Flowers.**—Violet and blue, ½ inch spikes long, crowded, and one-sided, with about 30 flowers in each spike; flowers turn purple before withering. **Fruit.**—Light-brown pod, ½ inch long. **Seeds.**—Round, ⅛ inch dark-brown, mottled. **Duration.**—Perennial **Flowering.**—July—August. **Seeding.**—August — September. **Propagation.** — By seeds **Dispersal.**—Seeds carried by birds; in hay and field crops. **Eradication.**—Plow, and plant hoe-crop.

Purple-tufted Vetch is found in hay fields, pastures and waste places.

Common Vetch, or Tare, *Vicia sativa*, (L), found in cultivated fields, in waste grounds, and along railways, is a European plant now naturalized through cultivation. It has a simple pubescent stem, leaflets 10 to 14, somewhat linear, and large purple flowers, one or two together and nearly sessile in the leaf axils. It is easily distinguished from purple-tufted vetch by the absence of a spike or one-sided raceme of flowers, and the fewer leaflets on the leaf. The pods of common vetch are black when mature, and contain from 4 to 10 mottled, black seeds. Common vetch is an annual, eradicated by summer-fallowing and careful cultivation.

Group No. 13—Wood Sorrel Family.

YELLOW WOOD SORREL.

Oxalis stricta, (Sav.).

Root.—Fibrous, underground shoots. **Stem.**—Low herb with acid juice; erect, leafy stem, a few inches high; throws out running underground shoots. **Leaves.**—Alternate, compound; the three leaflets obcordate and drooping in the evening; no stipules as in Oxalis corniculata. **Flowers.**—Yellow, ½ inch; five yellow petals, occasionally marked with red at the base; five long and five short stamens. **Fruit.**—Elongated, five-celled pod. **Seeds.**—Very small and numerous, flat, reddish-brown, oval in outline, but pointed towards one end. **Duration.**—Annual. **Flowering.**—June—October. **Seeding.**—July—October. **Propagation.**—By seeds and running underground shoots. **Dispersal.**—By birds, winds, etc. **Eradication.**—Frequent cultivation.

YELLOW WOOD SORREL
Oxalis stricta, (Sav.)

It is claimed by many that the Wood Sorrel is the Shamrock which legend says St. Patrick used in illustrating the doctrine of the Trinity. Its triple leaf was a favorite with the early painters, who often used it in the foreground of their pictures. The presence of oxalic acid in the plant has given rise to such common names as Sour Trefoil and Sorrel.

White Wood Sorrel, *Oxalis Acetosella*, (L), which has flowers with white petals, streaked with red veins, is common in deep, cool woods throughout Canada.

Group No. 14—Spurge Family.

SUN SPURGE, OR WARTWEED.

Euphorbia Helioscopia, (L).

Root.—Fibrous. **Stem.**—Stout, ascending, 6-18 inches high, with acrid, milky juice. **Leaves.**—Obovate, rounded or notched at the apex, alternate, the lower wedge-shaped and finely serrate. **Flowers.**—Yellowish, in cymes. **Fruit.**—Smooth, even pods. **Seeds.**—Small, with honeycomb-like surface, ⅛ inch long, nearly round, but pointed towards scar end, reddish-brown with light scar. **Duration.**—Annual. **Flowering.**—June—October. **Seeding.**—July—October. **Propagation.**—By seeds.

Dispersal.—Seeds carried by winds, birds, etc. **Eradication.**—Cultivation.

Sun Spurge is a naturalized European weed quite abundant in the streets of towns and cities and around ruined buildings—also in gardens and cultivated fields. Euphorbia is from Euphorbus, physician to King Juba.

Shore Spurge, *Euphorbia polygonifolia*, (L), is found on sandy sea shores.

Spotted Spurge, *Euphorbia maculata*, (L), is abundant along railways, in waste places, and in cultivated fields in some sections of Canada. It has oblong-linear, somewhat pubescent leaves, with a *brownish blotch* in the centre. The flowers are red, $\frac{1}{12}$ inch, in dense, leafy, axillary clusters.

Cypress Spurge, *Euphorbia Cyparissias*, (L), has escaped from gardens and become established in some places.

Three-sided Mercury, *Acalypha virginica*, (L), is abundant in river bottoms and in low, damp, cultivated fields. It is a nettle-like weed, with ovate, sparsely serrate, alternate, long-petioled leaves.

Group No. 15—Sumach Family.

POISON IVY.

Rhus Toxicodendron, (L).

Root.—Strong, woody roots. **Stem.**—Shrub, about one foot high, smooth, often climbing by rootlets; contains a milky or resinous juice; poisonous to the touch. **Leaves.**—Alternate, without dots or stipules; 3-foliolate leaflets ovate and notched irregularly; leaves resemble those of Box Elder. **Flowers.**—Greenish; sepals, petals and stamens, each five; in slender axillary panicles. **Fruit.**—One-seeded drupelet; a smooth, waxy-white fruit, which often remains on the plant until late in winter. **Seeds.**—One seed in each berry. **Duration.** Perennial. **Flowering.**—May—June. **Seeding.**—July—November. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by birds. **Eradication.**—Spud or root up the plants, or apply H_2SO_4 (sulphuric acid) to the stem of the plant every two or three weeks.

Poison Ivy grows everywhere in open brush, in ravines, on the borders of woods, along roadsides,

and in cultivated fields. The seeds are carried and scattered by crows, woodpeckers and other birds that eat its fruit in winter. The plant is poisonous to the touch; but notwithstanding this, it is sometimes planted about residences for the sake of ornament.

The poison is a non-volatile oil, found in all parts of the plant, even in the wood, after long drying. The oil is insoluble in water, and, therefore, cannot be washed off the skin by water, but can be removed by alcohol. An alcoholic solution of sugar of lead will destroy the poison.

Variety radicans, (L), has the leaves entire, and climbs high.

POISON IVY
Rhus Toxicodendron, (L)

Group No. 16—Balsam Family.

SPOTTED TOUCH-ME-NOT, JEWELWEED, OR WILD BALSAM.

Impatiens fulva, (Nutt).

Root.—Fibrous. **Stem.**—Erect, succulent, 1-3 feet high. **Leaves.**—Simple, ex-stipulate, alternate, serrate. **Flowers.**—Irregular, orange, spotted with reddish-brown; sepals and petals colored alike; one of the sepals spurred, and the spur tapering and strongly incurved. **Fruit.**—An elongated pod, which bursts elastically, hurling the seeds several feet away. **Seeds.**—Reddish-brown, 1/8 inch long, 5-ridged, somewhat oval in outline, and flattened. **Duration.**—Annual. **Flowering.**—June—October. **Seeding.**—July—October. **Propagation.**—By seeds. **Dispersal.**—Seeds thrown by sudden bursting of pod. **Eradication.**—Drainage, and cultivation.

Spotted Touch-me-not, or Wild Balsam, is abundant around springs and in damp places, along streams and in roadside ditches, throughout Canada.

The graceful flowers of Touch-me-not, which cannot be termed a noxious weed, are attractive; and after dewy nights, the drooping leaves sparkle in the early sunlight with the diamond drops set at

the tips of the leaves' teeth, due to superfluous water exuding from the leaves at these points.

Though bumblebees and other insects often visit the flowers of Touch-me-not, the Humming Bird is the most welcome guest. When it thrusts its bill into the spur, it comes in contact with anthers and stigma, and thus cross-fertilization is brought about.

SPOTTED TOUCH-ME-NOT, JEWEL-WEED, OR WILD BALSAM
Impatiens fulva, (Nutt)

ROUND-LEAVED MALLOW
Malva rotundifolia, (L)

Group No. 17—Mallow Family.

ROUND-LEAVED MALLOW.

Malva rotundifolia, (L).

Root.—Stout tap-root. **Stem.**—Several prostrate shoots. **Leaves.**—Long-petioled, round-heart-shaped, crenate, alternate with stipules, palmately veined, obscurely lobed. **Flowers.**—Pinkish or whitish, streaked with purple, ½ inch, solitary; petals twice as long as sepals. **Fruit.**—Dry carpels, not wrinkled, united in a ring, and separating after ripening. **Seeds.**—Dull reddish-brown or dark-brown, circular or kidney-shaped in outline, considerably flattened, somewhat wedge-shaped in form, and surface smooth, except near the scar. **Duration.**—Biennial. **Flowering.**—June—October. **Seeding.**—July—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds and animals, etc.; also found in grain. **Eradication.**—By cultivation.

Mallow is a weed introduced from Europe and now common along roadsides, in waste places, and in gardens. Several species of mallow are found in Canada.

High Mallow, *Malva sylvestris*, (L), introduced, but now spontaneous in gardens, and waste places, has escaped from gardens in a few places. It has an erect stem, two feet high, sharply 5-7-lobed leaves, and purplish petals three times as long as the sepals.

Curled Mallow, *Malva crispa*, (L), which is a tall, erect annual with round and angle-toothed crisped leaves, and small sessile flowers crowded in the axils, has escaped from old gardens.

Musk Mallow, *Malva moschata*, (L), is sometimes found near gardens. It has an erect stem, one foot high, 5-parted stem leaves, with each division cleft, and large, handsome, white or rose-colored flowers on short peduncles.

Group No. 18—St. John's-wort Family.

COMMON ST. JOHN'S-WORT.

Hypericum perforatum, (L).

Root.—Strong, tough, with runners or rootstock produced at the base of the stem. **Stem.**—Erect, 1-2 feet, much branched, slightly two-edged; juice resinous and acrid. **Leaves.**—Linear-oblong, with transparent dots which are easily observed by holding the leaf to the light; opposite, without stipules. **Flowers.** Deep-yellow, ½ inch, regular; 5 persistent sepals, and 5 deciduous petals, numerous stamens; flowers in open leafy cymes. **Fruit.** A 5-celled pod. **Seeds.**—Light to dark-brown, about $\frac{1}{32}$ of an inch long; surface rough; in shape rod-like, but bluntly tapering to a point at either end; twice as long as wide. **Duration.**—Perennial. **Flowering.**—June—September. **Seeding.**—June—September. **Propagation.**—By seeds, and by rootstocks from base of stem. **Dispersal.**—Seeds in hay, and carried by birds—also by runners. **Eradication.**—Break up sod, and cultivate.

COMMON ST JOHN'S WORT
Hypericum perforatum, (L)

Common St. John's-wort is found

in pastures, fields, and waste places everywhere. As a rule it is not regarded as a noxious weed.

Small St. John's-wort, *Hypericum mutilum*, (L), is found in lowlands everywhere. It has a slender branching stem not a foot high, small yellow flowers not ¼ of an inch across, cymes leafy at the base, and purple pods.

Marsh St. John's-wort, *Hypericum virginicum*, (L), is a small plant found in marshes and damp low grounds. It has a smooth stem, and oblong or oval, clasping, purple-veined leaves, conspicuously dotted beneath. The flowers are flesh-colored, and are found in the axils of the leaves and at the summit of the stem.

Group No. 19 – Evening Primrose Family.

FIREWEED, OR GREAT WILLOW-HERB.

Epilobium angustifolium, (L).

Root.—Fibrous. **Stem.**—Simple, 3-6 feet high, herbaceous. **Leaves.**—Scattered, lanceolate or willow-like. **Flowers.**—Purple, very showy, 1 inch wide; stigma of four lobes; 8 stamens; flowers in terminal, loose spikes or racemes. **Fruit.**—Linear, curving, many-seeded pod, purple in hue, about 3 inches long, filled with silk-tipped seeds. **Seeds.**—Very slender and small, about $\frac{1}{20}$ inch long, light-brown, with copious tufts of soft wool. **Duration.**—Annual or biennial. **Flowering.**—July—September. **Seeding.**—August—October. **Propagation.**—By seeds. **Dispersal.**—Pods burst, and winds carry seeds by means of tuft of hairs on each seed. **Eradication.**—Cultivation.

Fireweed, or Great Willow-herb, is found in fields and woods, especially on ground which has been recently burnt over. It is a tall and beautiful species; and its loose spikes of magenta-like flowers lend beauty to waste and desolate places. In the newly-opened flower the stigmas are closed and the style turned backwards and downwards; but in the older blossoms the style projects, and the stigmas are expanded ready to receive the pollen which the bees have carried from the anthers of newly-opened flowers.

Epilobium coloratum, (Muhl.), has a smooth stem, lanceolate serrate leaves, and small blue flowers with conspicuous petals.

COMMON EVENING PRIMROSE.

Oenothera biennis, (L).

Root.—Fibrous. **Stem.**—Erect, branching, 2-5 feet high, hairy. **Leaves.**—Entire, lanceolate, sessile, abundant. **Flowers.**—Yellow, 1½ inch, odorous, in a leafy spike, opening at night; long slender calyx-tube; ovary 4-celled; 4 petals; 8 stamens,

FIREWEED, OR GREAT WILLOW-HERB
Epilobium angustifolium, (L)

COMMON EVENING PRIMROSE
Oenothera biennis, (L)

with long anthers. **Fruit.**—Oblong pod narrowing towards top, and containing many seeds. **Seeds.**—Light-brown in color, prismatic in shape with edges slightly winged; dull surface which is finely roughened or ridged lengthwise. **Duration.**—Biennial. **Flowering.**—July—September. **Seeding.**—August—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds and birds; an impurity in grass and clover seed. **Eradication.**—Pull, and cultivate.

The Evening Primrose is common everywhere in damp meadows and along roadsides, in summer-fallows, and in waste places. It is a nocturnal beauty, opening its fresh buds and emitting a sweet perfume as evening approaches. During the day it may look

faded and dull. Though each flower is attractive only for a night, in that time it has had many visitors. Moths sip the sweet nectar secreted at the bottom of the long calyx-tube, and at the same time receives a shower of pollen which is carried to the stigma of another flower. A pretty pink moth with yellow markings on its wings is a very frequent caller. In the morning or before noon, the corolla, having completed its life-work, usually drops from the top of the ovary. Later in the season the corolla remains longer on the calyx, and we may see the flowers of the evening primrose blooming during the day.

Small Evening Primrose, *Oenothera pumila*, (L), is very common in dry fields, by roadsides, and on river banks amongst sand. It has a low, smooth stem, less than a foot high, club shaped 4-angled pods, and pale-yellow flowers which open when the sun is shining.

Group No. 20—Parsley Family.

WILD CARROT.

Daucus Carota, (L).

Root. Long, thin, woody tap-root. **Stem.**—Erect, 1-2 feet, branching, hollow. **Leaves.**—Alternate, pinnately compound or decompound, cut into fine divisions. **Flowers.**—White, in umbel; central flower red; umbel 3 inches across, closing in like a bird's nest when mature; involucre of pinnatifid leaves. **Fruit.**—Dense, concave umbel of short bur-like achenes, covered with bristly prickles. **Seeds.**—Oblong or oval; almost flat on one side; on other sides are four prominent rows of spring ridges; greenish-gray; distinct and peculiar odor. **Duration.**—Biennial or annual. **Flowering.**—July—August. **Seeding.**—August — September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by wind and animals. **Eradication.**—Spud, and break sod.

Wild Carrot, from the ancient Greek name, was brought to this country from Europe and cultivated for the root but it occasionally runs wild and is found in fields, pastures, and on roadsides throughout the country. It most frequently behaves as an annual, but is often biennial. With the excep-

tion of its root, which is comparatively thin and woody, it resembles the cultivated forms in stem, leaf, flower, and fruit.

The wild carrot affords an excellent example of the possibility of rapid modification of plants by special selection and improved cultivation. No doubt all our cultivated varieties have been derived from the wild carrot.

WILD CARROT
Daucus Carota, (L.)

CARAWAY
Carum Carvi, (L.)

CARAWAY.

Carum Carvi, (L.).

Root.—Fibrous. **Stem.**—Erect, hollow, 1-2 feet high. **Leaves.**—Alternate, decompound; stem-leaves with slender but short thread-shaped divisions. **Flowers.**—Mostly white, in umbels, two inches across. **Fruit.**—Ovate or oblong achenes, flattish on the sides. **Seeds.**—Oblong, ribbed, smooth, aromatic, ⅛ inch long; light-brown with lighter ridges, concave on one side and convex on opposite side, characteristic taste. **Duration.** Perennial. **Flowering.**—July—August. **Seeding.**—August—September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds and animals. **Eradication.**—Spud, and mow when in flower.

Caraway, *Carum Carvi*, (L), from the country Caria, was introduced into this country from Europe, and cultivated for the caraway seed, the oblong, highly aromatic fruit. In early days no farmhouse was complete without the bunches of caraway hanging from the kitchen beams; and even now one often sees women laying in a supply of caraway, the seeds of which are used for flavoring cake.

SPOTTED COWBANE, MUSQUASH ROOT, BEAVER POISON.

Cicuta maculata, (L).

Root.—Fleshy, deadly poisonous. **Stem.**—Stout, smooth, 2-6 feet high, streaked with purple but seldom spotted. **Leaves.**—Not aromatic, alternate, pinnately-decompound; leaflets lance-oblong, coarsely toothed or sometimes cut-lobed, veiny, with the main veins running into the notches. **Flowers.**—White, in umbels 4 inches across. **Fruit.**—Aromatic when bruised; globular and contracted on the sides. **Seeds.**—Each carpel with 5 broad and thickened blunt ribs, and an oil-tube in each interval; small, $\frac{1}{16}$ inch, light-brown. **Duration.**—Perennial. **Flowering.**—July—August. **Seeding.**—August—September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by floods, etc. **Eradication.**—Spud, and mow when in flower.

SPOTTED COWBANE, MUSQUASH ROOT, BEAVER POISON
Cicuta maculata, (L)

Cicuta maculata is a Water Hemlock closely related to the Poison Hemlock, by which criminals and philosophers were put to death at Athens in ancient times.

Spotted Cowbane is found in wet meadows, and is troublesome in hay because it is poisonous to animals that eat the hay.

Another species, *Cicuta bulbifera*, (L), is common in swamps. The roots of both species are deadly poisonous.

Group No. 21—Heath Family.

SHEEP LAUREL, OR LAMBKILL.

Kalmia angustifolia, (L).

Root.—Fibrous and woody. **Stem.**—Shrubby, reddish, smooth, 1-4 feet high. **Leaves.**—Simple, opposite or in threes, oblong, obtuse, short-petioled, thick, flat, shining above and pale beneath, evergreen. **Flowers.**—Rose-purple, showy; corolla broadly bell-shaped, with 10 pouches receiving as many anthers; pedicels recurved in fruit. **Fruit.**—Depressed, globular pod. **Seeds.**—Minute, reddish-brown, ridged. **Duration.**—Perennial. **Flowering.**—May—July. **Seeding.**—June—August. **Propagation.**—By seeds and offsets from roots. **Dispersal.**—Seeds carried by winds, animals, etc. **Eradication.**—Spud; burn; cultivate.

SHEEP LAUREL, OR LAMBKILL
Kalmia angustifolia. (L)

Sheep Laurel, or Lambkill, is abundant, often covering large spaces in boggy or rocky fields. It has beautiful purple flowers, which are conspicuous.

It was named for Peter Kalm, a pupil of Linnæus, who travelled in America over 150 years ago.

Lambkill is said to be very poisonous to sheep, while deer eat its leaves with impunity. Several species of the Heath family are poisonous, but lambkill is the most deadly of all. Sheep, horses, and other animals have died after eating the leaves of the plant.

The flower of lambkill was a favorite with Thoreau. In his journal, June 13th, 1852, he wrote: "Lambkill is out. I remember with what delight I used to discover this flower on dewy mornings. All things in this world must be seen with the morning dew on them —must be seen with youthful, early-opened, hopeful eyes."

Even with its charming crimson-pink flowers, which make it one of the glories of June, farmers should uproot it from their pastures.

Group No. 22—Dogbane Family.

SPREADING DOGBANE.

Apocynum androsæmifolium, (L).

Root.—Tough, and fibrous, with running rootstocks. **Stem**—Erect, shrubby, 1-2 feet high, branching; branches forking and widely spreading; stem reddish and juicy; tough fibrous bark. **Leaves.**—Opposite, simple, entire, ovate, petioled. **Flowers.**—Pink, ¼ inch across, bell-shaped, in loose spreading cymes. **Fruit.**—Two long and slender diverging pods, each 3 inches long. **Seeds.**—Reddish-brown, ⅛ inch long, slender each with tuft of yellowish, silky hair. **Duration.**—Perennial. **Flowering.**—July—August. **Seeding.**—September—October. **Propagation.**—By seeds and offsets. **Dispersal.**—Seeds carried by winds; by running rootstocks. **Eradication.**—Spud and burn; summer-fallow, and cultivate.

SPREADING DOGBANE
Apocynum androsæmifolium, (L

Spreading Dogbane is found in old fields, summer fallows, on the borders of thickets, and along fences everywhere. It is more attractive in form and even more delicate in coloring than Meadow-sweet.

Its small, inconspicuous flowers are very beautiful if closely examined. The deep-pink veining of the corolla suggests nectar; and the insects are not mistaken, for at its base are five nectar-bearing glands. The two, long, slender seed pods are conspicuous. Rafinesque states that from the stems a thread, similar to hemp, can be obtained from the pods, cotton, and sugar from the blossoms. Its generic name, and one of its common names, arose from the belief, which formerly prevailed, that it was poisonous to dogs.

Another species of dogbane, Indian Hemp, *Apocynum cannabinum*, (L), has nearly the same range as the last, and likewise the species varies according to locality. It has more erect branches, oblong or slightly heart-shaped leaves, and crowded, erect, greenish-white, small flowers.

Group No. 23—Milkweed Family.

COMMON MILKWEED.

Asclepias Cornuti, (Dene).

Root.—Stout and fleshy, with running rootstocks. **Stem.**—Tall, 2-3 feet high, stout, downy, with milky juice. **Leaves.**—Opposite or whorled, the upper sometimes scattered, large, oblong, pale, minutely downy beneath. **Flowers.**—Dull, purplish-pink, ½ inch, clustered at the summit and along the sides of stem; parts of flower in fives; stamens united and enclosing the pistil. **Fruit.** Two pods, one of which is large and full of silky-tufted seeds, and the other often stunted. **Seeds.**—Oval, flat, each with a long tail of silky down. **Duration.**—Perennial. **Flowering.**—June August **Seeding.**—July—October. **Propagation.**—By seeds and offsets **Dispersal.**—By running rootstocks, and seeds carried by winds. **Eradication.**—Mow while in bloom; plow and cultivate.

COMMON MILKWEED
Asclepias Cornuti, (Dene)

Milkweed is one of the most familiar of Canadian plants which produce seeds with floats of hair. *Asclepias* is from the Greek name of *Æsculapius*, father of medicine. Milkweed is from the milky juice which it secretes.

Milkweed is found in rich soil in all crops, in fields, and on the borders of thickets. The young sprouts make an excellent pot-herb; the silky hairs of the seed-pods have been used for the stuffing of pillows and mattresses, and can be mixed with flax and wool and woven to advantage, while paper has been manufactured from the stout stalks.

Common milkweed is probably the most common example of a striking and beautiful native family. The tall, stout, juicy stems, the dull-pink clustered flowers, and the puffy pods filled with silky-tufted seeds, beloved of imaginative children, are familiar to country people. The milky juice which fills the stem possibly protects the flowers from the inroads of ants. Kerner, the naturalist, found that as ants crawl up the stem they cut the delicate surface with

their feet, causing the juice to flow. He says: "The ants were much impeded in their movements and, in order to rid themselves of the annoyance, drew their feet through their mouths....many escaped by getting to the edge of a leaf and dropping to the ground. Others tried this method of escape too late, for the air soon hardened the milky juice into a tough brown substance; and after this, all the struggling of the ants to free themselves was in vain." The flower is peculiarly constructed so as to bring about a cross-fertilization through the agency of insects.

Swamp Milkweed, *Asclepias incarnata*, (L), which has rose-purple flowers, very smooth and glabrous pods, and lance-shaped leaves, is found in marshes, low grounds, and in ditches.

Group No. 24—Convolvulus Family.

FIELD BINDWEED.

Convolvulus arvensis, (L).

Root.—Creeping, sending rootstocks far into the soil. **Stem.**—Branched, smoothish, trailing on the ground or climbing by twisting around some other plant. **Leaves.**—Small, with 2-4 lobes at the base, giving them an arrow-head shape. **Flowers.**—Small, 1 inch, white or rose-colored, solitary, flowering sparsely. **Fruit.**—Spherical capsule of three seeds. **Seeds.**—Large, brownish-black, angular, ⅛ inch across. Average plant produces 160 seeds. **Duration.**—Perennial. **Flowering.**—June—September. **Seeding.**—August—November. **Propagation.**—By seeds and offsets. **Dispersal.**—Chiefly by means of its creeping rootstocks; sometimes as an impurity in seed grain. **Eradication.**—Plow and cultivate frequently.

Field Bindweed is a very troublesome weed in some sections of Canada. Its tough and curling stems wind around the stalks of various plants, partially choking them and thereby hindering their growth. It is a difficult weed to eradicate; and careless cultivation only increases the trouble by carrying the roots from place to place. It may be kept in check by the frequent introduction of well cared-for hoe-crops into the rotation. Salting is

also recommended by some farmers. Buckwheat sown on summer-fallow, and plowed under when coming into blossom, followed by surface cultivation with the broad-share cultivator, will assist very much in killing the weed.

Hedge Bindweed, *Convolulus sepium*, (L), is found in moist alluvial soil. It has white, sometimes tinged with rose-color, 2 inch, solitary flowers, elongated flower-stalks, and acute bracts.

FIELD BINDWEED
Convolvulus arvensis, (L)

COMMON DODDER, OR DEVIL'S GUT
Cuscuta Gronovii, (Willd)

COMMON DODDER, OR DEVIL'S GUT.

Cuscuta Gronovii, (Willd).

Root.—Fibrous at first; later there is no root. **Stem.**—Slender, reddish, curling around stems. **Leaves.** — None. **Flower.**—Whitish, 1/8 inch, in dense clusters along orange-red stem. **Fruit.**—Round, small pods full of seeds. **Seeds.**—Round, small, yellowish-brown or gray. 2,500 seeds produced by one plant. **Duration.** Annual. **Flowering.**—June—November. **Seeding.**—July—November. **Propagation.**—By seeds. **Dispersal.**—By seeds, as an impurity in clover, alfalfa, and grass seed. **Eradication.**—Use clean seed; mow patches before seeds ripen; collect and burn; change rotation.

Common Dodder, Devil's Gut, or Strangle Weed, is a peculiar parasitic plant found in wet, shady places. The seed takes root in the soil and puts

forth a shoot which winds around some living plant. Having a good start, the shoot disconnects itself from the earth, and derives its nourishment from the juices of the plant to which it clings. Drummond says: "There are certain plants—the dodder, for instance—which begin life with the best intentions, strike true roots into the soil, and really appear as if they meant to be independent for life. But after supporting themselves for a brief period they fix curious sucking discs into the stem and branches of adjacent plants, and, after a little experimenting, finally cease to do anything for their own support, thenceforth drawing all their supplies readymade from the sap of their host. In this parasitic state the dodder has no need for organs of nutrition of its own, and nature therefore takes them away."

There are different species of dodder parasitic on flax, onions, clover, and a variety of other herbs and small shrubs.

Group No. 25—Borage Family.

HOUND'S TONGUE, OR BURS.

Cynoglossum officinale, (L).

Root.—Deep, branching, tap-root. **Stem.**—Erect, hairy, 1-3 feet, much branched, of rank growth. **Leaves.**—Upper leaves lanceolate, sessile, or clasping the stem; lower leaves broader and petioled; all 6-12 inches long, covered with downy hair and having a disagreeable odor. **Flowers.**—Reddish-purple, $\frac{1}{4}$ inch long, small; incurved racemes which straighten as the blossoms expand. **Fruit.**—Broad, rounded bur, $\frac{1}{4}$ inch long, with one flat side; covered with short spines which enable it to adhere to clothing or to animals. **Seeds.**—Each bur contains a seed. An average plant produces 600 seeds. **Duration.**—Biennial. **Flowering.**—June—August. **Seeding.**—July—September. **Propagation.**—By seeds. **Dispersal.**—Chiefly by animals carrying burs. **Eradication.**—Spud, and mow.

Hound's Tongue is a coarse plant, growing in fields and along roadsides, whose disagreeable odor strongly suggests mice. It is not only a troublesome weed in pasture-land, but a special annoyance to wool-growers, as its prickly fruit adheres with pertinacity to the fleece of sheep. Its common name

is a translation of its Greek generic title, and refers to the shape and texture of the leaves. To eradicate hound's tongue, spud or cut deeply in the autumn and early spring—the former to destroy the plant in its first year, and the latter to complete the destruction by removing those that escape the first cutting.

HOUND'S TONGUE, OR BURS
Cynoglossum officinale, (L)

STICKSEED, OR BLUE BUR
Echinospermum Lappula, (Lehm)

STICKSEED, OR BLUE BUR.

Echinospermum Lappula, (Lehm).

Root.—Tap-like, fleshy and fibrous. **Stem.**—Erect, 1-2 feet high, roughish-hairy, branching above. **Leaves.**—Lanceolate, rough. **Flowers.**—Blue, ⅛ inch, axillary, on leafy racemes; corolla salver-shaped with lobes rounded. **Fruit.**—Nutlet, warty on the back. **Seeds.**—Nutlet, with a double row of prickles on the margin, somewhat triangular or egg-shaped; one side flattened and the other convex; dull, granular, light-brown, ⅛ inch long. **Duration.**—Annual or winter annual. **Flowering.**—June—August. **Seeding.**—July—September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by animals in nutlets. **Eradication.**—Summer-fallow, and cultivate.

Several species of stickseed are found in Canada.

VIPER'S BUGLOSS, BLUEWEED, OR BLUE DEVIL.

Echium vulgare, (L).

Root.—Tap-root, penetrating to a great distance. **Stem.**—Erect, bristly-hairy, 6-18 inches. **Leaves.**—Sessile, linear or oblong, 2-6 inches long; upper and lower surface hairy. **Flowers.**—Blue, ½ inch, numerous, arranged in short lateral clusters. **Fruit.**—Four seed-like nutlets in each ovary. **Seeds.**—Hard, gray-brown, 1/6 inch long, angularly conical in shape. Average plant produces 3,500 seeds. **Duration.**—Biennial. **Flowering.**—July—October. **Seeding.**—August—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds, especially in winter time. **Eradication.**—Spud, and cultivate.

VIPER'S BUGLOSS, BLUEWEED, OR BLUE DEVIL.
Echium vulgare, (L.

Blueweed is found in fields and along roadsides. It is naturalized from Europe, and is spreading fast. Echium is Greek for *viper*—hence the name viper's bugloss.

Blueweed gives very little trouble in arable land if the cultivation is at all thorough. In fence corners, by roadsides, and in waste places, cutting below the crown with a spud is practically the only effective method of destroying it. When the plants are numerous, some such treatment as outlined for dock may be resorted to.

Blueweed settled in Virginia, when it first came from Europe; and from that State it has over-run the United States and Canada. As a rule it only seeks to monopolize land that is not good for very much else; and its pinkish buds and blue blossoms lend color to the midsummer landscape.

SMALL BUGLOSS.

Lycopsis arvensis, (L).

Root.—Fibrous. **Stem.**—Erect, 6-12 inches high, very rough-bristly. **Leaves.**—Sessile, lanceolate, hairy or bristly. **Flowers.**—Blue, ¼ inch, axillary; small blue corolla little exceeding the calyx. **Fruit.**—Nutlet. **Seeds.**—Small, rough, wrinkled, brown nutlet, about ⅛ inch long, oval in outline, pointed towards one end. **Duration.**—Annual. **Flowering.**—July—Octo-

ber. **Seeding.**—August—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds, etc. **Eradication.**—By hoeing and cultivation.

Small Bugloss is a small, very rough-bristly weed introduced from Europe and found growing in cultivated fields and waste grounds, principally in the Maritime Provinces.

Several other members of the Borage Family are classed as weeds. Corn Cromwell, *Lithospermum arvense*, (L), has whitish, small, funnel-form flowers, erect, roughish-hoary stem, 6-12 inches high, lanceolate or linear leaves, and a reddish root. It is found in waste grounds and in grain fields. Its nutlets are small, dull-gray, rough-wrinkled, and pitted.

Common Comfrey, *Symphytum officinale*, (L), is naturalized in nearly all older settlements. It is a European plant once cultivated in our gardens, and now escaped. It likes a moist soil, but does not spread rapidly. Comfrey has a soft, hairy stem, with branches winged by the bases of the oblong-lanceolate leaves, and yellowish-white flowers. It is supposed to possess valuable medicinal properties—in fact, the name means *to grow together* or *unite*.

SMALL BUGLOSS
Lycopsis arvensis. (L.)

Along the banks of streams and in low wet places, throughout the summer, we may look for the exquisite little blue Forget me-not, of which we have several species.

Myosotis laxa, (Lehm.), has slender stems, alternate lance-oblong leaves, and small blue flowers in racemes. It loves wet places, as does *Myosotis palustris*, (Hill.), another species. *Myosotis laxa* is common in our fields.

"Earth is crammed with Heaven,
And every common bush afire with God,
But only he who sees takes off his shoes."

Group No. 26—Vervain Family.

BLUE VERVAIN, OR SIMPLER'S JOY.

Verbena hastata, (L).

Root.—Fibrous, with rootstocks. **Stem.**—Erect, 2-3 feet high, rough, 4-sided, branching. **Leaves.**—Opposite, lance-shaped, numerous, toothed. **Flowers.**—Purple, 1/8 inch; 5 toothed calyx; tubular, unequally 5-cleft corolla; four stamens in pairs; flowers in slender, erect spikes. **Fruit.**—Nutlets. **Seeds.**—Small, about 1/12 inch long, oblong and somewhat flattened, ridged, reddish-brown. **Duration.**—Perennial. **Flowering.**—June—September. **Seeding.**—August—October. **Propagation.**—By seeds and offsets. **Dispersal.**—Seeds carried by winds, annuals, etc.—also by running rootstocks. **Eradication.**—Mow; summer-fallow; cultivate.

Blue Vervain is common along roadsides, in pastures, low grounds, and in summer-fallows. In early times the *Vervain* was beset with classic associations. It was claimed to be the plant which Virgil and other poets mention as being used for altar decorations and for the garlands of sacrificial beasts. Pliny wrote that no plant was more honored among Romans than the sacred verbena. In modern times Vervain has been regarded as an "herb of grace," supposed to be endued with especial virtue, and worn on the person to avert disaster.

"Hallowed be thou, Vervain,
As thou growest on the ground,
For in the Mount of Calvary
There thou wast first found."

The title of simpler's joy arose from the remuneration which the popular plant brought to the "Simplers," as the gatherers of medicinal herbs were called.

White Vervain, or Nettle-leaved Vervain, *Verbena urticaefolia*, (L), is indigenous, and is found in waste places, by roadsides, and in old pastures.

It is an uninteresting looking plant which grows rankly, and has a tall, 2-3 ft. high stem, oval, coarsely serrate leaves, and slender spikes of small white flowers.

BLUE VERVAIN, OR SIMPLER'S JOY
Verbena hastata, (L)

HEAL ALL, OR SELF-HEAL
Brunella vulgaris, (L)

Group No. 27—Mint Family.

HEAL-ALL, OR SELF-HEAL.

Brunella vulgaris, (L).

Root.—Fibrous, with creeping rootstalks. **Stem.**—Low, erect, square, 4-8 inches high. **Leaves.**—Opposite, oblong, petioled, mostly entire. **Flowers.**—Violet, ½ inch; calyx 2-lipped; corolla 2-lipped; 4 stamens; flowers in spike of axillary three-flowered clusters. **Fruit.**—Deeply-lobed capsule holding 4 little nutlets. **Seeds.**—Light to dark-brown and sometimes tinged with green, oblong-oval, the base tapering to a very characteristic small, whitish, triangular, scar-appendage. **Duration.**—Perennial. **Flowering.**—June-September. **Seeding.**—July-September. **Propagation.**—By seeds and offsets. **Dispersal.**—Seeds carried by winds; also by creeping rootstocks. **Eradication.**—Break up sod, and cultivate.

Heal-all is abundant in pastures, by roadsides, and in meadows. The common name refers to the reputed medicinal virtues of the plant. The generic name, *Brunella*, is a corruption of *Prunella*, which

is taken from the German for quinsy, for which the plant was considered a certain cure. In England the plant was applied to the wounds received by rustic laborers. There is an old French proverb, "No one wants a surgeon who keeps Prunelle."

CANADA MINT, OR WILD MINT
Mentha canadensis, (L)

PEPPERMINT
Mentha piperita, (L)

CANADA MINT, OR WILD MINT.
Mentha canadensis, (L).

Root.—Fibrous and possessing rootstocks. **Stem.**—Erect, more or less hairy, square, 6-12 inches high. **Leaves.**—Opposite, aromatic, oval to lance-shaped, toothed, tapering to both ends, short-petioled. **Flowers.**—Purplish, or whitish, small; calyx 5-toothed; corolla 4-cleft; irregular; flowers in globular clusters in the axils of leaves. **Fruit.**—Capsule containing 4 nutlets. **Seeds.**—Oval-oblong nutlets, light-brown and dull to reddish-brown; scar at base three-angled and light-colored; body of seed finely roughened and longitudinally striate. **Duration.**—Perennial. **Flowering.**—June—October. **Seeding.**—July—November. **Propagation.**—By seeds and offsets. **Dispersal.**—Spreads rapidly by running rootstocks; seeds carried by winds, birds, and water. **Eradication.**—Drain, and cultivate.

Canada Mint is found in wet places along streams, in damp meadows, and in other low places, from Atlantic to Pacific. It is a native mint, but we have several other species introduced from Europe.

Whorled Mint, *Mentha sativa*, (L), very much resembles M. canadensis. A native of Europe, it has escaped from gardens in some places, and is found growing in damp places.

Corn Mint, *Mentha arvensis*, (L), is a European species found in cultivated fields. Its flowers resemble those of *M. sativa*, but its leaves are smaller, obtusely-serrate, and the teeth of the calyx short and broader.

Spearmint, *M. viridis*, (L), has escaped from cultivation in the neighborhood of old settlements. Its flowers are in a narrow, terminal spike, and the leaves are sessile, ovate-lanceolate, wrinkled, veiny, and unequally serrate.

Peppermint, *Mentha piperita*, (L), is also a garden escape. It has a *smooth* stem, acute, ovate, petioled leaves, and flowers in interrupted spikes.

Another member of the Mint family is Bugle Weed, *Lycopus virginicus*, (L). It is found in moist places by roadsides, in fields, in low wet woods and by brooks. It has an obtusely 4-angled stem, 6-18 inches high, producing slender runners from the base, ovate, lanceolate, toothed leaves, and white flowers in dense axillary clusters.

Summer Savory, *Satureja hortensis*, (L), is cultivated as an herb in gardens, but it has escaped to dry, sandy soil in a few localities.

American Pennyroyal, *Hedeoma pulegioides*, (L), is quite common in waste fields, on hillsides, and in shady woods. It is a low, branching, strong-scented little plant with opposite, aromatic leaves and small purplish flowers whorled in the axils of the leaves. It blossoms in midsummer. In taste and odor it nearly resembles the true Pennyroyal, *Mentha pulegium*, of Europe.

Motherwort, *Leonurus Cardiaca*, (L), should be but is not familiar to us all. It is one of the old-fashioned, time-honored plants, such as Catnip and Tansy, which cling so persistently to the skirts of

the old homestead, in whose domestic economy they once played so important a part. It has a tall, erect stem, rounded and lobed opposite leaves, and regular whorls of closely-clustered pale-purple flowers. It is completely naturalized in the old provinces, but does not become a weed except around dwellings. One may find it in waste and cultivated ground, and in gardens and manured soils.

Catnip, *Nepeta Cataria*, (L), is naturalized and seen on roadsides, along fences, in old gardens, and around buildings, but it is not very common. It is a European plant with soft-downy stem, oblong, heart-shaped, deeply-crenate leaves, and whitish flowers crowded in terminal clusters or spikes, blossoming in late summer. It is supposed to cure all ills to which cat-flesh is heir—it is certainly relished by cats.

COMMON HEMP-NETTLE
Galeopsis Tetrahit L.)

Ground Ivy, *Nepeta Glechoma*, (Benth.), is very common. It has a creeping and trailing stem, small, kidney-shaped leaves, and bluish-purple flowers loosely clustered in the axils of the leaves. As the pleasant aroma of the leaves suggests, it is closely related to catnip. It grows along fences, amongst stones, on roadsides, and about dwellings. The plant was highly prized formerly as a domestic medicinal herb. Gerarde says: "Boiled in mutton-broth it helpeth weake and aking backs."

COMMON HEMP-NETTLE.

Galeopsis Tetrahit, (L.).

Roots. Fibrous. **Stem.**—Bristly-hairy, 1-3 feet high, branching, swollen below the joints. **Leaves.**—Opposite, pinkish, oval, coarsely toothed. **Flowers.**—Purplish, ½ inch, in whorls in the axils of the leaves. **Fruit.**—Capsule of 4 nutlets. **Seeds.**—About ⅛ inch long, ovate to deltoid in outline, light to

dark-brown with irregular conspicuous gray spots which give the surface a mottled appearance; scar at pointed base of nutlet is slightly concave; surface with the exception of slightly elevated gray spots is smooth. **Duration.** Annual. **Flowering.**—July—September. **Seeding.**—July—September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds, birds, etc **Eradication.**—Hoe; pull; cultivate.

Hemp-nettle is an emigrant from Europe. Late in summer it over-runs waste places near civilization, and is found in all crops in rich land. It is a very common weed around barns.

Group No. 28—Figwort Family.

MULLEIN, OR VELVET DOCK.

Verbascum Thapsus, (L).

Root.—Large, long tap-root. **Stem.**—Tall, 3-6 feet high, usually unbranched, densely woolly with branched hairs. **Leaves.** Whitish, thick, oblong, velvety to the touch; some clasp the stem; others form a pale-green velvety rosette near the ground. **Flowers.**—Yellow, $\frac{3}{4}$ inch, arranged on densely-crowded, elongated spikes. **Fruit.**—Capsule about $\frac{3}{8}$ inch long. **Seeds.**—Six-sided, about $\frac{1}{20}$ inch long, dark-brown; irregular ridges running lengthwise between sides. Average plant produces 6,000 seeds. **Duration.**—Biennial. **Flowering.**—July September. **Seeding.**—August—November. **Propagation.**—By seeds. **Dispersal.** Seeds carried by winds; an impurity in seeds. **Eradication.**—Spud or cut below the crown; dig up roots when young; break up soil, and cultivate.

Common Mullein is a native of the island of Thapsos, from which it takes its name. It is now widely distributed and common in our fields and pastures and by roadsides. It was probably brought to this country from Europe by the early colonists, notwithstanding the title, American Velvet Plant, which it bears in England. The Romans called it *candelaria*, from their custom of dipping the long, dried stalk into suet and using it as a funeral torch; and the Greeks used the leaves for lamp-wicks. In modern times the plant has served as a remedy for pulmonary complaints; and "mullein tea" is greatly esteemed by many.

MULLEIN, OR VELVET DOCK
Verbascum Thapsus. (L)

Because of its supposed efficacy with cattle it is sometimes called "bullock's lungwort."

Moth Mullein, *Verbascum Blattaria*, (L), is perhaps a worse weed than common mullein, as it infests meadows and bears more seeds. Burroughs says of it: "Of beautiful weeds quite a list might be made without including any of the so-called wild flowers. A favorite of mine is the little moth mullein that blooms along the highway and about the fields, and maybe upon the edge of the lawn." The plant has a slender stem 1-2 ft. high, green, smoothish, dentate leaves, and a loose cluster of 1-inch yellow or white flowers marked with purplish brown. The flowers are fragile and pretty; and scattered along the erect slender stem, they look at a distance like so many canary-yellow or purplish-white moths alighted for a moment's rest. The seeds are very small, brown, and six-sided.

TOADFLAX, OR BUTTER AND EGGS
Linaria vulgaris, (Hill)

TOADFLAX, OR BUTTER AND EGGS.

Linaria vulgaris, (Hill).

Root.—Fibrous, and with rootstocks. **Stem.**—Erect, smooth, 1-2 feet high. **Leaves.**—Alternate, linear or nearly so, crowded, sessile, entire, pale. **Flowers.**—Yellow with paler lips, or yellow and orange, ½ inch; calyx 5-parted, two-lipped and long spurred; unpleasant odor; flowers in terminal racemes. **Fruit.**—Many-seeded pod opening by a hole or chink which forms below the summit of each cell. **Seeds.**—Small, black, thin, oval, numerous; surface rough with little warts; about $\frac{1}{32}$ inch long, surrounded by circular wing. **Duration.**—Perennial. **Flowering.**—July—October. **Seeding.**—August—November. **Propagation.**—By seeds and offsets. **Dispersal.**—By running rootstocks; by seeds carried by winds, and in grass seed. **Eradication.**—Break up sod; cultivate; seed heavily to clover.

Toadflax, Butter and Eggs, or Ramsted, has become naturalized wherever there are settlements; and is found by roadsides, near gardens, and in fence corners.

The bright blossoms of toadflax grow in full, close clusters and enliven waste places with their orange and yellow; yet they attract little notice, since they usually select useless pieces of ground for their home. Like nearly all common weeds this plant has been utilized by country people. It yields what was once considered a valuable lotion for the skin, and its juice mingled with milk constitutes a fly poison. The generic name, *Linaria*, and the English title toadflax, arose from a fancied resemblance of its leaves to those of flax.

NECKWEED, OR PURSLANE SPEEDWELL.

Veronica peregrina, (L).

Root.—Fibrous. **Stem.**—Smooth, erect, 4-9 inches, branching. **Leaves.**—Lower leaves oval or oblong and toothed; the upper oblong-linear and entire. **Flowers.**—Blue, 1/8 inch; corolla shorter than calyx, wheel-shaped, and only slightly irregular; inconspicuous, in spikes, almost sessile. **Fruit.**—Many-seeded pod slightly notched and orbicular. **Seeds.**—Oblong-egg-shaped minute particles; seeds flattened, often being slightly curved in the direction of the inner face; light or reddish-yellow in color; surface roughened. **Duration.** Annual or winter annual. **Flowering.**—May June. **Seeding.**—June—August. **Propagation.** By seeds. **Dispersal.**—Seeds carried by winds, etc. **Eradication.**—By cultivation, and draining.

COMMON SPEEDWELL
Veronica officinalis. (L.)

Neckweed is a common weed in damp, cultivated fields, in meadows, pastures, and along the margins of rivers.

The Common Speedwell, *Veronica officinalis*, (L), "the little speedwell's darling blue," is noticeable during June and July, when clusters of its tiny flowers brighten the roadside banks. It has a prostrate, rooting stem, downy-toothed, short-stemmed leaves, and small, pale-blue flowers, which grow in thick clusters from an axil of the leaves. It prefers dry places.

Perhaps the prettiest is American Brooklime, *Veronica americana*, (Sch.). Its clustered blue flowers make bright patches in moist ground, and are often mistaken for Forget-me-nots.

Thyme-leaved Speedwell, *Veronica serpyllifolia* (L), is another native veronica sometimes found in gardens and lawns, but oftener seen flourishing in pastures and along ditches. The smooth stem is much branched at the creeping base, the leaves small and obscurely toothed, the flowers whitish or pale-blue with deeper stripes, in loose terminal clusters. It is a perennial easily eradicated by cultivation.

Corn Speedwell, *Veronica arvensis*, (L), is common in cultivated soil. It has blue flowers, a hairy stem, and pods inversely heart-shaped.

Field Speedwell, *Veronica agrestis*, (L), has round or oval, crenate, petioled leaves, and small, long-pedicelled flowers in the axils of the leaves. It is found in sandy soils.

YELLOW RATTLE.

Rhinanthus Crista-galli, (L).

YELLOW RATTLE
Rhinanthus Crista galli. (L)

Root.—Fibrous. **Stem.**—Slender, upright, 6-12 inches, usually branching. **Leaves.**—Opposite, lanceolate, set close to the stem, coarsely toothed. **Flowers.**—Yellow, ½ inch, in a 1-sided, leafy-bracted spike; calyx membranous and much elongated in fruit; calyx 4-toothed; corolla two-lipped, usually with a purple spot on one or two lips. **Fruit.**—Inflated calyx containing seed-case. **Seeds.**—Thin and flat, about ⅛ inch, with a membranous wing, readily blown about by wind; when ripe they rattle in the seed-case. **Duration.**—Annual. **Flowering.**—June—August. **Seeding.**—July—August. **Propagation.**—By seeds. **Dispersal.** Seeds carried by winds; in hay. **Eradication.**—Mow early; top dress with salt.

Yellow Rattle, or Rattle Weed, is found in meadows, in low land, by roadsides, and along streams. The plant prefers damp pastures and meadows, and is partially parasitic on the roots of other plants. It is not liked by stock, either when fresh or dry; but close depasturing with sheep seems to reduce it.

TURTLEHEAD.

Chelone glabra, (L).

Root.—Stout and fibrous. **Stem.**—Smooth, upright, branching, 1-7 feet high. **Leaves.**—Opposite, lance-shaped, short-petioled, toothed. **Flowers.**—White or pinkish, in spike or close cluster; 5 sepals; corolla 2-lipped—upper lip broad and arched and notched at apex; lower lip three-lobed, and woolly bearded in the throat; 4 stamens with woolly filament and anthers. **Fruit.**—Many-seeded capsule. **Seeds.**—About $\frac{1}{32}$ inch, surrounded by a very thin, circular wing, thin, dark-brown and oval; wing lighter brown; very light. **Duration.**—Annual **Flowering.**—July—September. **Seeding.**—August—October. **Propagation.**—By seeds. **Dispersal.**—Seeds in hay, etc. **Eradication.**—Drain, and cultivate.

TURTLEHEAD
Chelone glabra, (L)

Turtlehead is very common in wet meadows, bogs, and ditches. The flowers of the plant are more odd and striking than pretty, and their common name is fairly appropriate. The name "Chelone" is from the Greek, meaning *tortoise*. When a bumblebee lights on the stiff, elastic lower lip of the flower, its weight presses down the lip and an opening is made through which the bee forces its way to the nectary. In so doing its velvety back is abundantly dusted with pollen from the heart-shaped anthers—thus the work of cross-fertilization is accomplished by bumblebees. Hairs prevent smaller insects from stealing the nectar.

Group No. 29—Plantain Family.

COMMON PLANTAIN.

Plantago major, (L).

Root.—Fibrous. **Stem.**—Naked scape, 6-18 inches high. **Leaves.**—All radical, 5-7 ribbed, ovate or slightly heart-shaped, with channelled petioles. **Flowers.**—Small, crowded on a long and slender dense spike. **Fruit.**—7-16 seeded pod or capsule. **Seeds.**—Small, irregular, angular, greenish-black to dull-black. **Duration.**—Perennial. **Flowering.**—June—September. **Seeding.**—July—September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds; in clover and grass seeds. **Eradication.** Spud; break up sod, and cultivate; use salt in yards.

Common Plantain is widely distributed and common in moist soils, in fields, pastures, and lawns. It is naturalized in all the older settlements throughout Canada. Besides the introduced form there is an indigenous one, which is always found along the margins of rivers and lakes, in the crevices of rocks or amongst gravel.

COMMON PLANTAIN
Plantago major, (L)

RIB-GRASS, OR ENGLISH PLANTAIN
Plantago lanceolata, (L)

RIB-GRASS, OR ENGLISH PLANTAIN.

Plantago lanceolata, (L).

Root.—Short, thick rootstoeks, and rooting deeply. **Stem.**—Erect or prostrate; flower-stalk slender and channelled, without leaves, 6-18 inches high. **Leaves.**—3-5 ribbed, laneeolate; ribs running lengthwise; several inches long. **Flowers.**—Inconspicuous in thick, short spikes; stamens with blaek anthers, projecting from the flowers. **Fruit.**—Small pods, each containing two seeds. **Seeds.**—$\frac{1}{12}$ inch long, brown and shiny; groove on one side, in centre of which is a black spot; opposite side rounded. Average plant produces 12,000 seeds. **Duration.**—Perennial. **Flowering.**—June—September. **Seeding.**—July—October. **Propagation.**—By seeds. **Dispersal.**—Seeds in hay, and in grass and clover seeds. **Eradication.**—Spud, and cultivate.

Rib-grass, English Plantain, or Narrow-leaved Plantain, is a deep-rooting perennial common to

moist soils. It has been introduced from Europe, where it is sometimes grown for pasture purposes, and is now naturalized on lawns, by roadsides, and in meadows and pastures in most of the settled parts of Canada. It is considered a bad weed, especially when it appears on lawns; and since the seeds of it are very common in grass and clover seed, persons buying the latter should examine such closely and guard against plantain seeds.

Group No. 30—Madder Family.

BLUETS, OR INNOCENCE.

Houstonia cærulea, (L).

Root.—Fibrous. **Stem.**—Smooth, slender, erect, 3-5 inches high. **Leaves.**—Opposite, entire, oblong; stipules between leaves. **Flowers.**—Light-blue, purplish or almost white, with yellowish eye; corolla salver-form; 4 stamens; 2 stigmas. **Fruit.**—A pod somewhat 2-lobed, its upper half free, opening across the top; few seeds in each cell. **Seeds.**—Saucer-shaped or thimble-shaped, with a deep hole occupying the face, small, brownish. **Duration.**—Annual. **Flowering.**—May—September. **Seeding.**—June—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by birds and winds. **Eradication.**—Careful cultivation.

BLUETS, OR INNOCENCE
Houstonia cærulea, (L)

Bluets was named by Linnæus for Dr. Houston, an English physician, who botanized on the coast of Mexico, and died there.

Bluets is a delicate, pretty little plant found on mossy banks and in grassy places. This little plant is not usually listed with weeds. Dr. Jas. Fletcher, of Ottawa, said: "Surely bluets is not a weed"; but in some sections old fields and roadsides are in early spring tinted blue by the pretty flowers of bluets.

Galium, Bedstraw, or Cleavers, named from the Greek for milk, which some species will curdle, is a member of the Madder family.

Goose Grass, *Galium Aparine*, (L.), is found in cultivated ground, on the borders of woods, and along beaches.

Rough Bedstraw, *Galium asprellum*, (Michx.), is common in low grounds.

They are slender herbs with square stems, the angles of which are often rough or prickly; leaves in whorls without stipules and sometimes *sticky*; white small or minute flowers, mostly in clusters, each flower having a wheel-shaped 4—or 3—parted corolla, and 3 or 4 short stamens. The plants spread by seeds and running rootstocks, and are sometimes objectionable.

Group No. 31—Bluebell Family.

HAREBELL, BLUEBELL.

Campanula rotundifolia, (L).

Root.—Fibrous. **Stem.**—Slender, tufted, spreading, 5-12 inches high, with milky juice. **Leaves.**—Root-leaves round heart-shaped, dying early; stem-leaves narrow or linear; leaves numerous. **Flowers.**—Blue, regular, 5-lobed, bell-shaped corolla; calyx lobes awl-shaped; flowers panicled on slender peduncles. **Fruit.**—3-celled short pod. **Seeds.**—About ⅛ inch long, light-brown, nearly smooth, oval in outline; slightly recurved with minute wing around the seed longitudinally. **Duration.**—Annual. **Flowering.**—June—October. **Seeding.**—July—November. **Propagation.**—By seeds. **Dispersal.**—Seeds carried in grain, [illegible] **Eradication.**—By cultivation.

Harebell [illegible]on on precipices, on shady banks, and in [illegible] It is a slender, pretty plant with drooping, [illegible]ulous, bright blue flowers. The drooping posture of the flowers protects their pollen from rain or dew.

The Harebell came from Europe, and it is said to be identical with the celebrated Scotch bluebells. It has now made a new home for itself in every part of Canada.

Other species of harebell, or bell flower, such as Marsh Bellflower, *Campanula aparinoides*, (Pursh.), are found in Canada. The latter has a very slender, weak stem, rough with bristles, and bearing small

pale-blue or white flowers, which droop in the bud, but later stand erect.

Tall Bellflower, *Campanula americana*, (L), has light blue flowers, about an inch across, crowded in a leafy spike, a simple stem 3-6 ft. high, and ovate or ovate-lanceolate taper-pointed serrate leaves. It is quite abundant in moist, rich soil.

HAREBELL, BLUE BELL.
Campanula rotundifolia, (L)

INDIAN TOBACCO
Lobelia inflata, (L)

Group No. 32—Lobelia Family.

INDIAN TOBACCO.

Lobelia inflata, (L).

Root.—Fibrous. **Stem.**—Erect, branching, leafy, 8-18 inches high, pubescent, with acrid juice. **Leaves.**—Ovate or oblong, toothed, alternate. **Flowers.**—Pale-blue, ¼ inch long; corolla irregular and 5-lobed, the tube split down one side; flowers in long racemes. **Fruit.**—Inflated pod. **Seeds.**—Very small, reddish-brown, rough, oblong or egg-shaped. **Duration.**—Annual. **Flowering.**—July—November. **Seeding.**—August—November. **Propagation.**—By seeds. **Dispersal.**—Seeds in hay, and in grass and clover seed. **Eradication.**—Plow, and cultivate.

During the summer time we note in dry open fields, pastures, meadows, and grain fields, the blue racemes of Indian Tobacco; and later we see the

inflated pods. *Lobelia* (after the noted herbalist, de l'Obel) *inflata* is somewhat poisonous if taken internally, and it yields a quack medicine of some notoriety. The Indians smoked its dried leaves (hence its name), which impart to the tongue a peculiar tobacco-like sensation.

Cardinal Flower, *Lobeli cardinalis*, (L), is found in low swamp or marshy meadows, and along streams.

Group No. 33—Composite Family.

CANADA GOLDENROD.

Solidago canadensis, (L).

Root.—Fibrous, with rootstocks. **Stem.**—Erect, rough-hairy, 2-3 feet high, stout. **Leaves.**—Alternate, usually serrate and pointed, lanceolate, plainly 3-ribbed, downy beneath but rough above, deep-green in color. **Flowers.**—Yellow, small; heads with short rays; flowers in 1-sided, crowded, spreading or recurving racemes, forming an ample panicle; pappus a row of slender, roughish bristles. **Fruit.**—Head of narrow, many-ribbed achenes. **Seeds.**—Very small, brownish, about $\frac{1}{12}$ inch long, slender, tufted. **Duration.**—Perennial. **Flowering.**—August—October. **Seeding.**—August—November. **Propagation.**—By seeds and rootstocks. **Dispersal.**—Seeds carried by winds. **Eradication.**—Prevention of seeding by mowing; cultivation.

CANADA GOLDENROD
Solidago canadensis
(L)

Canada Goldenrod is a very common species, found on the borders of roads, thickets, and fields, and sometimes in grain fields and summer-fallows. It blooms through late summer and autumn.

Solidago, the old name, was derived from the Latin word meaning *to make whole*, from the supposed healing qualities of the plant. Goldenrods are not only indigenous, but broadly distributed in this country. There are about 75 species of *Solidago*, but only a dozen or so are common on the borders of our highways.

"Along the roadside like the flowers of gold
That tawny Incas for their gardens wrought,
Heavy with sunshine droops the Goldenrod."

NARROW-LEAVED GOLDENROD.

Solidago lanceolata, (L).

Root.—Fibrous, with rootstocks. **Stem.**—Erect, smooth, 12-18 inches high, very bushy; ridges, which run lengthwise with stem, minutely rough. **Leaves.**—Alternate, light-green, extremely narrow or lance-linear, 3-5 nerved, without teeth, but the edges rough. **Flowers.**—Bright-yellow, in dense flat corymbs of small heads sessile in clusters; the small rays 15-20, and disk flowers fewer. **Fruit.**—Head of achenes which are narrow and ribbed. **Seeds.**—Very small, about $\frac{1}{12}$ inch long, light-brown, slender, tufted. **Duration.**—Perennial. **Flowering.** August—October. **Seeding.**—September—October. **Propagation.**—By seeds and rootstocks. **Dispersal.**—Seeds carried by winds; also by creeping rootstocks. **Eradication.**—Prevention of seeding by mowing; cultivation.

Narrow-leaved Goldenrod is common on low lands, in wet shaded places, in fields, and in pastures. It is easily recognized by the narrow willow-like leaves, and its flat-topped flower clusters, supported by small-leaved wiry stems. The flowers are not so showy as in *S. canadensis*.

CANADA FLEABANE, OR HORSEWEED.

Erigeron canadensis, (L).

Roots.—Small and fibrous. **Stem.**—Erect, tall, ½-5 feet high, hairy. **Leaves.**—Linear, downy, 1-4 inches long; lower ones cut-lobed. **Flowers.**—White; heads very numerous; small, about ¼ inch wide, crowded in slender, erect, wand-like panicles. **Fruit.**—Head of achenes. **Seeds.**—Small, $\frac{1}{16}$ inch long, light in color, each with pappus of short hairs. Average plant produces 120,000 seeds. **Duration.**—Annual or winter annual. **Flowering.**—June—September. **Seeding.**—July—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried chiefly by winds. **Eradication.**—Hand-pull, and cultivate.

CANADA FLEABANE, OR HORSEWEED.
Erigeron canadensis

Canada Fleabane is very common in meadows and grain fields, and in waste places. Where it is not indigenous it is spreading by means of railways. In Ontario it is known as "Fireweed," and is very injurious to winter-killed fall wheat. As a rule the weed is

troublesome only in meadows; and the frequent breaking up of meadow land tends to keep it under control. As it has a small root it is easily pulled; and where there is not much of it, hand-pulling is a satisfactory means of eradication.

Several other species of fleabane are common. Daisy Fleabane, *Erigeron annuus*, (L), is a common weed in fields and waste places. It is 3-5 ft. high, branched above, roughish with spreading hairs; leaves ovate or lance ovate, the lower ones coarsely toothed; rays rather short and often tinged with *purple*. The seeds are carried in hay.

PLANTAIN-LEAVED EVERLASTING
Antennaria plantaginifolia, (Richards)

Rough Daisy Fleabane, *Erigeron strigosus*, (Muhl.), is common in dry fields and open woods. It grows 1-2 ft. high, and has rough, entire leaves, the lower with slender petioles, the upper lanceolate. The flowers are white, ½ inch wide, and in panicled corymbs.

Rosy Fleabane, *Erigeron philadelphicus*, (L), has clasping, oblong, entire, stem-leaves, and toothed root-leaves. The flowers are rose-purple, showy, ¾ inches, and in corymbs. It is common in low grassy places, along streams and in the valleys of rivers, in low land, fields, pastures, and gardens.

PLANTAIN-LEAVED EVERLASTING.

Antennaria plantaginifolia, (Richards)

Root.—Fibrous. **Stem.**—Leafy, prostrate; flowering-stems 4-8 inches long, erect, naked or with few and small lanceolate leaves. Gives off runners. **Leaves.**—Root-leaves obovate and tufted; stem-leaves small and lanceolate. **Flowers.**—White, ¼ inch, in small crowded clusters, silvery-white. **Fruit.**—Head of carpels. **Seeds.**—Very small, tufted, about $\frac{1}{20}$ inch long, light-brown; surface minutely rough, oblong. **Duration.**—Perennial. **Flowering.**—May—June. **Seeding.**—June—July. **Propagation.**—By seeds and offsets from runners. **Dispersal.**—Seeds carried by winds; also by runners. **Eradication.**—Break up sod and cultivate.

Plantain-leaved Everlasting is found on dry knolls and slopes and in old pastures. It flowers in early spring. In the autumn one sees only the small rosettes of greenish-cotton leaves.

Pearly Everlasting, *Anaphalis margaritacea*, (B. & H.), has an erect stem, 1-2 feet high, and numerous lance-linear, downy-white leaves. It is an attractive plant, and its pearly-white flowers, clustered in many heads at the summit of the stem, lend beauty to the autumn landscape.

Pearly Everlasting
Anaphalis margaritacea, (B. & H.)

Low Cudweed
Gnaphalium uliginosum, (L.)

LOW CUDWEED.

Gnaphalium uliginosum, (L.).

Root.—Fibrous. **Stem.**—Ascending and spreading, 4-8 inches high, white-woolly. **Leaves.**—Lanceolate or linear, cottony. **Flowers.**—Inconspicuous; heads of very many small, whitish or yellowish flowers crowded in leafy terminal clusters. **Fruit.**—Head of carpels. **Seeds.**—Very small, light-gray, somewhat flat, tufted with short, soft hairs. **Duration.** Annual. **Flowering.**—July—September. **Seeding.**—August—October. **Propagation.** By seeds. **Dispersal.**—Seeds carried by winds and water. **Eradication.**—Drain thoroughly; cultivate.

Low Cudweed is a most common cottony, insignificant little weed in low grounds, fields, meadows, and pastures. The name is derived from the Greek, meaning "lock of wool."

Scented Everlasting, *Gnaphalium polycephalum*, (Michx.), is found in Eastern Canada in old fields and open places in woods. It is an annual, 1-2 ft. high, with yellowish-white, 1/6 inch flowers, in terminal clusters. The stem is leafy, and the whole plant *fragrant*. The upper surface of the leaves is free from wooliness.

RAGWEED, OR HOG-WEED
Ambrosia artemisiifolia, (L)

RAGWEED, OR HOG-WEED.

Ambrosia artemisiifolia, (L).

Roots.—Fibrous. **Stem.**—Erect, much branched, 1-3 feet high, slightly hairy. **Leaves.**—Finely divided, either opposite or alternate; pale or hoary beneath. **Flowers.**—Yellow, 1/6 inch; infertile in the terminal spikes, and fertile in the axillary; green flowers at base of spikes. **Fruit.**—Small, roundish, with about 6 little teeth or spines. **Seeds.**—Somewhat pear-shaped and varying in length from 1/2 to 1/6 of an inch, dull surface, light-straw to dark-brown; apex long and tapering to a point; outer covering of seed brittle. Average plant produces 5,000 seeds. **Duration.**—Annual. **Flowering.**—July—September. **Seeding.**—August—November. **Propagation.**—By seeds. **Dispersal.**—As an impurity in seed grain; carried by winds and water, the seeds being borne long distances by freshets. **Eradication.**—Mow to prevent ripening of seeds; cultivate stubble ground, and plow or rib up for winter.

Ragweed, Hog-weed, or Bitter-weed is a bad weed in rich cultivated land, in gardens and grain crops. It is being introduced in imported seed, and is becoming quite common. The classical name means "*food for the gods*," a name perhaps sarcastically given. The seeds have a bad taste, and give a peculiar odor to the milk of cows that eat the plants.

COCKLEBUR.

Xanthium echinatum, (Murr).

Root.—Fibrous. **Stem.**—Stout, 1-2 feet high, low-branching, rough. **Leaves.**—Opposite, triangular, three-lobed, the lobes lance-ovate and serrate; petioles margined. **Flowers.**—Green, ¼ inch, in heads. **Fruit.**—A bur ½ inch long, with two hooked spines at top. **Seeds.**—Two seeds enclosed in brownish, oblong, ½ inch long bur, rough with hooked prickles. **Duration.**—Annual. **Flowering.**—June—September. **Seeding.**—August—September. **Propagation.**—By seeds. **Dispersal.**—Burs carried by animals. **Eradication.**—Mow; burn old plants; cultivate.

Cocklebur is found in river bottoms, around barnyards, and in waste manured ground. It is a coarse, vile weed. The burs become entangled in the wool of sheep, and thus cause the wool-pickers much trouble.

The name Xanthium is from the Greek for *yellow*. The plants yield that color.

ELECAMPANE.

Inula Helenium, (L).

Root.—Stout and mucilaginous; used in medicine. **Stem.**—Stout, 3-5 feet high, perennial. **Leaves.**—Alternate, large, entire, woolly beneath; those from root ovate and petioled, the upper clasping. **Flowers.**—Heads large and broad; ray-flowers yellow and numerous, in one row, with narrow ligules; outer scales of involuere leaf-like; pappus of many, slender, roughish bristles. **Fruit.**—Head of narrow seeds. **Seeds.**—Nearly ¼ inch long, light-brown, somewhat like a 4-sided cylinder in shape; shows shiny points under glass; tufted. **Duration.**—Perennial. **Flowering.**—July—September. **Seeding.**—August—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds, etc. **Eradication.**—Spud, and cultivate.

ELECAMPANE
Inula Helenium. (L)

Elecampane is another wayside weed long since introduced from Europe. It is not very common, and is usually seen in isolated patches by the roadside. Elecampane is usually found on damp ground where the road passes a swamp. Several of our grasshoppers find that the succulent leaf of elecampane furnishes a very delectable luncheon in the middle of a hot day; and one may see them perched on the big dusty leaves, and listen to their songs as they help to swell the grand chorus of a midsummer's day song.

CONEFLOWER, BLACK-EYED SUSAN, OR YELLOW DAISY
Rudbeckia hirta, (L)

CONEFLOWER, BLACK-EYED SUSAN, OR YELLOW DAISY.

Rudbeckia hirta, (L).

Root.—Fibrous. **Stem.**—Stout, simple, or sparingly branched, 1-2 feet high, rough or bristly. **Leaves.**—Alternate, nearly entire, triple ribbed, chiefly oblong-lanceolate; the upper sessile thick. **Flowers.**—Single showy heads, 1-2 inches across; orange-yellow rays or petals, 10-20 in number; spherical or cone-shaped; dark, purple-brown centre. **Fruit.**—Head of seeds. **Seeds.**—Dark-brown, almost black, 4-angled, about ⅛ inch long, with no pappus or tuft of hair. Average yield equals 2,000 per plant. **Duration.**—Biennial. **Flowering.**—June—August. **Seeding.**—August—September. **Propagation.**—By seeds. **Dispersal.**—Seeds in hay, and in clover seed. **Eradication.**—Mow often; spud, and summer-fallow.

Yellow Daisy is found in old fields and meadows, and in grain fields in Eastern Canada. It can be killed by mowing; but it is sometimes necessary to break up the meadow or pasture, and follow with a hoe-crop.

The plant was named Rudbeckia for Rudbeck, a Swedish botanist.

COMMON BEGGAR-TICKS.

Bidens frondosa, (L).

Root.—Fibrous. **Stem.**—Erect, branched, 1-3 feet high. **Leaves.**—Pinnate; 3-5 broad, lanceolate, coarsely-toothed leaflets. **Flowers.**—Yellow; ½ inch heads; flowers rayless and insignificant; outer involucre longer than the head. **Fruit.**—Head of flat, wedge-shaped, ciliate achenes with upturned bristles; two-awned. **Seeds.**—Broad, flat, with two barbed awns which cling to the dress or to the fleece of animals; about ⅜ inch long; awns $\frac{3}{16}$ inch long. **Duration.**—Annual. **Flowering.**—July August. **Seeding.**—August—September. **Propagation.**—By seeds. **Dispersal.**—Seeds

COMMON BEGGAR-TICKS
Bidens frondosa, (L)

carried by animals and floods. **Eradication.**—Drain, and cultivate.

Beggar-ticks is a coarse weed in low or manured grounds, and in grain fields. It is common everywhere, and is locally known as Pitch-forks. The two-pronged seed-vessels cling tenaciously to whatever they touch.

Larger Beggar-ticks, *Bidens chrysanthemoides*, (Michx.), has opposite, simple, lanceolate, serrate leaves, with heads of achenes somewhat like those of Beggar-ticks. It is found in ditches and other wet places.

YARROW, OR MILFOIL.
Achillea Millefolium, (L).

Root.—Fibrous. **Stem.**—Erect, leafy, 10-20 inches high. **Leaves.**—Very feathery, twice pinnately-divided into very slender and crowded 3-5 cleft divisions. **Flowers.**—White, 1/6 inch, in flat heads two inches across; each flower with 4 or 5 short white or rose-colored rays. **Fruit.**—Head of achenes. **Seeds.**—Small, 1/8 inch, light-colored, wedge-shaped. **Duration.**—Perennial. **Flowering.**—July—August. **Seeding.**—August—September. **Propagation.**—By seeds. **Dispersal.**—By seeds carried by winds and in hay; also by offsets. **Eradication.**—Break up sod, and cultivate.

YARROW, OR MILFOIL.
Achillea Millefolium, (L.

Yarrow, or Milfoil, abounds in meadows and pastures everywhere. It is a European plant named by Linnæus after Achilles, the great hero of ancient Greece, who cured the wounds of his soldiers with this plant. Rose-red Yarrow is not a different species, but a variety of the common White Yarrow.

Sneezeweed, *Achillea Ptarmica*, (L), has been introduced from Europe, and is now found at a few places. It has simple, lance-linear, sharply-cut, serrate leaves; 8-12 rather long, bright, white rays in each head, and flower heads in a loose corymb.

OX-EYE DAISY, OR WHITEWEED
Chrysanthemum Leucanthemum, (L)

OX-EYE DAISY, OR WHITE-WEED.

Chrysanthemum Leucanthemum, (L).

Root.—Fibrous; short, thick, creeping base or rootstock of much vitality. **Stem.**—Erect, simple, 18-24 inches; several from one root. **Leaves.**—Cut-toothed or slightly pinnatifid, slightly aromatic if bruised; upper leaves small, entire and partly clasping; lower leaves narrow, long and toothed. **Flowers.**—White, 1-2 inch heads, solitary from naked summit of stem; 20-30 white rays and bright yellow disk. **Fruit.**—Head of achenes. **Seeds.**—About $\frac{1}{12}$ inch long, marked with ten more or less regular white longitudinal ribs with black interspaces. It has a short point but no pappus. Average plant produces 75 seeds. **Duration.**—Perennial. **Flowering.**—June—August. **Seeding.**—August—September. **Propagation.**—By seeds and offsets. **Dispersal.**—Seeds carried by birds, etc.; also in grass and clover seed. **Eradication.**—Break up sod; seed to clover; cultivate.

The Ox-eye Daisy, or "Bull's-eye," is a weed naturalized from Europe and now very troublesome in fields and pastures in Eastern Canada. It is closely related to the Chrysanthemum, the national flower of Japan.

COMMON TANSY.

Tanacetum vulgare, (L).

Root.—Fibrous, with stout rootstock. **Stem.**—Erect, 2-4 feet high, smooth, strong-scented and acrid. **Leaves.**—Deep green, 1-3 pinnately compound; the leaflets and winged margins of the petioles cut-toothed. **Flowers.**—Heads, 2 or 3 inches wide, of many yellow flowers; the marginal ones with pistil only, and a 3-5 toothed corolla; scales of involucre dry. **Fruit.**—Heads of achenes. **Seeds.**—Angled or ribbed with a flat top, crowned with a cup-like toothed pappus. **Duration.**—Perennial. **Flowering.**—July—August. **Seeding.**—August—September. **Propagation.**—By seeds and off-

COMMON TANSY
Tanacetum vulgare, (L)

shoots. **Dispersal.**—Seeds carried by winds; also by creeping rootstocks. **Eradication.**—Pull or plow, and cultivate.

Tanacetum means *undying*. The plant was so named because the flowers of Tansy are durable. Common Tansy is naturalized throughout the country, and is much used for medicinal purposes. It is found in patches in old fields, along roadsides, and in lanes near dwellings.

CHAMOMILE, OR MAY-WEED.

Anthemis Cotula, (L).

Root.—Fibrous. **Stem.**—Low, 6-12 inches, acrid, strong-scented. **Leaves.**—Thrice pinnately-divided into slender leaflets or lobes, smooth, with fetid smell. **Flowers.**—White, ¾ inch, in heads which terminate the branches; white rays and yellow centre; scaly leaves among flowers. **Fruit.**—Head of achenes. **Seeds.**—About $\frac{1}{16}$ of an inch long, tapering, light to dark-brown in color; surface roughened by distinct tubercles. **Duration.**—Annual. **Flowering.**—June—August. **Seeding.**—July—September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds; in hay and grass seeds. **Eradication.**—Mow; seed down, follow by hoe-crop.

CHAMOMILE, OR MAY-WEED
Anthemis Cotula, (L)

May-weed is naturalized and abundant along roadsides, in meadows and waste places, and along the streets of towns and villages. The white-rayed flowers closely resemble daisies; but its finely-cut leaves and small flower heads with yellow centres in high relief are sufficient for its recognition. By bruising the flowers and leaves a strong odor of chamomile proves the identity of the plant. One may brew "*chamomile*" tea from the leaves; or through their agency raise effective blisters in an emergency.

MUGWORT.

Artemisia vulgaris, (L).

Root.—Tough and fibrous. **Stem.**—Erect, tough, branching, 1-4 feet high. **Leaves.**—Pinnatifid, green and smooth above and cottony-white beneath; lance-linear divisions of leaves mostly cut and cleft; leaves and stem bitter-aromatic, and strong-scented. **Flowers.**—Purplish, in small heads in open panicles; heads erect. **Fruit.**—Head of club-shaped achenes. **Seeds.**—Small, dry, club-shaped. **Duration.**—Perennial. **Flowering.**—July—September. **Seeding.**—August—September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds, birds, etc. **Eradication.**—Plow sod, and cultivate.

MUGWORT
Artemisia vulgaris, (L)

Common Mugwort is found along roadsides, in waste grounds, and in old fields near dwellings. It is a tall, rank, unsightly weed, with nothing to commend it except its classical genus name, *Artemisia*, which is from Artemis, the Greek Diana.

Common Wormwood, *Artemisia Absinthium*, (L), is another European plant found in old gardens and around dwellings. It is a strong-scented, silky-hoary plant two or four feet high, with a somewhat woody stem, twice or thrice pinnately-divided leaves, and nodding flower-heads. Old folk brew "wormwood" tea, which the younger members of the family do not enjoy, although the tea has valuable medicinal properties.

COLTSFOOT.

Tussilago Farfara, (L).

Root.—Mucilaginous and bitter rootstocks. **Stem.**—Scaly-bracted scape, 3-6 inches high, bearing a single head. **Leaves.**—Rounded and somewhat angled or heart-shaped, toothed, cot-

tony beneath when young. **Flowers.**—Yellow; ray-flowers numerous and in many rows; fertile with narrow ligules; pappus fine and soft; flowers solitary. **Fruit.**—Head of achenes. **Seeds.**—Light-brown, 1/8 inch long, very slender, slightly ridged; copious pappus of long, soft, white hair. **Duration.**—Perennial. **Flowering.**—May—June. **Seeding.**—June—July. **Propagation.**—By seeds and creeping underground rootstocks or offsets. **Dispersal.**—Seeds carried by winds; also by rootstocks. **Eradication.**—Prevent seeding; spud; drain.

Tussilago, from Latin *tussis*, a cough, for which the plant is a popular remedy, is a European plant now wild along brooks and damp roadsides, near dwellings, and in pastures. It is not very common. The weed is chiefly met with on damp, stiff clays or moist, chalky clays. Seeding should be prevented; and the plant needs special attention because of its habit of flowering before the leaves appear, the reverse of what usually happens. The plant may be exterminated in one or two seasons by cutting off the leaves as soon as they appear. Draining is an efficient remedy. When the plant is thoroughly established, it often sends its roots to a depth of two or three feet.

COLTSFOOT
Tussilago Farfara, (L)

FIREWEED.

Erechtites hieracifolia, (Raf.).

Root.—Coarse, tough, fibrous. **Stem.**—Rank and coarse, 1-3 feet high, grooved, often hairy. **Leaves.**—Alternate, sessile, the upper ones with auricled clasping base, lanceolate or oblong, cut-toothed. **Flowers.**—Yellowish-white, in heads of many flowers; cylindrical involucre of many narrow scales in a single row; copious pappus of fine, white, soft hairs; heads in elongated panicle. **Fruit.**—Head of narrow achenes. **Seeds.**—Small, light in color, with copious pappus of fine, soft, white hairs. **Duration.**—Annual. **Flowering.**—July—September. **Seeding.**—July—September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds, etc. **Eradication.**—Pull; cultivate.

Fireweed springs up where woods have been cleared and grounds burned over, hence its name "Fireweed." This plant must be distinguished from Great Willow-herb, *Epilobium angustifolium*, (L), which is also called "Fireweed."

Erechtites hieracifolia is a rank smelling weed of unattractive appearance, found in crops grown on newly-cleared fields and in lowlands.

FIREWEED
Erechtites hieracifolia, (Raf.)

BURDOCK, OR BEGGAR'S BUTTON
Arctium Lappa, (L)

BURDOCK, OR BEGGAR'S BUTTON.
Arctium Lappa, (L).

Root.—Large tap-root, one foot or more long, branched below; has great hold on ground. **Stem.**—Coarse, stout, rough, 3-4 feet high, much branched. **Leaves.**—Very large, like rhubarb, cordate, petioled; upper leaves ovate, loosely cottony beneath or naked. **Flowers.**—Purpie, ½ inch, clustered in globular heads; scales of globular involucre tipped with hooked bristles; pappus of many short rough bristles. **Fruit.**—A bur which clings to one's clothing, or to the wool or hair of animals. **Seeds.**—Brown or mottled with darker brown, ⅜ inches long, irregularly ridged, somewhat recurved. **Duration.**—Biennial. **Flowering.**—July — **September.** **Seeding.**—August — October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried in burs which cling to everything. **Eradication.**—Cut below crown with spud and burn the tops.

Burdock is well-known to all. It grows in pastures, by roadsides, in dooryards, and in waste rich ground everywhere.

It has tremendous roots, probably the largest of all weed roots, and such long, stout roots are diffi-

cult to eradicate. Everyone knows how tenacious are the little hooked tips of the burs. They do much injury to the wool of sheep. Children frame baskets with the clinging things; and those who visit the deserted house on the neglected byway usually carry away numerous souvenirs of the occasion on their clothing.

The plant, when burnt, yields a good quality of alkaline ash, equal to the best potash; and a decoction from the roots is said to be equal to the juice of Sarsaparilla as a blood purifier. In the burdock the artist finds an indispensable and picturesque accompaniment of the "old farmhouse" which is the theme of his picture.

COMMON GROUNDSEL.

Senecio vulgaris, (L).

Root. — Fibrous. **Stem.** — Low, 6-12 inches, nearly smooth, branching, furrowed. **Leaves.** — Alternate, pinnatifid, toothed, half-clasping. **Flowers.**—Yellow, in terminal corymbs; no ray flowers; each head composed of small flowers; pappus fine and soft. **Fruit.**—Head of achenes. **Seeds.** — 1/8 inch long, linear, light-green to yellow; about 10 longitudinal ridges connect ends of cylindrical tapering seeds; pappus white. **Duration.**—Annual. **Flowering.**—July—September. **Seeding.**—July—September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds. **Eradication.**—Hoe and cultivate frequently.

COMMON GROUNDSEL
Senecio vulgaris, (L.)

Common Groundsel is found in waste or cultivated ground, in gardens, and in fields, chiefly in low, wet ground. The plant keeps on flowering during several months of the year, and heads in all stages of development can be seen on one plant. The genus name, *Senecio*, is from Latin *senex*, an old man, referring to the hoary hairs of many species, or to the white hairs of the pappus. The plant is sometimes given as food to caged birds.

Stinking Groundsel, *Senecio viscosus*, (L), is

abundant in some sections. The stem is viscid-pubescent and strong-scented, the ray florets wanting, and the leaves twice-pinnatifid.

Golden Ragwort, or Squaw-weed, *Senecio aureus*, (L), has a smooth stem, 1-2 feet high, orbicular or roundish, ovate radical leaves (or cordate, petioled, and crenately toothed), and sessile, lanceolate, deeply-pinnatifid stem-leaves, and heads, each with 8-12 rays, in corymbs. It is found in swamps, wet meadows, and in gardens.

COMMON RAGWORT, OR STINKING WILLIE
Senecio Jacobæa, (L)

COMMON RAGWORT, OR STINKING WILLIE.

Senecio Jacobæa, (L).

Root.—Fleshy and fibrous. **Stem.**—Erect, branching, 2-3 feet high, glabrous or somewhat cottony. **Leaves.**—Numerous, lyrate, bipinnatifid or irregularly-lobed, the lower with broad segments, the upper with linear divisions; all glabrous; leaves give ragged appearance to plant. **Flowers.**—Yellow, ½ inch, in flat cymes or spreading corymb. **Fruit.**—Head of achenes, which blow about like thistle or groundsel seeds. **Seeds.**—Nearly white, ⅛ inch long, ridged lengthwise, slightly convex; pappus of short, soft hairs. **Duration.**—Short-lived perennial. **Flowering.**—July—September. **Seeding.**—August—September. **Propagation.**—By seeds and offsets. **Dispersal.**—Seeds carried by winds; in hay and grain. **Eradication.**—Spud; break up sod; mow to prevent seeding.

Stinking Willie was introduced into Nova Scotia and Prince Edward Island from the British Isles about fifty years ago. In P.E.I. it is known as "Baughlan," and in Nova Scotia as "Stinking Willie." Pictou, Antigonish, and parts of Guysborough and Colchester counties are completely over-run by the weed. It is common in P.E.I., and is also found in N.B. along the line of the I.C.R.

This weed, Ragwort, is of particular interest because it has been proved by experiments, recently conducted by Dr. Pethick, that the plant is without

doubt the cause of what is known as the "Pictou Cattle Disease." Cattle that eat dry hay containing ragwort sicken and die in a short time. Cattle won't eat it green in the pastures, but sheep will. It does not injuriously affect sheep, but it is doubtful if horses are immune.

The story is that ragwort was brought to Pictou Co., Nova Scotia, by a man named Ryan, who emptied the bed-tick on which he slept, on the voyage out from Ireland, by the roadside, and thus sowed the seeds of this troublesome weed.

Farmers should keep a sharp watch for this weed, and immediately eradicate it. If only a few plants are found they should be carefully spudded out. Cutting two or three times to prevent seeding will usually kill the plant. A short rotation should be adopted if the field is infested. Never feed cattle or horses hay which contains the plant.

KNAPWEED, OR HARDHEADS
Centaurea nigra, (L.)

KNAPWEED, OR HARDHEADS.

Centaurea nigra, (L).

Root.—Tap-like and tough, with stout rootstocks. **Stem.**—Stout, rough, tough, 1-2 feet high. **Leaves.**—Mostly entire, lanceolate, rough with stout hairs. **Flowers.**—Purple, in globular terminal heads which are black and hard outside; pappus short or none. **Fruit.**—Head of achenes. **Seeds.**—1/8 inch long, light-gray, ridged longitudinally; fringe of bristles at one end; other end pointed and shiny. **Duration.**—Perennial. **Flowering.**—August—October. **Seeding.**—September—October. **Propagation.**—By seeds and offsets. **Dispersal.**—Seeds carried by winds, etc. **Eradication.**—Spud, and break up sod.

Knapweed, or Hardheads, is a European weed now naturalized in Canada. It is found by roadsides, and in waste places, in pastures, and in meadows. The weed should be hand-pulled, spudded, or the land broken up and carefully cultivated.

CHICORY, OR WILD SUCCORY.

Cichorium Intybus, (L).

Root.—Long, deep tap-root. **Stem.**—Tall, 1-3 feet high, branching, almost leafless, slightly hairy, rough, and whitish in color. **Leaves.**—Radical ones long with irregular edges; stem-leaves oblong or lanceolate, and partly clasping. **Flowers.**—Bright blue, 1½ inches across; heads numerous, in clusters without flower stalks, on the naked branches; flowers usually closed at noon. **Fruit.**—Head of achenes. **Seeds.**—Light-brown, ⅛ inch long, tapering to a blunt point, the opposite end having a fringe of minute hairs around the crown. Average plant produces 3,000 seeds. **Duration.**—Perennial. **Flowering.**—July—October. **Seeding.**—August—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds and floods; an impurity in clover and grass seed. **Eradication.**—Spud; mow; cultivate.

CHICORY, OR WILD SUCCORY
Cichorium Intybus, (L)

Chicory is found in old fields and by roadsides. It has become naturalized. In general the plant is coarse and unsightly, but the bright blue flowers are very conspicuous. Because of the deep tap-root the eradication of chicory is difficult. Spudding and frequent, deep cultivation will do much to rid the land of it.

The root of chicory, when dried and ground, is used for adulterating coffee and as a substitute for it. In France the plant is extensively cultivated, and the leaves are blanched and used in a salad. Horace mentioned the leaves of chicory as part of his frugal fare, and Pliny remarked on the importance of the plant to the Egyptians, who used it in great quantities and of whose diet it is still a staple article.

"Oh, not in Ladies' gardens,
My peasant poesy!
Smile thy dear blue eyes,
Nor only—nearer to the skies—
In upland pastures, dim and sweet,
But by the dusty road
Where tired feet
Toil to and fro;
Where flaunting sin
May see thy heavenly hue,
Or weary sorrow look from thee
Toward a more tender blue."

BONESET, OR THOROUGHWORT.

Eupatorium perfoliatum, (L).

Root.—Stout, tough, and fibrous. **Stem.**—Erect, 2-4 feet high, stout, hairy. **Leaves.**—Opposite, in pairs, united at the base around the stem, wide spreading, lance-shaped, serrate, very veiny and somewhat wrinkled, 5-8 inches long. **Flowers.**—Dull white; small and numerous heads crowded in a dense corymb. **Fruit.**—Head of 5-angled achenes. **Seeds.**—1/8 inch long, dull brownish-black, ridged; tuft of downy, tawny hairs at one end. **Duration.**—Perennial. **Flowering.**—August—October. **Seeding.**—September—November. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds. **Eradication.**—Spud; pull; drain.

Boneset, or Thoroughwort, is found in low meadows, in ditches, and along streams.

It was dedicated to Eupator Mithridates, who is said to have used the European species in medicine. Probably the efficacy of this herb is not overrated. The Indians were the first to discover its virtues, and they called it Ague Weed. The name Boneset was given the weed because once it was much used in curing a disease peculiar to the Southern States, called "break-bone fever." In this country not many years ago, and in some sections even to-day, one could see the attic or wood-shed of many a farm-house hung with

BONESET, OR THOROUGH WORT
Eupatorium perfoliatum, (L.)

bunches of the dried herb. To the children of fifty years ago the herb served as a gruesome warning against wet feet or any exposure which might result in a cold; and if such a catastrophe befell the unhappy children "boneset" tea was poured down their throats.

JOE-PYE WEED, OR TRUMPET WEED.

Eupatorium purpureum, (L).

Root.—Tough and fibrous. **Stem.**—Stout, simple, 2-12 feet high, often dotted with purplish dots or spots. **Leaves.**—In whorls of three to six, oblong or oval, pointed, rough, veiny, toothed, petioled. **Flowers.**—Purplish-pink, small, composed entirely of tubular blossoms with long protruding styles; flowers in large clusters at or near summit of stem. **Fruit.**—Head of achenes. **Seeds.**—⅛ inch long, dark-brown to black, resembling 4-sided cylinder in shape, but tapering sharply towards end; tuft of hairs at one end. **Duration.**—Perennial. **Flowering.**—July—October. **Seeding.**—August—November. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds. **Eradication.**—Spud; pull; drain.

JOE-PYE WEED, OR TRUMPET WEED
Eupatorium purpureum, (L.)

Joe-Pye Weed is a tall, conspicuous plant found in low meadows, around ponds, along streams, and in ditches. In some sections it is very common, and its flowers tinge with "crushed strawberry" the lowlands through which one passes. Joe-Pye is said to have been an Indian of the New England States who cured typhus fever by using this plant. It is closely related to Boneset and, like the latter, has no doubt valuable medicinal properties.

White Snakeroot, *Eupatorium ageratoides*, (L), is found in woods and in rich soil. It is a tall, 2-3 ft., smooth plant with opposite, long-petioled, broadly ovate, coarsely and sharply toothed, thin leaves, and heads of handsome pure-white flowers in compound corymbs.

CANADA, OR CREEPING THISTLE.

Cnicus arvensis, (Hoff.).

Root.—Tough, deep or creeping, with numerous underground stems which bear a large number of shoots. **Stem.**—Erect, branching, 1-3 feet high. **Leaves.**—Narrow and long, deeply indented into very prickly, lobed segments, woolly underneath, the upper surface less so; leaves with crimped appearance, and at the base slightly clasping the stem. **Flowers.**—Lilac-purple; heads ¾ inch wide, and numerous; flower smaller than that of other thistles. **Fruit.**—Head of tufted achenes. **Seeds.**—Irregularly cylindrical or club-shaped, with the end bluntly pointed and the apex presenting a cup-like appearance, surface smooth, about ⅛ inch long, grayish-brown, each with conspicuous tuft of hairs. 3,500 from average plant. **Duration.**—Perennial. **Flowering.**—June—August. **Seeding.**—July—September. **Propagation.**—By seed and offsets. **Dispersal.**—Seeds carried by winds and birds; spreads by creeping underground stems. **Eradication.**—Mow in July and August to prevent seeding; cultivate frequently.

CANADA, OR CREEPING THISTLE
Cnicus arvensis, (Hoff.)

Canada Thistle was originally introduced from Europe. It is improperly called Canada Thistle. It is a hardy perennial, infesting fields, pastures, gardens, meadows, and roadsides everywhere. Perhaps Creeping Thistle is among weeds our greatest pest. Great care should be taken to prevent its seeding by mowing before the seeds ripen. It can be eradicated in several ways, provided thorough work is done:

1st. By careful and persistent spudding done in such a way as to prevent the plant from developing a top above ground.

2nd. By early after-harvest cultivation of stubble ground.

3rd. By the frequent introduction of hoe-crops into the rotation.

4th. By summer-fallowing.

5th. By seeding much with clover, taking one

or two crops of hay, plowing the clover-sod shallow early after harvest, and cultivating frequently throughout the autumn.

COMMON, OR BULL THISTLE.

Cnicus lanceolatus, (Hoff.).

Root.—Tough, deep, tap-like root. **Stem.**—Erect, rough, 1-3 feet high. **Leaves.**—Decurrent, pinnatifid; the lobes prickly pointed, rough above and woolly with webby hairs beneath. **Flowers.**—Purple; heads 2 inches across; scales of involucre prickly; pappus of hairy bristles. **Fruit.**—Head of tufted achenes. **Seeds.**—Large, nearly ¼ inch long, light-brown, pointed at one end, other end blunt. **Duration.**—Biennial. **Flowering.** — July — August. **Seeding.** — August — September. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds and birds. **Eradication.**—Mow; spud; cultivate.

COMMON, OR BULL THISTLE
Cnicus lanceolatus, (Hoff.)

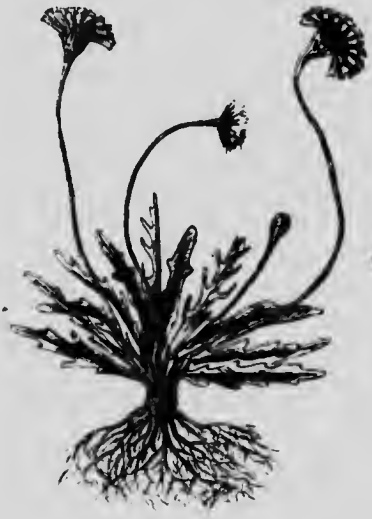
Bull Thistle is naturalized from Europe. It is found in fields and by roadsides everywhere, but is not such a vile weed as Creeping Thistle. It is sometimes improperly called Scotch Thistle. The real Scotch Thistle is *Onopordon Acanthium*, a plant quite rare, but found in waste grounds occasionally.

FALL DANDELION, HAWKBIT, OR AUGUST FLOWER.

Leontodon autumnalis, (L).

Root.—Fibrous or somewhat tap-like. **Stem.**—Branching solid scapes, 6-12 inches high. **Leaves.**—Radical, lanceolate, toothed or pinnatifid. **Flowers.**—Yellow, ¾ inch heads, borne on branches of scape; involucre with braetlets at base; pappus of bristles; head entirely composed of strap-leaved flowers. **Fruit.**—Head of achenes, each with a stalk surmounted with a feathery crown of hairs. **Seeds.**—Small, tufted; down of seeds tawny; ⅛ inch long, reddish-brown, ridged longitudinally with short spine, towards apex. **Duration.**—Perennial. **Flowering.**—June—October. **Seeding.**—July—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds. **Eradication.**—Break up sod, and cultivate.

From June to October we find the Fall Dandelion in blossom along the roadsides, in gardens, and in pastures. While the yellow flower heads suggest the ordinary dandelion, the general habit of the plant is more like that of the hawkweeds. The scape of the ordinary dandelion is simple and *hollow* —the scape of fall dandelion is solid and branching.



FALL DANDELION, HAWKBIT, OR AUGUST FLOWER
Leontodon autumnalis, (L)

COMMON DANDELION
Taraxacum officinale, (Weber)

COMMON DANDELION.

Taraxacum officinale, (Weber).

Root.—Long, stout, tap-root. **Stem.**—Hollow, round, naked scape, 2-12 inches high. **Leaves.**—All radical and coarsely serrate or cut, the pointed teeth turned towards base of leaf. **Flowers.**—Yellow, 1½ inch heads; many flowers in a head; each head on a hollow scape; involucre double and outer one reflexed. **Fruit.**—Head of tufted achenes. **Seeds.**—Slender, ⅛ inch long, with tuft of soft white hairs. **Duration.**—Perennial. **Flowering.**—May—October. **Seeding.**—June—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds. **Eradication.**—Spud, and cultivate.

Common Dandelion is a familiar weed growing in pastures, and on lawns and waste places every-

where. Taraxacum is the Greek name referring to the medicinal properties of the plant.

Emerson's definition of a weed was: "A plant whose virtues have not yet been discovered." This does not apply to the Common Dandelion, because its young sprouts have been valued as a pot-herb, its frail leaves enjoyed as a salad, and its dried roots used as a substitute for coffee in various countries and for many years. Nowadays, as of yore, children make chains from the naked scapes and blow the feathery-tufted seeds from their receptacle, to see them carried away by the wind.

It is said that the Apache Indians so greatly relish the plant as a food that they scour the country for many days in order to procure enough to satisfy their appetites. The name dandelion is from French *dent de lion*. Some think that the name refers to the jagged leaves, while others think that it refers to the yellow flowers, which they liken to the golden teeth of the heraldic lion.

ORANGE HAWKWEED, OR DEVIL'S PAINT-BRUSH.

Hieracium aurantiacum, (L).

ORANGE HAWKWEED, OR DEVIL'S PAINT-BRUSH
Hieracium aurantiacum, (L.)

Root.—Fibrous, shallow-rooted, throwing out many creeping branches close to the ground. **Stem.**—Erect, 6-12 inches high, hairy with stiff or beard-like hairs, leafless or nearly so. **Leaves.**—Mostly radical and thickly clustered in a rosette at the base of the stem, entire, oblanceolate, covered with stiffish hairs. **Flowers.**—Deep orange or yellow, ½ inch heads in terminal clusters on a simple pedunele; heads small but conspicuous. **Fruit.**—Head of achenes. **Seeds.**—Tapering, about $\frac{1}{16}$ inch long, slender, reddish-brown or black, ridged, furnished with copious down. **Duration.**—Perennial. **Flowering.**—June—August. **Seeding.**—July—September. **Propagation.**—By seeds and offsets. **Dispersal.**—Seeds carried by winds; by running or creeping rootstocks or runners; by seeds in clover or grass seed. **Eradication.**—Cultivation; salt broad-casted at the rate of 1½ tons per acre.

Orange Hawkweed, or Devil's Paint-brush, is a persistent perennial. It is a serious pest in the Eastern Townships of Quebec, and is too common in N.B. It is a vigorous grower, throwing out many creeping branches close to the ground; and with its thick foliage crowds out grasses in pastures, meadows, and fields. In upland and mountain pastures, which cannot be plowed, this plant soon crowds out the grasses and renders the pastures useless. In land used for crops, plowing and cultivation will destroy it. On upland pasture or other uncultivated land salt broad-casted at the rate of 1½ tons per acre will destroy hawkweed without any injury to the grass.

Another hawkweed, known as the Yellow Devil, is very prevalent in N.B., and in some sections is a terrible weed. Its scientific name is *Hieracium cladanthum*. It has been described by Mr. Arvet-Touve, of Paris. It resembles *H. aurantiacum* very much, but has longer leaves and *yellow* flowers.

ROUGH HAWKWEED
Hieracium scabrum

Rough Hawkweed, *Hieracium scabrum*, (L), which has small heads, a stout, leafy, rough-hairy stem, and peduncle and involucre densely clothed with dark bristles, is common on dry sandy or rocky ground.

Canada Hawkweed, *H. canadense*, (Michx.), has a simple, leafy stem, 1-3 ft. high, downy peduncles, ovate-oblong leaves with a few coarse teeth, somewhat hairy, sessile or uppermost slightly clasping, and achenes tapering towards the base. The flowers are yellow, and smaller than a fall dandelion head. It is found on river banks and in dry thickets.

In England Devil's Paint-brush was called "Grimm the Collier," on account of its black hairs, and after a comedy of the same title, which was popular during the reign of Elizabeth. Both its common and generic names refer to a superstition

to the effect that birds of prey used the juices of this species for strengthening their eyesight.

PERENNIAL, OR FIELD SOW-THISTLE.

Sonchus arvensis, (L).

Root.—Tap-like, with large, vigorous rootstocks full of milky-white juice. **Stem.**—Erect, 3-4 ft. high; rough; branches covered with soft glandular hairs. **Leaves.**—Soft, deeply cut, and furnished with small spines; the base of leaf clasping the stem of plant. **Flowers.**—Yellow, 1½ inch heads, 3 or 4 heads at top of leafless stem; flowers close in strong sunlight; calyx green and covered with yellowish bristles. **Fruit.**—Head of tufted achenes. **Seeds.**—Oblong and thickly flattened in shape and conspicuously marked with five distinct folds running lengthwise on each side—the central one being the largest; ⅛ inch long and dark reddish-brown in color; tuft of silken hair at top of each. 2,000 seeds produced by one plant. **Duration.**—Perennial. **Flowering.**—July—September. **Seeding.**—August—October. **Propagation.**—By seeds and offsets. **Dispersal.**—Seeds carried by winds; also by running rootstocks. **Eradication.**—Pull or mow when in bloom; plow, and cultivate.

PERENNIAL, OR FIELD SOW-THISTLE
Sonchus arvensis, (L)

Perennial Sow-thistle is a persistent perennial quite troublesome in some sections. It is a heavy feeder and draws much nutriment and water from the soil. It is less troublesome on stiff clays than on light soils. The same methods outlined for Canada Thistle may be employed in the eradication of Perennial Sow-thistle.

In order to exterminate perennials absolutely all of the underground stem must be destroyed. Hand-pulling is most effective after rain, as the plants come up more easily and more completely then.

ANNUAL SOW-THISTLE, OR MILK THISTLE

Sonchus oleraceus, (L).

Root.—Branching, stout root, with fibrous branches. **Stem.**—Erect, branching, 1-3 feet high. **Leaves.**—Much lobed with short, soft spines; slightly toothed; clasping auricles acute.

Flowers.—Pale-yellow, ½ inch heads; many small flowers in each head which are in corymbs; involucre smooth. **Fruit.**—Head of tufted achenes. **Seeds.**—Brown, thin, ⅛ inch long, with longitudinal markings, large tuft of fine hairs attached to top of each seed. **Duration.**—Annual. **Flowering.**—June—September. **Seeding.**—July—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds. **Eradication.**—Pull; mow; cultivate.

Annual Sow-thistle was introduced from Europe, and now is found in gardens, hoe-crops, and in manured soil about buildings. Thorough cultivation as for the other thistles will eradicate it. Out of a grain crop the weeds should be pulled by hand.

ANNUAL SOW-THISTLE, OR MILK THISTLE
Sonchus oleraceus, (L)

WILD LETTUCE
Lactuca canadensis, (L)

Spiny-leaved Sow-thistle, *Sonchus asper*, (Hill.), is an annual found associated with *S. oleraceus*, and perhaps more common in cultivated fields than the latter. It has clasping leaves with rounded lobes or auricles, and the leaves are hardly lobed but fringed with soft spines more prickly than the spines of *S. oleraceus*. The achenes of *Sonchus asper* are smooth and margined.

WILD LETTUCE.

Lactuca canadensis, (L).

Root.—Tap-like, branching, stout. **Stem.**—Erect, 1-7 feet high, stout, smooth, hollow, branching near summit. **Leaves.**—Alternate, deeply lobed, terminating in an acute point, partly clasping, pale beneath; upper leaves entire. **Flowers.**—Yellow, small, heads numerous in a long and narrow naked peduncle; a few flowers opening at a time. **Fruit.**—Head of achenes, longer than their beaks. **Seeds.**—Dark-brown, flat, oval, with longitudinal ribs and thread-like beak at apex; each with small white tuft of hairs. **Duration.**—Annual or biennial. **Flowering.**—June—October. **Seeding.**—July—October. **Propagation.**—By seeds. **Dispersal.**—Seeds carried by winds. **Eradication.**—Pull and burn before seeds ripen; treat as for Mustard.

Wild Lettuce is found in deep, rich soils on the borders of thickets, in fields, and by roadsides.

Lactuca integrifolia, (Bigel.), another species, which has undivided, entire or slightly-toothed, glabrous leaves, is found in dry soil.

Another species, *Lactuca leucophæa*, (Gray), is quite common in low, wet grounds.

Garden Lettuce, *L. sativa*, (L), is frequently found on waste heaps and in the corners of gardens; but it never remains longer than one or two years.

Noxious Weeds of Western Canada

SKUNK-TAIL GRASS.

Hordeum jubatum, (L).

Root.—Fibrous. **Stem.**—Tufts, 8 to 12 inches high. **Leaves.**—Grayish-green. **Flowers.**—Flowers in beautiful silky, bristly heads, 3 to 4 inches long, pale yellowish-green and often tinged with red. **Fruit.**—When ripe, spike breaks up into 7-awned clusters of three flowers, the central one of which is long-awned and fertile. **Seeds.**—Slender and sharp-pointed. **Duration.**—A perennial, flowering the second year. **Flowering.**—July. **Seeding.**—July—August. **Propagation.**—By seeds. **Dispersal.**—By seeds in grain and hay; carried by animals, winds, and water. **Eradication.**—Mow before seeds ripen; cultivate early in season.

SKUNK-TAIL GRASS
Hordeum jubatum, (L)

Skunk-tail Grass, also called Skunk Grass, Squirrel-tail Grass, Tickle Grass, and Wild Barley, is a true barley and makes excellent feed when green or as hay. It is, however, a serious enemy of Western stockmen, because the barbed seeds, when taken into the mouth of an animal, penetrate the soft tissues, causing annoying irritation, ulcers, and swellings. It works into the wool of sheep, and through it even into the flesh, sometimes causing blindness. Wild barley is a native grass found usually in alkaline soils, in Western Canada. Short-awned skunk-tail grass is found growing with the long-awned, the habits of the two being identical. The short-awned skunk-tail has taller and more erect stems, shorter awns to the seeds, and slender and more drooping spikes, which are much more tinged with red.

SWEET GRASS.

Hierochloe borealis (R. & S.)

Root.—Deep-rooted, with wide-spreading, white rootstocks, which produce in summer many barren shoots. **Stem.**—12 to

18 inches high. **Leaves.**—Long, flat, shining, deep-green, over one foot long. **Flowers.**—Pyramidal panicle; spikelets drooping, with shining, papery outer glumes, which are yellowish, tinged with purple. When seeds are ripe the whole panicle becomes dark golden-brown. **Fruit.**—1-seeded glumes. **Seeds.**—Enclosed in inner scales, oblong, $\frac{1}{5}$ inch long. **Duration.**—Perennial. **Flowering.**—April—May. **Seeding.**—June—July. **Propagation.**—By seeds and running rootstocks. **Dispersal.**—By rootstocks, and by seeds carried in grain, hay, etc. **Eradication.**—Mow and burn before summer-fallowing, so as to avoid plowing down ripe seeds; or plow in spring when the sweet grass is in flower, and then seed down heavily.

Sweet Grass, also called Indian Hay, Vanilla Grass, Holy Grass, Seneca Grass, etc., is a deep-

SWEET GRASS
Hierochloe borealis, (R. & S.)

COMMON DARNEL
Lolium temulentum. (L.)

rooted, native perennial growing in damp places by streams and rivers. It is rare in the East, but extremely abundant in the West, where it grows in all kinds of soil, and is very difficult to eradicate. It does injury by smothering out other crops. The whole plant is sweetly aromatic, like Sweet Clover, hence the name Sweet Grass.

COMMON DARNEL.

Lolium temulentum, (L).

Root.—Fibrous. **Stem.**—2-4 feet high, simple, leafy, smooth. **Leaves.**—6 to 10 inches long by ¼ inch wide, and rough above. **Flowers.**—Spikes 6 to 10 inches long, resembling those of Couch Grass; spikelets 3 to 7-flowered, solitary, sessile and alternate; each spikelet in the axil of a long, rigid, strongly-nerved, persistent glume or empty scale. **Fruit.**—Swollen, nearly straight on the outer face, much swollen on the inner, with a deep, wide groove; the inner scale of the husk has a wing-like keel on each side, and is minutely bristly on the edges. **Seeds.**—True seed, after husk is removed, is greenish-brown, often tinged with deep-purple. **Duration.**—Annual. **Flowering.**—July. **Seeding.**—August. **Propagation.** By seed. **Dispersal.**—In seed grain chiefly. **Eradication.** Sow clean seed which has been cleaned by fanning mills.

Common Darnel, also called Poison Darnel, White Darnel, Bearded Darnel, and Poison Rye-grass, is an introduced perennial, abundant along the Red River in Manitoba, generally in wet land. The seeds of darnel are with difficulty separated from grains of wheat, thereby somewhat damaging the wheat which is to go to the flour mill. Darnel seeds are also widely reputed to be poisonous, but it is doubtful if they have much toxic effect on animals eating grain containing them. In "The True Grasses," by Eduard Hackel, we find a reference to darnel as follows: "A weed among grain crops; troublesome in wet years. The grain contains a narcotic principle (*Loliin*) soluble in ether, which causes eruptions, trembling and confusion of sight in man and flesh-eating animals, and very strongly in rabbits; but it does not affect swine, horned cattle or ducks."

HARE'S-EAR MUSTARD.

Conringia orientalis, (L).

Root.—Fibrous. **Stem.**—Upright, smooth, glaucous, stiff. **Leaves.**—Fleshy, entire, alternate, smooth, glaucous; shaped like a hare's ear, and clasping the stem by two rounded auricles. **Flowers.**—Creamy-white, ¼ inch across: in terminal racemes. **Fruit.**—Square pods, 3 to 4 inches long. **Seeds.**—Dark-brown, rounded, oblong, pointed at the scar end, ⅛ inch long, granular roughened; when soaked in water covered with a thick pile of short, erect, white, mucilaginous hairs. **Duration.**—Annual and

winter annual. **Flowering.**—June—July. **Seeding.** August—September. **Propagation.**—By seed. **Dispersal.**—In seed grain. **Eradication.**—Pull by hand. If in large quantity, summer-fallow. Disk stubble in fall or early spring.

Hare's-ear Mustard, also called Rabbit-ear, Hare's-ear Cabbage, and Klinkweed, is a succulent plant which absorbs much moisture from the soil. Because of its wiry stems an infested grain crop is difficult to bind and handle. The plant was introduced from Europe, in flax seed, about the year 1892, and is now common throughout Manitoba and the North-west. It may be looked for in grain fields, on stubble, and by roadsides wherever grain is carried.

HARE'S EAR MUSTARD
Conringia orientalis, (L)

GREEN TANSY MUSTARD
Sisymbrium incisum, var. filipes, (Gray)

GREEN TANSY-MUSTARD.

Sisymbrium incisum, var. filipes, (Gray).

Root.—Branching, white tap-root. **Stem.**—Erect, 3 to 4 feet, widely branching at the top and bearing many pods. In the first season the plant consists of a rosette of finely divided leaves lying on the ground. **Leaves.**—Alternate, bright green, pinnately divided, and the pinnae again once to twice divided into linear-oblong, entire, or toothed segments. **Flowers.**—Yellow, ⅛ inch across, in elongated racemes. **Fruit.**—Slightly

curved pod from ½ to ¾ inch long, on slender, spreading pedicel. **Seeds.**—Very small, 1/16 inch long, reddish-brown, minutely roughened with mucilaginous hairs, shedding out very easily. **Duration.**—Biennial. **Flowering.**—July—August. **Seeding.**—August—September. **Propagation.**—By seeds. **Dispersal.**—By seeds carried by winds, and in grain. **Eradication.**—Hand-pull, and cultivate carefully in spring and fall.

Green Tansy-Mustard, also called Cut-leaved Tansy-Mustard, is a coarse, unsightly native weed growing on stubble and on imperfectly cultivated summer-fallows. It is a gross feeder, and regarded as a noxious weed in the Prairie Provinces.

The Gray Tansy-Mustard (*Sisymbrium incisum*, var. *Hartwegianum*, (Watson), is a tall, coarse biennial weed, commoner and more widely distributed than Green Tansy-Mustard. It is more erect in its habits, is covered with short, gray pubescence, and has much divided foliage above. The pods are ¼ inch long, and are crowded close to the ascending branches, which form a narrow spire.

TUMBLING MUSTARD.

Sisymbrium altissimum, (L).

Root.—Long, tap-root. **Stem.**—Erect, 2 to 6 feet high, branching; lower part glandular with a musky odor; upper part smooth. Young plants form a rosette. **Leaves.**—Alternate, smooth, and much divided above; lower leaves pale-green, downy and soft, with musky odor. **Flowers.**—Pale-yellow, ⅓ inch in diameter, plainly cross-shaped, in racemes. **Fruit.**—Pods, 2 to 4 inches long, very slender and abundant along the branches. Each pod contains about 120 seeds, and a single plant may bear one million and a half seeds. **Seeds.**—Small, 1/16 inch in diameter, olive-brown or greenish-yellow, minutely roughened, with mucilaginous glands. **Duration.**—Annual and winter annual. **Flowering.**—June—July. **Seeding.**—August—September. **Propagation.**—By seeds. **Dispersal.**—When seeds are ripe the whole head of the plant breaks off and is blown across the prairie, scattering the seeds far and wide—hence the name Tumbling Mustard. **Eradication.**—Hand-pull; cultivate growing crops with weeder or light harrow.

Tumbling Mustard is an enormously prolific, coarse, and conspicuous plant, and a gross feeder. It is found in the grain fields of the West, where it is an aggressive enemy of the farmer. It was introduced into the Prairie Provinces from Europe

about 1887. A head of the weed may blow about on the prairie for a whole winter, dropping a few seeds at intervals for many miles, and thus the weed becomes widely dispersed.

TUMBLING MUSTARD
Sisymbrium altissimum, (L.)

BALL MUSTARD
Neslia paniculata, (L)

BALL MUSTARD.
Neslia paniculata, (L).

Root.—Tap or fibrous root. **Stem.**—Erect, tall, slender; strong plants with a few long branches; whole plant covered with small, oppressed, star-shaped hairs. **Leaves.**—Yellowish-green, alternate, entire; lower leaves lance-shaped and narrowed at the base; upper leaves arrow-shaped, bluntly pointed and clasping the stem. **Flowers.**—Small, 1/8 inch, orange-yellow; very long racemes. **Fruit.**—Small, round, one-seeded, shot-like pods, on slender footstalks about half an inch in length. The pod does not open to discharge the seed, but dries up and produces a small, roundish, brown, wrinkled object, about 1/2 inch across, and looking like a small piece of earth. **Seeds.**—Round, very small, yellow. **Duration.**—Annual or winter annual. **Flowering.**—June—August. **Seeding.**—July—September. **Propagation.**—By seed only. **Dispersal.**—By winds, and in seed grain. **Eradication.**—Early summer-fallowing, and the disking of stubble in fall and spring. The edges of fields should be mown before the seeds of Ball Mustard are ripe.

Ball Mustard, or Yellow-weed, was introduced into the West several years ago, and is now a troublesome weed in grain fields, from Manitoba to the Pacific. The weed has spread chiefly from the in-

conspicuous nature of the seed or pod which, because it so closely resembles a small particle of earth, is overlooked in seed grain.

PENNYCRESS, OR STINKWEED.

Thlaspi arvense, (L).

Root.—Long, tap-root. **Stem.**—Erect, 1-2 feet, with branches above. **Leaves.**—Undivided radical leaves, and clasping, arrow-shaped stem-leaves, which are numerous early in the season; leaves dark-green. **Flowers.**—White, small, with spreading flower-stalk; parts of flower as in Wild Mustard. **Fruit.**—Orbicular pod, $\frac{3}{4}$ inch broad, quite flat with a broad wing, notched at the top. Each pod produces about 12 seeds. **Seeds.**—Dark reddish-brown, small, about $\frac{1}{16}$ inch long, irregularly oval and thickly flattened, 8-14 concentric grooves on each side of seed. Average plant produces 20,000 seeds. **Duration.**—Annual and winter annual. **Flowering.**—May—October. **Seeding.** June—October. **Propagation.**—By seeds. **Dispersal.**—Chiefly by winds. **Eradication.**—Thorough cultivation; mow, and burn mature plants.

PENNYCRESS, OR STINKWEED
Thlaspi arvense, (L)

Pennycress is not common in the Maritime Provinces, but is a great pest in the Northwest and Manitoba. It has been introduced from Europe. The plant has a peculiar odor, resembling that of garlic. When the plant is eaten by milch cows a disagreeable flavor is imparted to the milk. The seeds have a very pungent taste.

FALSE FLAX.

Camelina sativa, (Crantz).

Root.—Fibrous. **Stem.**—Straight, erect, branching, 2-3 feet high, downy. **Leaves.** Alternate without stipules; lower leaves long with a petiole; upper leaves clasping stem with arrow-shaped bases; downy. **Flowers.**—Yellow, $\frac{1}{8}$ inch, numerous, somewhat inconspicuous; in racemes. **Fruit.**—Pear-shaped or globular

pod with a small projection from the upper end; pods held by slender ascending stems; 3/8 inch long, and containing about 10 seeds. **Seeds.**—Reddish-brown, angularly oval in shape and grooved along one side, about 1/12 of an inch long; surface finely granular. 40,000 to 50,000 seeds produced by one plant. **Duration.**—Annual and winter annual. **Flowering.**—June—July. **Seeding.**—July—September. **Propagation.**— By seeds only. **Dispersal.**—An impurity in flax and clover seed, and occasionally in grain. **Eradication.**—Hand-pull or cultivate as for Wormseed Mustard.

It is probable that False Flax, or Gold of Pleasure, came to this country in imported flax seed; and it is now found along railways and in cultivated fields throughout Canada, chiefly in Western Canada. It is not a troublesome weed in the Maritime Provinces. In Europe, False Flax is cultivated for the fine oil extracted from the seed and used in feeding cattle. Its common name arose from its supposed resemblance to Flax. It is most troublesome where fall wheat is grown.

Where only a few plants or patches exist, pull by hand; where it is plentiful, sow spring grain or employ the same method as detailed for Wormseed Mustard.

FALSE FLAX
Camelina sativa, (L.)

COW COCKLE
Saponaria Vaccaria, (L)

COW COCKLE.

Saponaria Vaccaria, (L).

Root.—Tap or fibrous root. **Stem.**—Erect, simple, branching, 1 to 2½ feet high, smooth, glaucous, succulent. **Leaves.**—Opposite, entire, ovate lanceolate, clasping the stem, smooth, glaucous, gray-green. **Flowers.**—Pale rose-pink, ½ inch across; in loose cymes; calyx ovate, 5-ribbed, much inflated, and wing-angled in fruit. **Fruit.**—Smooth, roundish capsule, containing about 20 seeds. **Seeds.**—Hard, dull-black, about $\frac{1}{16}$ inch in diameter, with minutely-roughened surface. **Duration.**—Annual. **Flowering.**—July. **Seeding.**—August. **Propagation.**—By seeds only. **Dispersal.**—By winds, and in seed grain. **Eradication.**—Early summer-fallowing at short intervals; hand-pulling. Harrowing growing grain crops kills many tender seedlings. Seed grain should be thoroughly cleaned.

Cow Cockle, Cowherb, or China Cockle, introduced from Southern Europe, is now abundant in grain fields in Manitoba and the North-western Provinces. It is a succulent plant, which absorbs much moisture, and its branching head crowds out crops. It is a troublesome weed in the Prairie Provinces, particularly in Southern Manitoba.

WHITE EVENING PRIMROSE.

Anogra pallida, (Britton), or *Oenothera pallida*, (Lindl.).

Root.—Deep-running, white, fleshy rootstocks. **Stem.**—Simple, 3 feet high, shining white, sparsely pubescent above, somewhat decumbent. **Leaves.**—Usually entire, narrow and waved, 1 to 4 inches long, sessile, in alternate clusters, green. **Flowers.**—Axillary, large and handsome, 1½ inches across, waxy-white and turning pinkish as they fade, open in day-time; odor unpleasant. **Fruit.**—Narrow, curved, 4-angled capsules about one inch long, with seeds in single rows in the 4 cells. **Seeds.**—About $\frac{1}{16}$ inch long, normally spindle-shaped, but angular and somewhat twisted by compression in the pod, yellowish-brown in color. **Duration.**—Perennial. **Flowering.**—July—August. **Seeding.**—September—October. **Propagation.**—By seeds and extensive deep-running, fleshy rootstocks, every part of which when broken will throw out shoots and form new plants. **Dispersal.**—By seeds and rootstocks. **Eradication.**—Cultivate in fall or spring before seeding to a crop; summer-

WHITE EVENING PRIMROSE

Anogra pallida, (Britton), or *Oenothera pallida*, (Lindl.)

fallow with deep or shallow plowing, according to the nature of the soil, after the growth has been made in summer.

White Evening Primrose is a native perennial found in sandy land in Manitoba and westward. It is deep-rooted and very persistent.

POVERTY WEED.

Iva axillaris, (Pursh).

Root.—Tough, extensive, running, underground stems or rootstocks. **Stem.**—Herbaceous, branching, ascending, 6-12 inches high, very leafy. **Leaves.**—Numerous, thick, obovate to linear-oblong, entire, rough-hairy; lower leaves opposite and upper leaves alternate. **Flowers.**—Solitary, drooping flower heads, on very short pedicels from the axils of the upper leaves; 1/6 inch across, yellow, and inconspicuous. **Fruit.**—Achenes, one or two to each flower-head, and sometimes wanting. **Seeds.**—Pear-shaped, slightly flattened, olive-green, yellowish-brown, or nearly black, mealy, dull achenes, 1/8 inch long. **Duration.**—Perennial. **Flowering.**—June—August. **Seeding.**—July—September. **Propagation.**—Mainly by extensive system of underground stems which send up many flowering leafy shoots. **Dispersal.**—By seeds in grain, grass or clover seed, and by running underground stems. **Eradication.**—Use of sharp instruments; clean, deep plowing, followed by frequent cultivation with a broad-shared cultivator.

POVERTY WEED
Iva axillaris, (*Pursh*)

Poverty Weed, or Small-flowered Marsh-elder, is a native, very persistent perennial, forming large patches in grain fields and pastures, particularly in alkaline soil. It is very exhaustive of moisture, thus starving the land and making it hard to work. When well established it is very difficult to dislodge. It is common in Manitoba and west to the interior of British Columbia.

GREAT RAGWEED.

Ambrosia trifida, (L).

Root. Long, tap-root. **Stem.** Tall, 1 to 8 feet high, rough, pale-green, coarse, branching. **Leaves.**—Opposite on long-margined petioles; very variable in shape; on young plants deeply indented but scarcely lobed; on older stems leaves 3-5

lobed or without lobes. **Flowers.**—Sterile and fertile flowers in different heads on the same plant; the sterile in long, slender spikes at the ends of branches; the fertile, two or three together, and sessile in the axils of the leaves at the base of the spikes; sterile flowers cup-shaped, nodding, ¼ inch across, with yellow, conspicuous anthers; fertile flowers inconspicuous, with purplish slender pistils. **Fruit.**—Achenes. **Seeds.**—Brown, urn-shaped achenes, about ¼ inch long, tipped with a tapering beak and bearing around the base of this, about one-third from the top, like the points of a crown, 6 or 8 blunt spines—hence the name, Crownweed, sometimes given the plant. **Duration.**—Annual. **Flowering.**—July. **Seeding.**—August. **Propagation.**—By seeds. **Dispersal**—Seeds carried by water and in grain. **Eradication.**—Hand-pull, or mow before seeds are ripe.

GREAT RAGWEED
Ambrosia trifida, (L)

Great Ragweed, Kingweed, Crownweed, Tall Ragweed, or Bitterweed, is a tall, coarse, native annual only occasionally found in the eastern provinces, but abundant in the rich Red River valley lands in Manitoba and westward along the railways. When in crop it crowds and starves grain growing near it. The plants are coarse and conspicuous, and easily eradicated by hand pulling. Millers experience difficulty in separating the seed of great ragweed from grain seeds in cleaning wheat, because of its similarity in size and weight to wheat, and because the spines catch in the meshes of the screens in the cleaning process.

The False Ragweed, *Iva xanthiifolia*, (Nutt), a coarse annual closely resembling Great Ragweed, is a common plant by roadsides, along railways and in corrals in Manitoba. It bears at the top of the stem a large, loose panicle of dark-colored flowers, while the Great Ragweed has many of the leaves distinctly three-lobed, and the tip of each branch ends with a rat tail like spike of male flowers.

BLUE LETTUCE.

Lactuca pulchella, (DC).

Root.—Deep-rooted, with fleshy running rootstocks. **Stem.** Erect, 2-3 feet high, leafy below, smooth and glaucous; filled with milky juice. **Leaves.**—Entire, linear-lanceolate or oblong, simply or runcinately dentate, or pinnatifid, with stem-leaves less divided and sessile. **Flowers.**—Heads nearly 1 inch across, pale-blue, few, on scaly peduncles in a narrow panicle. **Fruit.**—Head of seeds. **Seeds.**—About $\frac{1}{8}$ of an inch, one-quarter of which is a short, thick beak; slaty-gray when ripe and red when immature; pappus pure white and silky. **Duration.**—Perennial. **Flowering.**—June—July. **Seeding.**—July—August. **Propagation.**—By seeds and by fleshy running rootstocks. **Dispersal.**—By seeds in grain, and by creeping rootstocks. **Eradication.**—Early summer-fallowing.

Blue Lettuce, or Showy Lettuce, is a deep-rooted and persistent native perennial, common in moist

BLUE LETTUCE
Lactuca pulchella, (DC.)

RUSSIAN PIGWEED
Axyris amarantoides

or sandy soil in the Prairie Provinces and British Columbia.

Prickly Lettuce, *Lactuca scariola*, (L), is a noxious weed in Manitoba. It is a coarse-growing, prickly-leaved annual which is spreading rapidly through Canada. It sometimes grows to a height of from 3 to 8 ft. The leaves are oblong-lanceolate, spiny-margined and prickly on the mid-rib beneath,

more or less pinnately divided, and sessile with ear-like lobes at the base. The flower heads are pale-yellow, less than ½ inch across, in large, wide-spreading panicles, and only a few open at a time.

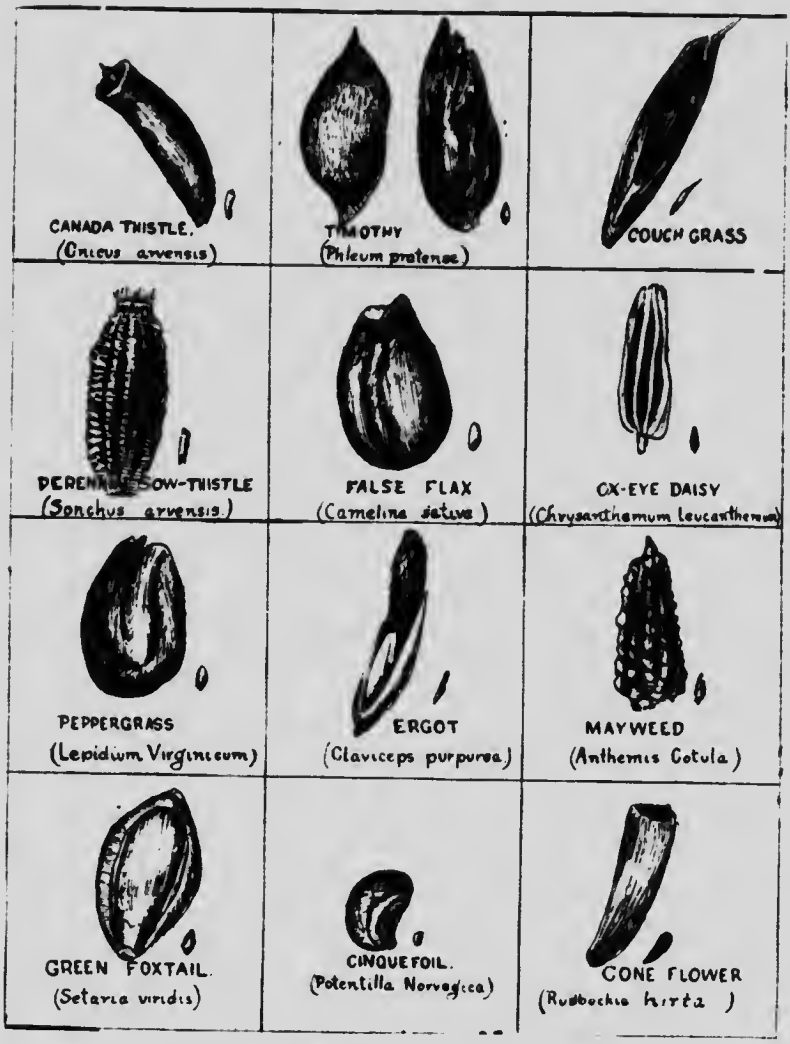
One peculiarity of Prickly Lettuce is that the leaves of the stem are twisted at the clasping base so as to stand vertically with the edge to the sun instead of horizontally—hence the common name of the plant, Compass Weed.

RUSSIAN PIGWEED.

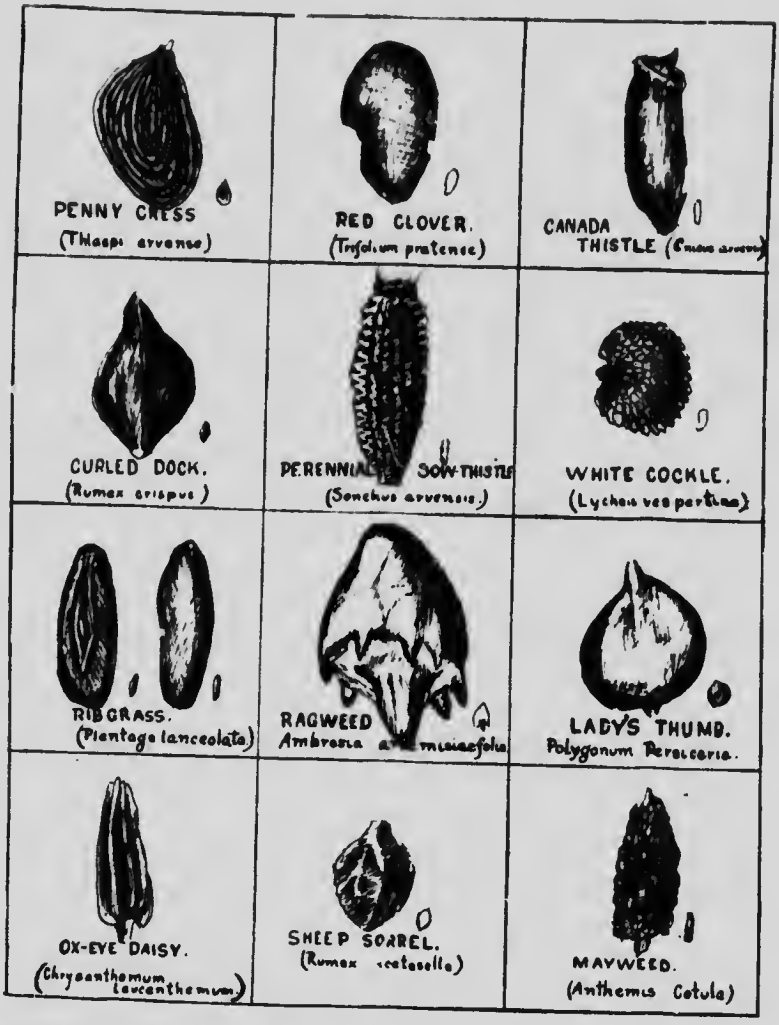
Axyris amarantoides, (L).

Roots.—Large, wide-rooted, fibrous roots. **Stem.**—Erect, leafy, widely branching, coarse, tall, 2-4 feet high, grooved, rather pale at base. **Leaves.**—Lanceolate on short petioles, sparsely toothed, numerous; upper leaves covered with rusty pubescence on under side. **Flowers.**—Of two kinds; spikes of anther-bearing flowers from ½ to 3 inches long, terminate every branchlet; and fertile flowers cluster the branchlets thickly below these, each one producing a single seed. **Fruit.**—An achene. **Seeds.**—Oval, flattened, $\frac{1}{16}$ inch, gray, with a silky lustre and surface minutely lined and wrinkled lengthwise. **Duration.**—Annual. **Flowering.**—June. **Seeding.**—July—August. **Propagation.**—By seeds. **Dispersal.**—In grain and other seeds; and broken-off plants are carried by the winds long distances. **Eradication.**—Hand-pulling when not too abundant; mowing and burning plants by roadsides and in waste places; harrowing out young seedlings from growing grain crops.

Russian Pigweed is a noxious weed throughout the North-west. It was first noticed west of Winnipeg, in 1886, to which place it was said to have been brought direct from Russia. When full grown the whole plant forms a large pyramidal compound raceme, is white in color, and thus very conspicuous. When young it somewhat resembles Lamb's Quarters, but is a paler green. Every precaution should be taken to keep it spreading from roadsides and waste places.



WEED SEEDS COMMONLY FOUND IN TIMOTHY



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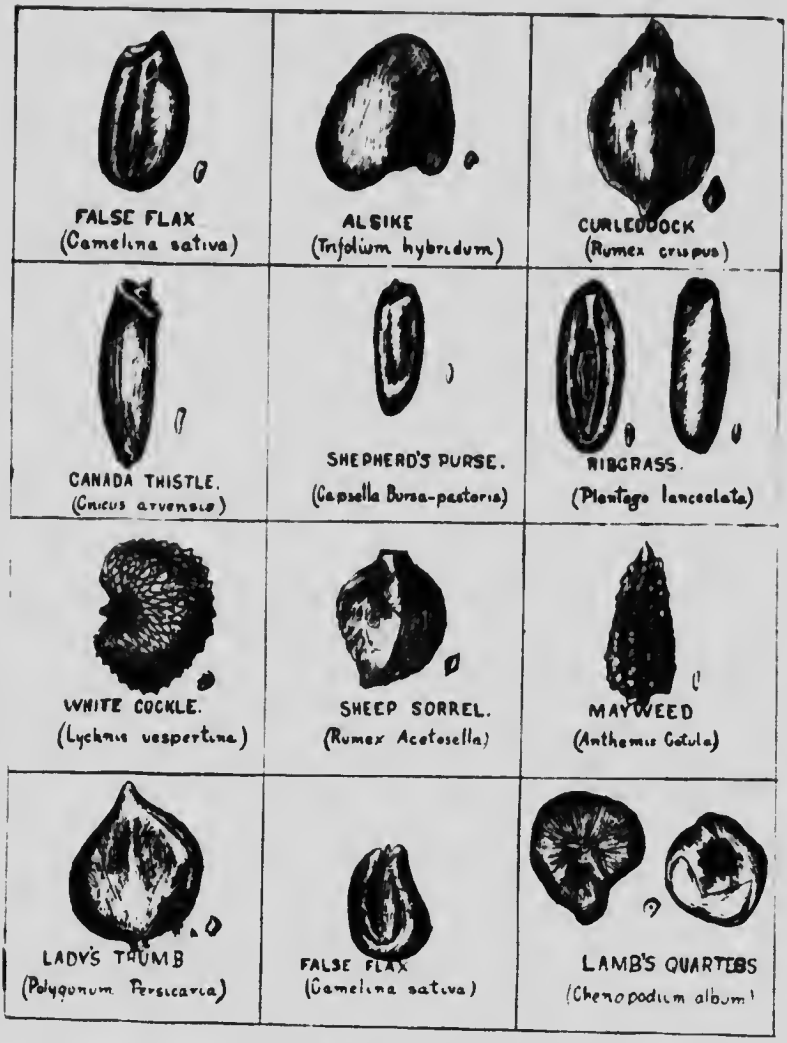

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