

ing turns all grain and weed seeds under, causing them to germinate and when plowed again before winter, sets in, this growth is turned under, adding to some extent to the fertility of the soil. As this plowing which is as deep as the depth of the soil and the custom of former years will admit, the land is usually put in ridges from two to eight rods wide according to the drainage of the land.

When sod which has been plowed in the early fall is desired to be used as planting ground the next season, it is good practice to work it up "one and just before winter ridge it up by throwing two furrows up from opposite directions, and not plowing it in the form of lands. This surface is a good one to spread manure upon and when plowed again in the spring, will cover the manure completely.

It is not good practice to plow any land so as to bring the sub-soil to the surface unless it is desired to increase the amount of surface soil, then a slight depth, say an inch may be brought up each season until the desired object is attained. But it is well to have the sub-soil stirred once in four or five years, especially if it is of a very stiff and retentive nature. This operation is called sub-soiling and is done with a sub-soil plow which is very simple in construction and strong. It loosens the sub-soil without bringing it to the surface following in each furrow after the common plow has preceded, therefore the work must be accomplished while the regular plowing is in progress. This operation is especially beneficial on soil intended for root crops, mangels in particular having long roots, it gives them an opportunity of penetrating in lower soil and feeding therefrom to some extent. Sub-soiling should always be performed in the spring or else the late fall rains and spring floods will pack the soil nearly as firm as before. (1)

In conclusion a word may be not out of place as regard the kind of plow to use. We have a great variety of plows made in Canada but perhaps for fancy work on sod there is no plow which can compete with the old iron Scotch plow as has been proved at all plowing matches of any significance in Quebec or Ontario during the last twenty five years. But since so many different appliances have come into use for working the soil it does not make very much difference how the plowing is accomplished so long as it is done fairly straight and laid up at the proper angle to give the best results. (2)

A QUEER DOG.—A friend of ours, who lives in Lincoln Avenue, has a magnificent black spaniel, with a perfect curly coat, which, strange as it may seem, is very desirous of keeping free from spot or blemish. To this end, Jack, as the spaniel is unequally called, refuses to eat his meals until his ears are carefully fastened behind his head by means of a clothes-pin! A fact, parole d'honneur, foi de gentilhomme.

AGRICULTURE IN THE SCHOOLS.—The Rev. Brother Théon, of the order of the Brothers of Christian doctrine, whose provincial house is at Laprairie,

(1) True only on un-drained land.—Ed.
(2) No work so perfect as that done by the two-wheeled ploughs of Ransome, Howard, and others. Any boy of 15 years old can hold them, if once properly set.—Ed.

has sent us an admirable book, intended especially for the schools of his order. We know that the Rev. Brother Abel, of Ploërmel, France, submitted this book to the "Society of the Farmers of France," which, after having carefully examined it, greatly approved of it. Since that time, the book has been entirely remodelled to adopt it to Canadian usage, and the illustrations are suited to this country. In short, the book seems to us to be a model of what such a work should be, and absolutely unique of its kind.

Messrs. Beauchemin, Bros., of Montreal are the publishers: price, 15 cents. From "L'Journal d'Agriculture."

At the request of the Department, we revised the above work, and can honestly say that it is likely to prove of great utility to any school into which it is introduced.—Ed.

The annual meeting of the American Southdown Breeders' Association was held in Springfield, Ill., May 27th, Mr. J. H. Pickrell, presiding as president pro-tem in the absence of president John Hobart Warren of New-York.

The financial and other reports of the Treasurer and Secretary show the Association in good condition, and that Southdown breeders have reason to expect that this breed will be in great demand because of their superiority of mutton, and of their ability to impress their good qualities upon other breeds thus making the sort of sheep that our mutton markets now require.

The report of the Committee awarding Mr. Geo. McKerrow, Sussex, Wis., the fifty dollar Gold Medal for making the largest score in exhibition at Fairs in 1895 was approved.

A committee was appointed to formulate the offering of a Gold Medal for exhibitions in 1896, and for Special Premiums at the Tennessee Centennial in 1897.

The selection of two rams from the flock of Mr. Geo. McKerrow, Sussex Wis., for use in a test between Southdowns and Dorsets as to earliness and quick maturing of lambs for market, to be made by Mr. G. M. Wilber, Marysville, Ohio, was approved.

Mr. C. H. Nimson, Cranberry, N. C., presented a valuable paper on the Characteristics of Southdown Sheep.

The following officers were elected: President, L. S. Rupert, Bloomington, Ill.

Secretary, Jno. G. Springer, Springfield, Ill.

Treasurer, D. W. Smith, Springfield, Ill.

Directors, Geo. McKerrow, Sussex Wis.

L. M. Crothers, Crothers, Penn. F. W. Barrett, Wadsworth, N. Y.

J. G. S.

ENEMIES.

Weeds—Fungi—Insects—Means to destroy—Necessity of prompt action &c.

"A man's worst enemy is often himself."

At this season of the year the farmer has many foes to contend with, and if he does not fight manfully against them, they will get the upper hand and he will have himself to blame.

It will be opportune at this time to consider what these foes are and how they may be conquered or rendered comparatively harmless. First, noxious

weeds; we must not wait until these have marshalled all their forces and are in battle array, but attack them while they are yet weaklings. Finely, earnest, thorough, careful and complete cultivation of the growing crop is our best resource as to the embryo weeds which will grow up and choke it if neglected.

But some weeds require more patient and laborious effort to eradicate them. For instance the field thistle "*Carduus arvensis*," called here, and by our neighbours across the line, the "Canada thistle," why, I am at a loss to know, for many a hard day have I spent when a youth in old England "spudding" thistle, and many an acre of them have I seen in New-England, or why poor Canada should have such a troublesome child mothered upon her I cannot conceive.

In our pastures, meadows, and grain crops, where they abound, no more effective means can be used for their complete annihilation than the spudding I mentioned. If we take an instrument called a "soud" which is a chisel about 1½ inches wide fixed on to a hoe handle, and with this cut the plant just below the crown of the root we shall have no more trouble, because the root deprived of its top will perish.

This may be considered in these fast times a slow and tedious operation, but it is the best means of utterly and completely destroying the pest. The root-stalks will not grow without the top but if any part of it is left it will; hence the necessity of cutting them below the crown which the scythe will not, therefore mowing them to prevent their seeding is not nearly so effective as "spudding"—Docks, burdock, Bull thistles, and the like, can be destroyed in the same manner. Charlock, or wild mustard, "*Sinapis arvensis*," can be got rid of by preventing its going to seed, and it is unpardonable to allow this to take place, for soon a whole neighbourhood will be over run by it. Couch, grass, or sometimes, it might seem, appropriately, called devil's grass (*Agropyron repens*)—is perhaps one of the most tiresome and persistent weed-foes we have to fight. Every particle of the root left in the soil will grow and develop into a perfect plant with amazing rapidity, and if not checked, will soon take the place of any other crop. Alternate cropping with cereals, legumes, or roots, thorough summer cultivation, and planting a smothering crop are the best agent, for its eradication.

Fortunately, it cannot grow without sun light, and if we plant a crop that will entirely overshadow the land we can destroy it completely. I have entirely succeeded in doing so, in one case by a crop of "corn" and in another case with a crop of tobacco, I had a good crop of each, by keeping a little space round each plant quite clean until their leaves overshadowed the soil and although the piece was a complete mass of grass, and rendered quite useless until that was removed, when the crops were taken off in the fall not one particle of the couch was alive. Ox-eye daisy, "*Chrysanthemum leucanthemum*," a terrible pest in some localities, is often supposed to be bought mixed with grass or clover seed.

Hence the necessity of dealing with a conscientious, trustworthy seeds-man, and not buying an article because it is cheap: dirty seed is dear at any price. This daisy is a perennial, propagated by root-stocks and seed, and it is difficult to exterminate, but this may be accomplished by cutting before the seed is ripe; thorough cultivation and ex-

posing the roots to the action of frost will destroy it. The annual weeds such as Lambs quarters, "*Chenopodium album*," purslane. "*Portulaca oleracea*," Groundsel, and the like are all easily killed, by close and persevering cultivation. Sorrel, sheep sorrel, or sour weed, "*Rumex acetosella*," soon makes its appearance on light sandy soil, and pastures where it abounds can only be cleared of it by good cultivation and planting a smothering crop. But, after all it is doubtful whether these enemies which can be seen and described are any more dangerous than the vegetable organisms which are so minute as only to be visible with the aid of a powerful microscope. Our worst foes are those which are insidious in their attacks and work in the dark.

Thanks to scientific research and observation, these too are now, to a great extent, defined and understood, and with a knowledge of their habits comes also a knowledge of the means by which they may be rendered comparatively harmless. We know that mildew, rust, blight etc., are caused by the action of microscopic fungi, and we know too that these may be killed by the application of certain caustic poisons to the growing plant. Of these the most effectual is the formula called Bordeaux mixture which, if properly prepared and faithfully used will prevent injury to all crops affected by fungi. The experiment Station of Vermont has paid great attention to the prevention of plant diseases, and the results of their experiments for several years have been most instructive and interesting. The last Bulletin is full of most useful information on these subjects, especially as regards the potato rots, about which several new discoveries have been made, amongst them the fact that two distinct species of fungi injure the potato crop, namely the "*Macrospermum solani*," causing the early blight, damaging the leaves but not the tubers, and the old potato blight "*Phytopthera infestans*," which destroys leaves, stems, and tubers. These diseases, which have caused the loss of millions of dollars, have been prevented by the use of Bordeaux mixture. But it is now proved that to be perfectly effective it must be used quite fresh and the formula changed a little: thus—6 pounds copper sulphate and 4 pounds fresh lime to 40 gallons of water. This is now adopted as the standard article. The most important experiment I copy from the Vermont Bulletin.

EXPERIMENT WITH POTATO DISEASES AT BURLINGTON VERMONT 1895.

Every third row were left untreated as a check row.

11 rows treated with Standard Bordeaux Mixture.

4 rows treated with test Bordeaux Mixture.

2 rows treated with Stock do. made sometime previous.

3 rows treated with Bordeaux powder.

2 rows treated with a new mixture called fungroid.

RESULT

	Yield per acre in bushels	Large sound tubers	Large rotten tubers
Standard B. Mixture	365	57	
Test B. Mixture	332	74	
Stock B. Mixture	307	100	
Bordeaux powder M.	235	177	
Fungroid	210	151	
Check row not treated	170	159	