

growing season. If this is done most of the roots will die, virtually for want of breath, as plants require air just as much as animals, and they absorb it by means of their leaves. Most of the others, being much weakened, will succumb to the winter, for it is found that the roots are not so vigorous here as in the East. Next spring drill in oats or barley. If there is any sign of the thistle starting first, give a stroke of the disk harrow to keep them down. If done just before seeding, the grain will get a start and ripen before the thistle. If any should happen to come afterwards, it would be an advantage to delay seeding till well on in May if thistles appear in the spring. If there was no sign of growth, wheat might be risked; in that case the disking should be omitted. After the crop is reaped, if thistles have grown in it, plough and harrow; if clean, seed the next spring with drill, without ploughing. The third season summer-fallow would again be in order, and it will now be seen whether the treatment has been successful or not. If any appear, reap the fallow, if not sow a crop for fodder, such as late oats, Hungarian grass or rye; or for grain, such as six-rowed barley, ploughing a fairly deep furrow. By methods similar to the foregoing, seed will be prevented from ripening, and if not entirely eradicated, the thistles will at least be kept under, so that good crops can be raised.

## WILD OATS.

"*Avena Fatua*" is an annual closely related to the cultivated variety, which it much resembles, only the panicle is more straggling, and the leaves generally have a more yellow tinge than the latter. The seed has brown hulls covered at the base with hair, and a long awn, much twisted, which uncoils when dampened, whence it is called "animated oats." In England, where it is indigenous and a troublesome weed, there are records of the seed growing after being buried a century. If discovered before ripening, the crop should be cut for fodder. If the plants seed, do no plough; cultivate the surface, harrow again in the spring very early, then plough and sow barley the end of May, but it would be safer to summer-fallow. This would be effectual if the first appearance of the pest, but where it is established it will be a more difficult task to get rid of it, as fresh seed will be constantly turned up. As in French weed and other annuals, the object is to clean in the one season the layer of soil on which the next one or two crops are to be grown. This can be accomplished by following the treatment given for French weed as to surface cultivation. Oats should not be grown until the land is clear, for any wild ones could not be distinguished and pulled out as they could from wheat or barley. Six-rowed barley or a fodder crop would be good, for they could be cut before wild oats ripen. Any feed grain suspected to have wild oats in it should be ground fine or boiled before being fed.

## WILD BUCKWHEAT.

"*Polygonum Convolvulus*" is an annual which spreads in all directions over the ground, clinging to and climbing up anything which grows near it, and when numerous, forming a complete mat, smothering out all other plants. It has bright green, heart-shaped leaves, a small spike of insignificant pink and white flowers, succeeded by three-sided seeds, the outer husk brown, the inner black. Though supposed by many to be indigenous to the soil, appearing after brought into cultivation, it is doubtful, as it never comes in some fields. Whatever its origin, the actual occurrence must be dealt with. Though most harmful among crops, it need never cause great alarm, as a thorough summer-fallow will conquer the worst cases. Surface cultivation should be given in the spring to start the seed, then plough a fairly deep furrow the end of June or first part of July, while the buckwheat is not very tangled. If thick a good rolling-coulter will be needed on the plow. Be careful to leave none sticking out at the furrow edges, as such will mature seed as well as ever. Follow with the harrow, and job is completed, with the exception of such harrowing afterwards as may be needed to start a fresh crop of weeds. As the seed is large, compared with the other annual weeds, they will germinate from a much greater depth, and will come up soon after the ploughing. If there are cattle in the locality, they can be depended on to clear the last growth, for they will stick to the young buckwheat as if it were a turnip patch, and not leave a leaf.

## COUCH GRASS.

"*Agropyrum Glaucum*," also known as Twitch grass or Scutch and Quack grass, but for its habit of growth, and the difficulty of getting it out of cultivated land, would be a valuable pasture grass. It is perennial, propagated by seed, but mainly by its root stalks, which possess a bud at every joint, each of which forms a new plant, thus the land becomes in time a mass of tangled roots, and forms a perfect sod. The plan followed elsewhere of trying to drag the roots out of the ground is needless labor here, according to the experience of the writer and others in this country. A plan which succeeds perfectly is to plough five or six inches deep as late in the spring as possible, and seed at once with some quick-growing crop, such as oats, barley, rye or Hungarian grass. Oats are very good, and being of strong growth, seem to smother the grass well. This treatment may be laughed at by some who believe in the old methods, but fields which showed a perfect sward of grass have been almost cleared in one season, and the same repeated the next year will clear

it right out. This may not be suitable in all cases, as where the land is full of weed seeds and requires a summer-fallow, it should then be ploughed in June, and well harrowed, and then ploughed a little deeper in August. This is not the best mode of ploughing twice for this country, as the second ploughing should be shallower, but will be best for Couch grass, as the roots will not trouble by getting on the edge of the share. Defective cultivation is mainly responsible for Couch grass; such as growing two or more crops on the same land without ploughing when it is unfit for that course, and in ploughing turning a wider furrow than the share cuts, so leaving an inch or two uncut, sufficient to give the grass a hold. This fault is very prevalent when the share is partly worn, as many plows make a nicer looking job on the surface when turning their widest furrow. In all cases the draft should be set to take no more land than the share will cut clean.

[Ed.—The essayist omits to mention SWEET GRASS ("*Hierochloa borealis*"), which is the "Couch grass" of many districts in Manitoba, and may be treated as above, only should be ploughed earlier.]

## RUSSIAN THISTLE.

"*Salsola Kal—Tragus*," also called Russian Cactus, is in reality a Salwort, brought to South Dakota by Mennonites from Russia, where it is a native. Fortunately there has been no notice, so far, in Manitoba, and it is to be hoped never will. It is annual, growing from two to five feet high, and forms a bush as much in diameter when fully grown. When young the leaves are downy and tender; as it advances towards maturity the plant becomes more woody and the leaves bristly, till they resemble in some respect miniature fir trees inverted. At this stage it has strong thorns or spines at certain distances along the stalks, then it is unmanageable, for horses can scarcely be driven through it. After ripening in the fall, the plant breaks off at the ground, and is driven before the wind for miles, scattering seed as it goes, till stopped by some obstruction. The seed is not so tenacious of life as the other annuals here. Very few retain their germinating powers more than one year. Not being personally acquainted with the plant, it is harder to advise on the treatment for its extermination than in the case of Manitoba weeds, but from its habits and nature the treatment given for French weed should be successful in this case; only it is important that the fallowing be done in June before the plants grow strong, and that none are allowed to grow afterwards, even if a second ploughing is necessary. It naturally prefers a dry soil, and it is said that sheep are very fond of it. Another plant that of late years has appeared in many places in the western portion of the Province and very troublesome in Assiniboia is what is known as

## TUMBLE WEED.

"*Sisymbrium Sinapistrum*," a native of Europe, is an annual here, though biennial in some instances elsewhere. Its seeds retain their germinating powers in the same way as wild mustard (to which family it belongs) and apparently for as long a period. It grows from two to four feet in height and very branched; the flower is smaller than that of mustard. The quantity of seed produced is enormous; one plant gave nearly six ounces, or about one million and a-half seeds, which are much smaller than those of timothy and dark-red in color. It ripens about the middle of August and then dies, afterwards the wind blows the plant over the prairie in the same way as the Russian thistle. The best plan is to treat it like French weed or mustard, but as long as it is in the locality there is always danger of a fresh invasion; therefore, concerted action among all the farmers in the affected district, so that none is allowed to ripen, is the only way to meet the difficulty. The modes of destroying the weeds here given are such as could be practised by a farmer who makes grain raising his exclusive or main dependence, as at present the majority of Manitoba farmers do. At the same time, there can be no question that in many instances weeds could be more easily and profitably destroyed by making the land, instead of lying in a naked fallow, produce heavy crops of fodder or pasture for the live stock, that should hold an equal place with grain raising in the operations of every farmer. There are many plants that could be grown in the manner on summer-fallow that would leave the land in better condition for the following crop than to have it bare. Rape or turnips are suitable for any fallow, as green pasture in the fall, except where a second ploughing is needed. For a crop to be cut green for hay, one should be chosen that is fit for cutting at any stage of growth, so that if it was seen there was danger of weeds seeding, it could be mowed at once. Rye is good for this purpose, and makes a first-class hay; also oats, barley and peas, only they should be left a little longer before cutting. As to permanent pasture, the native grasses will probably be the best. "*Agropyrum Tenuum*" (Western rye grass); Austrian Brome Grass, "*Bromus Inermis*," seems to be good. However, the wisdom of such a course in dealing with noxious weeds is doubtful. Whenever the land is broken again they will appear, so it is in reality a mode of preserving, rather than destroying the worst kind of weeds. All small patches of weeds can be easily destroyed by growing roots, corn for fodder, etc., providing the cultivating is thoroughly done. A disk harrow used before or after ploughing weedy land will frequently save a second ploughing. To kill weeds harrow when in the seed leaf. To keep free from weeds, never feed the seeds to your stock without

first boiling. Always clean your seed grain well. It is safer to buy from a regular seedsman than from a feed store, especially grass seeds, which at the best generally have more or less foreign seeds amongst them. See that the thresher cleans the machine out before setting up; weeds are often spread in this way. Many weeds come with packing cuttings and seedlings from the East, and any strange plant appearing should be pulled up.

Observe the provisions of the Noxious Weed Act, and assist the Inspectors by having none on your own farm, and informing of weeds growing on adjacent lands; better still, take the liberty of pulling or cutting any isolated specimens yourself—if not for the benefit of the community, as a measure of self-protection. A farm cannot be kept entirely free as long as weeds are allowed to ripen near by. The seeds are carried by the wind, birds and animals. In short, make yourself a weed inspector for the surrounding section, and see that the law is enforced; delinquents have no right to poison another man's land by allowing weeds to ripen. The country is large and the regular inspectors cannot explore every corner. Many of the worst weeds first appear along railway grades, and the law should be strictly enforced against them. The future of agriculture may depend on whether the weeds are kept down or not. Let everyone write as against a common enemy and the result can not be in doubt; but to succeed there must be no backsliding, and farmers, inspectors, pathmasters etc., must remember that "eternal vigilance is the price of safety."

## Farmers' Institutes.

## VIRDEN.

At the annual meeting of the above Institute the following officers were elected: Jas. Elder, President; P. McDonald, Vice-President; C. E. Ivens, W. Stephen, W. Whiteford, J. Wells, J. Caldwell and J. Cooper, Directors; Geo. Moir and W. H. Hall, Auditors; Geo. H. Healey, Sec.-Treas., and P. McDonald, Assistant Secretary. Mr. C. E. Ivens was appointed delegate to the Central Institute. Arrangements were made for the Travelling Dairy, and the following resolution was carried: "Moved by C. E. Ivens, seconded by P. McDonald, that in view of the prevalence of tuberculosis in different parts of the country, the Dennis Farmers' Institute, No. 1, considers it advisable to caution farmers and others against bringing cattle, pigs or sheep into this district from other parts of the country."

## GLENBORO.

The following officers were elected for Glenboro Institute for the ensuing year: Geo. Steele, President; J. Dale, Vice-President; F. Obee, Secretary and Treasurer; W. McKenzie, W. Lyall, W. Cox, J. Davidson, J. Atkinson, J. Christie, Directors; D. Steele and R. S. Thompson, Auditors. F. Obee was appointed delegate to the Central Convention. The following resolution was then carried: "That the delegate to the Central Institute be instructed to bring to the attention of the meeting the necessity of increasing the grant to the Central Institute, and to S. A. Bedford, for travelling expenses to the local institutes. Carried."

## ELKHORN.

The election of officers for 1894 resulted as follows: W. Wood, President; Geo. Allison, Vice-President; A. M. Bradford, Secretary and Treasurer; G. Freeman, C. Freeman, E. Ives, J. Montgomery, J. Middleton and W. Bailey, Directors; Rev. R. G. Stevenson and W. M. Cushing, Auditors. We take the following from the Elkhorn Advocate: "After the election of officers, Mr. S. A. Bedford, of the Brandon Experimental Farm, delivered an address on 'How to farm with profit, under existing circumstances.' Among other things, he urged the use of the best varieties of grain for seed, stating that in five years an improved variety of wheat had averaged considerably more than a common variety, and also with oats. He said that the different modes of culture of the land made a vast difference in the crop. Spring plowing on the Experimental Farm, Brandon, always gave better results than fall plowing. He also urged the early sowing of grain, as late sown grain would yield considerably less than that sown at the proper period. He was strongly in favor of summer-fallowing, and stated that by summer-fallowing two years' moisture could be saved for use by one crop. He spoke on the rotation of crops, and advised the growing of peas, as they had sold and were still selling at a good price. He also spoke on sowing grass seed, either timothy or some of the native varieties. He advocated poultry raising as a profitable business, and thought the farmers should raise more of them. He then spoke briefly on tree planting, and said that every person should endeavor to decorate their homes by planting a few trees. Parties writing to him could get seed or slips."

Cows should be milked in the stable the year round. In summer it saves much annoyance from the flies, and then the cows always stand better, too. It is neither pleasant nor profitable to be kicked over in the barnyard with a pail of milk, and all trouble of hooking and fighting will be avoided by putting the cows in the stable. And should spraying for hornflies be necessary, it can be done very easily in the stable.