

From these facts the reader will observe that it is a favorable district for mixed farming and for stock raising. Those who wish to go entirely into cattle raising can choose few better locations in the province than Brokenhead district. Along the townline, a mile west of the river, are many excellent places for cattle raising. Here the country is about half woods and half prairie, covered with heavy grass every year, which makes excellent hay. In this part there are springs of excellent water.

Brokenhead has all the educational advantages of any country district. There are schools within convenient reach of any part of the district. In these schoolhouses church services are held every second Sunday. Leading agricultural writers are telling the farmers of the west the advantages and the picturesqueness gained by setting out groves of trees on their farms. Here, however, the groves are already set out and full grown. On every quarter section are beautiful groves of trees, which nearly all mark beautiful sites for building. Every stretch of prairie is enclosed by a ring of woods, which add beauty to the locality, break the force of the wind, shade the house and yard in the summer, and prevent the seeds of thistles and other weeds from being spread by the wind.

By the settlement of the country almost every other disadvantage will be overcome, and is being overcome year by year. The constant drainage has so improved the road to Beausejour, that in fine weather it is only a few hours drive to the station from the farthest part of the settlement. Then the district has more frequent communication with Winnipeg than most of the stations on the branch lines, for a train runs each way on the main line every day.

#### The Manure from Farm Stock.

The attention of the best farmers has long been directed to the superior value of the manure from well-fed animals, although much depends whether this indispensable material is properly preserved and applied. That of stable-fed animals has been for many years estimated at a high value, and in more modern days that of swine in much higher estimation than formerly. That there is still much difference in opinion as to the best methods of application and preservation one can easily judge from the arguments often advanced by the most practical men. One farmer, whose stock, farm and whole surroundings entitle him to be placed in the first ranks of his profession, has become so thoroughly convinced that loose boxes are the only right system of feeding for the well-doing of his cattle and the best manner of handling the manure that he has converted his stables into box stalls nine feet square, and contends that from his own experience and observations this size is sufficient. These do not require the manure to be removed except at any leisure time, thus saving the continual labor in cleaning out, for where animals are tied in stalls the droppings must be removed twice or three times a day to keep the occupants in comfort. Many advocate cutting the bedding, as in this form it absorbs the dampness more thoroughly, and is more easily removed when loose boxes are in use, and the manure is in better condition to apply directly to the land, while the article thus manufactured contains all the elements of fertility just as they pass from the animals, undiluted and unfermented, and consequently comprises all the organic material for vegetable nutrition ready formed for the coming crops. Where it is not advisable to apply directly to the land, the manure should be hauled to the field where it is intended to be applied. It is a good plan to plough the ground slightly where the pile is to be placed. The spot should be sufficiently high so that no water will get near it, except that which falls in rain or snow, thus any leakage may be caught by the soil underneath the heap. Five feet is a good height to pile it, and many favor giving it a heavy sprinkling of salt, which will prevent too rapid heating, which in the case of manure from horses and sheep will cause it to fire. It is claimed by many there is a vast advantage in feeding cattle in loose boxes when they are intended to be grazed the following summer, as it is a well-known fact that cattle that are kept too closely confined do not graze to the same advantage as do those which have had rather more liberty during winter. The great difficulty with the loose box system is the quantity of bedding required, much more being needed than where cattle are kept tied up; but this on some farms is no object, for where grain is extensively grown there is generally more difficulty experienced in getting it rotted down. The advantage to all kinds is often lost sight of, and farmers are too apt to forget that in many cases they are using up their stock in trade by expending the fertility of their farms in growing large crops and selling them. Just as the cities of ancient times drained the surrounding countries and left them barren wastes, as far as the necessary elements of fertility are concerned, so is Great Britain to-day gradually robbing Canada

of the fruitful parts of her farms. In these days, when wheat commands such low prices, and all other grains and hay are also cheap, it is as well to consider what the manurial value of each of these articles is to the farm on which they are produced, and by taking the authority of Sir J. B. Lawes as to value from experiments tried by him, we shall be able to judge how the farmers of Canada can afford to sell their hay and grain, or rather which feeds are best suited for the combined object of producing meat and manure. The comparative value of these feeds is taken from an analysis of the different fertilizing elements they contain, and reduced to practice by actual tests of feeding and growing crops therefrom.

The following table gives the value of the manure from a ton each of grains, hay and feed in most common use:—

	Total dry matter.	Ash, manurial matter.	Phosphoric acid, phos. of lime.	Potash.	Nitrogen.	Value of manure in \$ and cts. for 2,000 pounds of food.
Oil Cake.....	88.0	7.00	4.92	1.65	4.75	\$19 72
Cotton-seed Cake.....	89.0	8.00	7.00	3.12	6.50	27 86
Peas.....	84.5	2.40	1.84	0.96	3.40	13 38
Corn.....	88.0	1.30	1.13	0.35	1.80	6 65
Wheat.....	85.0	1.70	1.87	0.50	1.80	7 08
Oats.....	86.0	2.85	1.17	0.50	2.00	7 70
Wheat Bran.....	86.0	6.60	7.95	1.45	2.55	14 50

The figures showing the money value of the manures made from different foods are based on the amount of nitrogen, phosphoric acid and potash they contain. Sir J. B. Lawes had been buying and using artificial manures for many years when he computed the above table, and, doubtless, the conclusion is as near correct as any that can be obtained as to the cheapest means of purchasing the three essential elements of fertility, viz., nitrogen, phosphoric acid and potash.

It is also as well to remember that not only are the chief ingredients of fertility in the most soluble state possible in the manure of richly fed animals, but the manure itself greatly assists in bringing the soil to the best mechanical condition.

Feeding pigs wheat is just now highly recommended, as it is contended by many that by feeding good feeding pigs in good weather at six cents per pound live weight, \$1 per bushel may be made of wheat. If this is the case, with proper care and application a good profit may be made by the manufacture of manure. Again, it is only by farming good, rich, well-kept land that either stock, grain or any crop can be produced at a profit.

#### How Insect Pests Are Kept in Check.

The necessity of waging constant warfare against the insect pests that destroy the hopes and profits of many crops on the farm requires continuous study on the part of those engaged in agricultural pursuits. Anything that will in any degree tend to lessen the inroads from destructive insects demands the attention of all so engaged. Many of these winter over in the ground, while others find a lodging place in any refuse left upon the surface, and if left undisturbed, will be ready to pursue their evil work when vegetation starts in the spring. Insects have their habits so thoroughly established that a sudden radical change must of necessity prove fatal to a greater or less number. This is why a rotation of crops is of so much value in holding destructive insects in check, and explains why it is that crops following after pasture or meadow are more apt to suffer injury. A grass or clover crop would be no more of a nursery for destructive insects than any other, if it was grown but for a single season on the same ground. This is, however, not the case, and how to overcome the effect of a continuous grass crop is one of the problems that is just now puzzling our farmers, as many of our most destructive insects are almost sure to get in their work immediately following the breaking up of sod lands.

One feature of these pests is that the majority of them winter over in the ground, in either one or the other of three stages of development. That is, they are either in the grub, pupal or adult state, and in either of these more or less susceptible to the changes of the weather, especially during the winter months. In autumn, all insects that remain inactive through the winter months make some provision against inclement weather, and usually this is done just prior to their becoming stupefied or dormant, in which state they are not affected by cold, no matter how severe, if continuous. It is the sudden changes, the freezing and thawing, the wetting and drying that is unhealthy.

With the coming of fall, white grubs, wire-worms and cutworms, that through the preceding months have been feeding near the surface of the ground, delve downward and by working their bodies about, construct a rude cell of earth, after which they practically go to sleep and remain in that condition until warm weather. What the farmer can do, after this sleepy, stupid condition comes on, to wreck these winter quarters, will be to throw the occupants out of their homes to the mercy of the elements, while the makers are in an unfit condition to construct others. Whatever the farmer can do to disturb or break up the surface of the ground late in the fall has this effect, and therefore fall plowing can not fail of being more or less effective in destroying any or all of the pests above mentioned.

## GARDEN AND ORCHARD.

### The Value of Observation and Experience in Fruit Growing.

BY ELMER LICK.

Man has many lessons to learn in this world. Some men gain a large amount of knowledge, while others seem to be at a standstill. Knowledge is said to be power; such can truly be said to be the case provided that such knowledge is turned to practical use. In acquiring knowledge, experience plays a prominent part. The lessons learned by our failures or successes are equally valuable, if not equally profitable in a financial sense. Experience teaches us to avoid these conditions and causes which have led to failure, and to follow that course which in the past has been successful. The man who trusts alone to his own experience will be an old man before he has learned very much, compared with the one who has closely studied and observed the experiences of others.

During the past few weeks apples have reached a size such that they can readily be seen from the roadside. I have been carefully noting the crops, and comparing the previous cultivation, with a desire to learn and add to my own knowledge some fact or facts which will enable me to produce more and better fruit on my own orchards, and at a minimum of labor and manure. In penning a few of these observations for the benefit of the readers of the FARMER'S ADVOCATE, I trust that they may be such as will lead men to observe and experiment.

There are about 180,000 acres under orchard and garden in the Province of Ontario, probably over one-half of this is planted to apples. Any method that will give an increase of production and of better quality will be a great boon to the fruit-grower. I have observed three principal methods of caring for orchards in this vicinity. One is to let them care for themselves—several orchards in this district come under this head; such trees have not been pruned for several years, are full of sprouts and dead limbs, and, should they accidentally have a few apples on, it is well nigh impossible to pick the fruit. The orchard containing these trees has usually been seeded down for several years, and consequently has become a tough sod. Usually all kinds of stock are allowed to run pell-mell through it summer and winter. In the summer the leaves are a pale yellow, and ripen early in October.

There are only two redeeming features to such a forlorn state of affairs. What fruit there is will be well colored, and in consequence of the lessened production the orchardist will have a better price and market for his fruit.

There are hundreds and thousands of orchards, ranging from an acre or more to many acres, which are being treated in a similar manner to the above. I never yet heard the man who managed an orchard in this style say that he thought there was money in growing apples. But I have heard tenants grumble because the landlord reserved most of the orchard for his own use, yet at the same time I have known them to use what few trees they did have in a similar way to that described.

Another method of managing an orchard is "to partially care for it." I fear that many orchards have been allowed to come under this head this hurried season. I personally have to regret being unable to plow a portion of one of my orchards this summer. When it should have been done it was too hard. Some pruning that I wanted to do in March I did not get done, I could not find time in June, and consequently a few hundred trees are unpruned. Such cases as my own are the result of unfavorable climatic conditions, and cannot be avoided. Within half a mile of my writing at the present time is an orchard which was thoroughly pruned a few years ago by cutting out many large limbs. So far the results have been satisfactory, but time will in all probability cause the decay and breaking of the remaining limbs. In another adjoining orchard the limbs were cut from one to three inches away from the trunk or branch from which the offending limb was separated. Orchards coming under this second heading are fairly loaded with fruit, considering the universal scarcity. Occasionally good crops are produced under favorable conditions.

The last class is that in which every care is taken of the orchard. Very few orchards can be so classed. The only conditions necessary to admit to this class are that the trees should bear abundantly, and of good quality, size and color, doing this without unnecessarily injuring the tree or impoverishing the farm. The last statement I will probably explain at some future time.

I know of several orchards that are well-pruned, fairly cultivated, and yet do not produce anything like paying crops. They simply lack the necessary manure. My observation and experience (and largely the latter) go to show that the best method of producing apples is to follow a course which opens the trees well to the sun, and that keeps the soil cultivated thoroughly and gives sufficient manure for the growth and development of the tree and fruit. Briefly, the best pruning is that which allows the branches and leaves to shade the trunk fairly well, and yet gives an opportunity for the fruit to color properly. The best cultivation is either two plowings in the spring, or one in the fall and another in the spring, following the last plowing in either case by buckwheat—the time of last plowing to be guided by the size of trees and