

especially when they have been newly transplanted. The presence of the insect may be detected by small heaps of sawdust at the base of the tree, thrown out by the burrowing worm; secondly, by the bark covering the borer being soft or yielding to the touch; thirdly, the bark becomes discolored and dried in places; fourthly, the tree appears to be unhealthy.

REMEDIES.—Wherever a borer is suspected, cut into the bark and kill him. As a preventative apply to the trunk and larger branches of the tree soft soap made to the consistency of thick paint by the addition of a strong solution of washing soda. Apply this mixture with a paint brush on a sunny morning early in June, and repeat it about the first of July. Keep the ground clean for about two feet around the base of the tree.

The Apple tree Bark Louse (*Mytilaspis pomorum*).

This insect is protected the greater part of its life by a scale. It only leaves this covering when hatched out, to seek a new place to become fastened to the tree. This usually occurs towards the end of May or commencement of June, and this is the best time to destroy them.

REMEDIES.—When the young lice have left their scales, brush the trees with soft soap, or spray with strong soft soap suds. A solution of kerosene and soap may be applied with good results at any time during spring or summer. It has also been recommended to scrape off the scales and collect them on a sheet placed below, and then burn them. But the best remedy is to examine the young trees before planting them, and to remove all scales then if any should be found. As the female is wingless, and can only travel a short distance, there is little danger of an orchard becoming infested if the above precaution has been taken.

PRIZE ESSAY.

Management of the Orchard.

BY KENNETH SUTHERLAND, INGERSOLL, ONT.

There is no department of the farm the management of which is so little understood by the average farmer as the orchard; not that it does not receive as much attention as the other branches, nor that the profits from it are less, as compared with the other departments, but the habits of the trees and the requisites for maintaining them in a healthy and fruit bearing condition, is a subject to which the majority of our farmers devote very little of their attention. The deplorable condition of many of our orchards on farms otherwise well and intelligently managed, is a proof of the truth of these statements. Why this is so it is rather difficult to say, unless the idea is prevalent at the beginning that an orchard when once planted will take care of itself without any care or assistance from its owner. But this I think an extreme deduction. The scientific knowledge necessary to rear and care for an orchard properly is not more than is required to raise a good crop of grain, or any other product of the farm, but the period of its growth extends over a much greater length of time, and, consequently, the care which it receives is not apt to be so constant and timely as would be given to a crop occupying but one short season. This, coupled with the fact that farmers think they must get a crop between the trees, I think, explains why our orchards do not flourish and bring forth fruit in abundance.

So much of the success in after years depends on the manner in which it is first planted, that I think I would be neglecting an important part did I not give a few directions for setting the orchard.

Select a site, if possible, sloping to the south, although perhaps the advantage of one slope over another, everything being taken into consideration, is very slight. For instance, although a southern slope will produce larger and earlier fruit than a slope to the north, fruit on the north side of a hill is less liable to be damaged by late frosts in spring. On the whole, I think the nature of the soil should be considered as of more importance than the slope.

In choosing a spot for the orchard, avoid a soil with a hard clay subsoil, for not even the best of cultivation and thorough drainage can render it fit for the reception of the far-reaching roots of the trees. A deep, dry, sandy loam should be selected to give the best results.

Having selected a site, the next thing will be to drain, manure and subsoil the land. The distance which trees should be planted apart will depend on the amount of land at your disposal, and the kind of trees to be planted, a spreading tree such as the Greening requiring more room than one of close growth, such as the Northern Spy. However, as the farmer will want to plant more than one variety, it is best to adopt a distance which will meet the requirements of all kinds. If the trees are given plenty of room they will require less manure to sustain them in good condition. From thirty to forty feet is better than a shorter distance. Select trees of medium size, set in large round holes, carefully spreading the small fibres and reserving the top soil to be pressed firmly around the roots. Next, stake and prune the trees, leaving about four of the main branches evenly balanced on the trunk of the tree.

The future management of the orchard will consist in preserving a well shaped top, in clean cultivation, and in applying to the land, in the shape of manures, such elements of plant food as will at once increase and retain the fertility of the soil and supply to the trees the essentials for fruit and wood growth.

By carefully going over the orchard once a year, and removing the objectionable branches in the first stage of their growth, it will not be necessary to mutilate the tree when it has arrived at maturity by sawing off large limbs, and leaving large openings and half rotten stubs too often seen in the farmer's orchard. Of branches which cross one another, or have a tendency to grow too close together, the less vigorous should be cut off, taking care not to interfere with the natural spreading or upward tendency of the tree. In fact, the more we strive to conform to Nature's ways in the management of the orchard the greater the chance of success. If asked when is the best time to trim, I would say whenever you have time to do it well, giving the preference to the early spring.

But it is to the soil that the attention of the orchardist should be most assiduously directed, for however much we prune and trim the branches we cannot expect success if we do not feed the roots. As well might we expect to produce a brilliant light in our lamps by constantly trimming the wick while we neglected to keep up the supply of oil. If the orchard is cropped, the object should be not to utilize all the fertility of the soil for fear it will be wasted, for the trees will need it all, and more too, but to keep the land clean, and for the purpose of working in the manure applied. For this purpose nothing is better than low, hoed crops. A judicious rota-

tion, however, should be practiced, as crops of the same nature taken from the land year after year would be apt to exhaust it of some of the elements necessary to the healthy growth of the tree, unless some stimulating artificial manure is applied to supply the deficiency. Whatever system is adopted, however, the land should receive every year a liberal dressing of well rotted manure.

But while the foregoing directions may be of benefit to those who have the care of the orchard from its infancy, with many others the case is different. Many of the present owners have probably but recently come into possession of their orchards, while but very few have had anything to do with their planting and early treatment, and they find their orchards a mass of brush twenty-five or thirty years old, dead limbs, barkless trunks and scanty foliage; fruit, if any, is borne small, scrubby and wormy, and the question is asked, what shall I do with my orchard? In this case there are three methods of procedure, and which of the three to choose must depend upon the particular state of the orchard and the purpose for which fruit is required:

1. To cut down the trees, grub out the stumps and plant a new orchard. 2. To graft the trees with scions from a vigorous stock. 3. To trim the trees and adopt a system of renovation.

If the case is an extreme one, as the one mentioned above, the fruit of an inferior kind, or the conditions of soil or location are unfavorable, probably the best plan to adopt would be the cutting down plan. But if the trees are young and vigorous, but with fruit of an inferior kind, and good fruit is wanted for market, I would adopt the grafting plan. If, however, the natural conditions for fine fruit are favorable, but the orchard, through neglect or improper treatment, has fallen into a state of unprofitableness, I would by all means endeavor to make the most of it by adopting the third plan.

We will suppose the time of year to be June, and the orchard in grass. First, remove all dead limbs, then scrape and wash the trees, then plow the land rather shallow and cultivate the surface at intervals during the season. Of manures it is doubtful if anything is better, if it can be had in sufficient quantities, than the refuse matter of the farm, such as decayed chips, yard scrapings, ashes, etc., not forgetting a good dressing of well rotted manure in the fall. The following summer cultivate some low hoed crops between the trees, after which seed down to grass to be used as a pasture for hogs, sheep, calves, etc. By pasturing the orchard the grass is kept short and the land kept in good condition by the droppings of the animals. The hogs especially are of great service in devouring the worms in the fallen fruit.

Until our farmers can be induced to inquire into the chemical constituents of their soil and become acquainted with the elements which enter into the composition of their different crops, noting the requirements of each and adapting the crop to the soil, or supply the deficiencies by artificial manures, then, and not till then, will the application of these manures be attended with benefit, and the profession of farming, instead of being a thing of uncertainty and variable gains, will be an occupation the pursuit of which will prove a field for the exercise of our intelligence, and will render the farmer what he ought to be, the happiest and most independent of mankind.

A correspondent of the *Homestead* gives a remedy for the onion maggot, which can be found abundantly about the homes of many farmers: Take green burdock leaves and stalks, run them through hay cutter, put them in a large kettle or tub, and mash them with an old axe or mallet, adding water and pounding them to a pulp. Let it stand over night, have the decoction strong, and when you see the first sign of the maggot use this, and you will find it a dead shot for the maggot. Put it on all the onions as a preventive; I have used it for forty years on onions. I use a sprinkler, taking off the nose, and pour the solution along the rows; I seldom have to apply it the second time.