one of the most effective lice powders to be had, and its cost is only about one-quarter that of prepared powders.

Some may say that all this cleaning is a lot of work for nothing, but it is merely the premium which the poultryman must pay for large numbers of eggs later on.

Now, as to feed. Do not fail to lay in a supply of good grit, lime and charcoal for winter. Crushed stone and crushed oyster-shells are the best for the first two, and for charcoal nothing is better than vegetable charcoal, obtained by charring ears of corn. Feed it in the mash or with the oyster-shells.

Keep a deep litter on the floor, and make the hens work to find their grain feed. Exercise is half the battle in making hens lay. Feed a variety of grains, if you can, but oats should form the bulk of their feed, as they form about as near a balanced ration for hens as can be had. I have had excellent results from feeding a small handful of wheat or buckwheat to each fowl in the morning, scattered in the litter. At noon I give about 1½ ounces to each fowl (Barred Rock) of a mash consisting of ground oats, corn meal, wheat bran and animal meal, mixed to a crumbly condition with skim milk. At night a large handful of oats is given to each. Feed good oats, if possible, as the lighter the oats, the greater the percentage of hulls to be consumed in providing the necessary amount of nourishment. Be sparing in the use of condition powders and tonics. They are apt to cause the fowl to fatten if used in excess, and a fat hen is rarely a laying hen.

Occasionally, hens get in the habit of egg-eating. It is generally started by having too few nests; boxes too small, so that the hens crowd and break the eggs, or not sufficient material in the bottom to prevent a thin-shelled egg from breaking when it strikes the bottom of the box. Have plenty of good-sized nests, with plenty of material in them and china nest eggs; feed rationally and intelligently, and you will have no trouble with egg-eating.

In conclusion, I may say that anyone who is willing to give their fowl a reasonable amount of care, and who looks carefully after the three essentials of successful poultry-keeping—breeding, feeding and cleanliness--cannot fail to make a success of it. POULTRY FANCIER.

Egg Eating.

Egg-eating is a bad vice which, if once acquired by the flock, is somewhat hard to overcome. It is often caused by soft and thin-shelled eggs being broken in the nest. A few broken eggs eaten from the nest has a tendency to teach the hens to break eggs themselves. If the vice would remain confined to a few individuals, it would not be so troublesome, but such is not the case. A few egg-eating hens soon communicate the vice to the entire flock. Where one or two hens are affected, it is often advisable to kill them, but if it has spread to many members of the flock, this is impracticable. If the hens can be prevented from eating the eggs for a couple of weeks, further trouble is not likely to occur. Prevention consists in keeping the nests dark. Two or three weeks of such treatment will usually effect a cure. Feed the hens plenty of grit and lime material to produce thicker shells on the eggs.

F. S. Jacoby, a graduate of Cornell University, has just been secured by the College of Agriculture, Ohio State University, to take charge of its new Poultry Department, provided for by the last Legislature.

GARDEN & ORCHARD

Protecting and Pruning Grape Vines.

Owners of vineyards are agreed that summer pruning should not be followed to any extent in grape-growing. Pruning may be done with safety after the crop has been harvested, and especially in the colder sections, growers will be wise to provide some winter protection for the vines. Where winter protection is necessary, fall pruning can be practiced to good advantage, and, after pruning, the vines can be removed from the trellis and covered with a few inches of earth before winter sets in. This can be accomplished after the land has been frozen, for in most seasons warm days, on which the top soil thaws, follow the first cold snaps. Do not neglect it too long. However, if the land becomes permanently frozen, a few clods of the frozen earth can be placed on the vines to hold them down and also to hold the snow over them, thus forming a very good protection. If the vines are so situated that a winter thaw is likely to bare them of their snowy covering, it is much better to cover them well with earth, because these vines, being accustomed to the protection which the snow affords them, and being suddenly exposed to the severe weather which may follow, are somewhat tender, and easily injured by the frost.

Grape-growing demands that some system be followed in shaping and training the vines.

For cold districts, the Fuller system is undoubtedly the best suited to meet all conditions of the severe winters. To follow this system, as with all systems of grape pruning, it is necessary to begin with the setting of the vine. Cut the vine back to one or two buds, and allow only the strongest one to grow. Let this grow until the end of the first year, when it should be cut back to within about one foot of the ground. The following year it is generally well to allow two of the upper buds to grow. These buds should produce two strong branches which can be trained each way along the trellis. At the end of the second year these branches should be cut back to within four or five feet of the main vine, and they form the two main permanent basic branches of the vine. From these branches new canes are produced annually. They can be spaced at about a foot apart, and should be tied up to the trellis wires as they grow. Each year these should be cut back, so as to leave two or three buds on them, which means that the entire vine, after it is pruned, is not allowed to produce much more than thirty-five to forty buds. At the approach of winter the necessary pruning can be done, and the vine taken from the trellis and covered, as previously indicated.

In more moderate climates, the "Kniffen System" works well. This system is such that the vines must be left exposed on the trellis throughout the winter. The vine is cut back to two buds at planting, and again at the end of the first year's growth. The beginning of the second year, the stronger of these two buds is allowed to grow into a long, straight cane which, at the end of this year, is cut back to about four or five feet in length, or just long enough to reach the top of the trellis which should be made for it at this time. This upright cane forms the permanent portion of the vine. The next year, four arms should be allowed to grow from the main cane, and they should be trained on the upper and lower wires. At the end of the first season these arms should be cut back to the sixth or seventh bud. The vine should be pruned back to this size each year. From each bud on the arms laterals are sent out in the spring. These laterals bear the fruit. The annual pruning consists in cutting out the four laterals as close to the main upright as possible, and allowing to grow in their places the strongest laterals nearest to the main vine.

Nearly every farm, whether a fruit farm or not, has its grapevine, and, with a little care, it can be made much more sightly, as well as a great deal more profitable, than if it is allowed to ramble over old fences and up into trees. Grapes are a luxury which can be had on most farms if they are cared for. Devote a little time to the grapevine this fall.

Some Work of the Federal Government Against Insect Pests.

(Abstract of an address by Dr. C. Gordon Hewitt, Dominion Entomologist, Ottawa, before the Annual Convention of the Fruit-growers' Association of Ontario, November 15th, 1911.)

The three methods, in which the Department of Agriculture of the Federal Government is dealing with the serious problem of insect pests are by legislation, by investigation, and by education, and it is proposed to deal particularly with the first of these methods on the present occasion, as there are still many fruit-growers and others who are very materially concerned in the prevention of the introduction, eradication and treatment of insect pests, who are not as yet fully acquainted with the work of the Federal Government in this respect.

When it is realized that about 50 per cent. of our most injurious insects have been introduced into Canada from other countries, the necessity of taking steps to prevent the introduction of further pests, and the spread of serious pests already within our borders into regions of Canada in which they do not occur, will be readily understood.

The discovery of winter nests of the Brown-tail moth on nursery stock imported from France in 1909 was chiefly responsible for the passage of the Destructive Insect & Pest Act of 1910. A previous Act, the San Jose Scale Act, was in existence, but this only empowered the Federal Department of Agriculture to fumigate vegetation liable to be infested with the San Jose Scale. The value of the San Jose Scale Act is obvious from the fact that, so far as we know, the San Jose Scale has not been introduced since the passage of the Act into regions other than those in which the Scale was already present when the Act came into force, from which it naturally spread. It was seen, however, that, for the work to be effective, the Department should have wider powers, and should not only be empowered to fumigate stock entering, but should have the powers to inspect such stock as was deemed necessary, and also to inspect nurseries, orchards, etc. This power was obtained under the Destructive Insect & Pest Act, which provided for the fumigation of nursery stock and other vegetation, or for its inspection, and also gave the right to enter into nurseries, orchards, etc., and the prescription of treatment which was to be carried out. All vegetation and nursery stock, except certain classes of florists' stock, such as greenhouse-grown plants, herbaceous perennials, bedding plants, etc., is allowed to enter Canada through certain ports only, at six of which, namely, St. John, N. B.; St. John's, P. Q.; Niagara Falls, Ont.; Windsor, Ont.; Vancouver, B. C.; and Winnipeg, Man., fumigation stations are established, where stock requiring fumigation is fumigated before being released from customs, and a certificate of fumigation is given. For stock requiring inspection, a different procedure is necessary. All vegetation and nursery stock, except already mentioned, coming from Europe, Japan, or the States of Vermont, Maine, Massachusetts, New Hampshire, Connecticut and Rhode Island, is inspected, and the method of procedure is as follows:

Any person importing such stock is required to send to the Dominion Entomologist, within five days of ordering this stock, a notice of his order, which must give the name of the consignee, place of origin, quantity and nature of the stock. When the shipment arrives, a notice of its arrival is sent by the Customs officers to the Dominion Entomologist, and the importer and Customs House brokers, also, are required, under the regulations, to send a notice of its arrival. Two methods may then be followed:

Nursery stock entering through certain ports, such as Vancouver or Winnipeg, is inspected at the port of entry, and when it bears a certificate of inspection it is allowed to proceed. Nursery stock entering Ontario through certain ports, however, is allowed to proceed to its destination, and, on notice of its arrival from the Customs officers and the importer, an inspector is immediately instructed to visit the consignee for the purpose of inspecting the stock. Under the regulations, the consignee may not unpack the stock, except in the presence of an inspector, who, after inspecting the same, issues a certificate of inspection.

During the first year of our work under the Act, over two and one-half million plants and trees in Eastern Canada alone were examined, and over three hundred and ten winter webs of the Brown-tail moth were found. When you realize that each of these winter nests or webs may contain two or three hundred young caterpillars of the Brown-tail moth, the importance of this work is obvious. Last season, nearly four million plants were inspected in Canada.

In addition to the fumigation and inspection of imported trees and vegetation classed as nursery stock, a campaign against the Brown-tail moth, which was first discovered in Nova Scotia in 1907, is being carried on by the Federal Department of Agriculture, in co-operation with the Provincial Departments of Agriculture of Nova Scotia and New Brunswick. To those acquainted with the ravages of the Brown-tail moth and Gipsy moth in the New England States, where these moths were allowed to spread, the necessity of taking all possible means to obtain the control of this insect in Canada needs emphasizing. In the State of Massachusetts alone over a million dollars a year are being spent in the attempts to control these two pests. The control will never be obtained by artificial means, and resource has now been made to the importation of the parasites of these insects from the countries in which they are native, in the hope that ultimately, with the aid of man's assistance, nature will be able to obtain the control. In Nova Scotia, the insect is distributed through the four Counties of Yarmouth, Digby, Annapolis and King's, and the suitability of the country to the propagation of the insect is indicated by the fact that in one case a winter nest or web was found to contain over eighteen hundred caterpillars. The insect infests not only the apple, but also wild thorn, rose, oak and other trees. Last spring, for the first time, the insect was found to have spread into New Brunswick from Maine, along the coast of which it is prevalent. We are now making attempts to anticipate its arrival in large numbers by introducing its parasites and establishing these on the native insects before it arrives in force. Its abundance in Nova Scotia and New Brunswick is such that, unless it spreads seriously into the wild bush and forest, we shall be able, I venture to hope, if we leave no stone unturned, to keep it under control, and to prevent it from attaining such dangerous proportions as it has obtained in the New England States.

In the carrying out of this legislation and work against the introduction and spread of introduced pests, the co-operation of all whom the successful carrying out of the work affects is ab-