

"The spading up of the feeding place once or twice per week will bring good results. It will tend to purify the ground. It will induce exercise on the part of the flock, which is always desirable. Especially is this true when the flock is confined in yards, and green feed, so necessary, is difficult to obtain. If grain is scattered as one spades up the ground, much will be buried so deep that hens will not scratch it out, and it will be thrown up at the next spading with green succulent blades that are greatly relished by the flock."

"Be sure to try this method of often spading up the feeding places and watch results in avoiding infectious diseases and improving the general health of the flock by inducing exercise and furnishing palatable succulent feed."

Prevention and Treatment of Black-head and Tuberculosis.

Black-head and tuberculosis are two of the worst diseases affecting fowl. From the report of the Health of Animals Branch we take the following on prevention and treatment of these two dread diseases.

TUBERCULOSIS.

The best means of preventing and treating tuberculosis in fowls is to destroy the entire flock if all have been running together, and to thoroughly cleanse and disinfect the quarters which they have occupied with any good disinfectant, one of which is a five per cent solution of crude carbolic acid. This may be made by adding two teacupfuls of crude carbolic acid to a pail of hot lime wash. This should be applied with a spray pump, brush or old broom to all parts of the house occupied by the fowl. This method of disinfection is suggested, owing to the fact that in tuberculosis or consumption in fowls, as has already been indicated, the bacilli or germs are found in the droppings in great numbers, and these should be destroyed. This action is further recommended as it has shown that fowls dead of tuberculosis if eaten by hogs communicate the disease to them, and it is probable that the droppings would also communicate the disease in a similar manner.

When destroying the birds after it has been demonstrated that tuberculosis is present, some may be suitable for food if an examination of the livers shows no yellow or white spots from the size of a pin point to that of a pea, and there are no nodules or lumps on the intestines. When these lesions are present the flesh cannot be considered suitable for human food.

We have found that eggs from tuberculous fowls may contain the bacilli or germs in the white, and have also demonstrated that they are in sufficient numbers to infect small experimental animals. This suggests a possible source through which tuberculosis may be introduced into a flock, namely by the unsuspecting purchase of eggs from some one who has tuberculosis among his fowl.

The drastic measures above recommended should be followed in all cases when tuberculosis appears among fowl. These measures, while temporarily entailing a considerable loss, will, in the end, prove the most economical to the owner and the community.

BLACK-HEAD.

The placing of poults on clean, sanded board floors in a dry, well-lighted and well-ventilated building with southern exposure, is considered a means of prevention. The continued contact with the floors, however, tends to weaken the poults. I believe it to be an advantage to see that they are quartered on sanded board floors at night, and prevented from ranging in the early morning when the grass is wet. When the birds are older the roosting places should receive consideration. The free application of lime and sulphur wash (that used in spraying fruit trees is suitable) on the ground under the roosting places and the ground on which they are reared two or three times during the season, will destroy any infection on the ground. We believe that persons raising turkeys should be very careful not to introduce the disease when making additions to improve their stock. A turkey tom may be a source of infection when he heads the flock of a neighborhood, or the disease may be introduced with sittings of eggs. The greatest care should be exercised to prevent any possible source of infection reaching a flock or locality now free from disease.

The early diagnosis of the first case is an essential feature in connection with the prevention and treatment. As has already been indicated, it is the early diagnosis that will prove the most essential factor in successful prevention and treatment. The isolation of the first case may many times prevent further manifestations of the disease. From our experiments, however, it appears that there may be chronic carriers of the disease whose droppings are continually infected, notwithstanding the fact that they exhibit very slight if any symptoms. This suggests that isolation may not be as potent a factor in pre-

venting losses as desired, but I believe that it should be enforced to such an extent as will prevent the old and young flocks intermingling after the first appearance of the disease.

There is, to my knowledge, no known specific for controlling the ravages of this affection. The use of muriatic acid in the drinking water was found, some six years ago, to be followed by beneficial results on affected turkeys, which I was trying to raise at my home. Later it was given a further trial, and three years ago a single turkey at the Ottawa laboratory made an apparent recovery. During the past two years we have recommended it as being the best medicinal agent which we know to assist in overcoming the affection. Last year five affected birds recovered after receiving liberal allowances of this acid. One of these, which was later autopsied to determine the presence or absence of lesions, was found to be normal in every respect so far as we could determine.

Some apparently remarkable recoveries have followed the use of this acid, but one cannot hope to bring all affected birds through an attack. I was prompted to use this acid, as I found the contents of the digestive tract in turkeys dead of entero-hepatitis or black-head to be alkaline in reaction.

The acid to be used is a teaspoonful of muriatic acid in a quart of drinking water. This acidulated water should be placed in a porcelain or glass vessel, and is suggested in the hope that the birds may be carried over an acute attack. At the outset when the birds show evidence of being severely affected, it may be of advantage to triple the amount of acid (using three teaspoonfuls to the quart of water) for the first three days. This amount will not injure the turkeys, and may assist them in more rapid, ly overcoming the infection.

They should be confined during this period on dry, sanded board floors in well-lighted and well-ventilated quarters, and allowed access to no other liquid. If allowed to roam they may obtain sufficient water for their requirements from the dew-laden grass or other sources, and, therefore, will not drink the acidulated water. If confined, green food should be supplied in addition to the grain ration.

Post-Mortem Appearances of Fowls Dead from Tuberculosis and Black-head.

Many people are not familiar with the difference between the post-mortem appearance of a bird which has suffered from tuberculosis and black-head. In black-head the lesions are confined to the liver and intestinal tract. The liver is the seat of lesions which appear on the surface, described as circular spots about the size of a five or ten cent piece, yellow or whitish yellow in color, and surrounded by what, to the naked eye, appears to be normal liver tissue. At a point between the lesions and the liver tissue, a ring almost bright red in color is observed. These lesions in the liver, if cut open, may have a uniform color throughout, or, in the more chronic cases, there may be a core in the centre. The intestines may be the seat of a chronic inflammation. The caeca or two blind guts, which lie along the course of the intestine and enter it about six inches from the vent, are usually inflamed, and, in either or both, a single or a number of lesions the size of a walnut are usually present. These lesions are yellow in color, have a thick wall and a degenerated center. There may be, in addition to the above in severe acute or chronic cases, either a localized or general peritonitis with adhesions and fluid in the cavity. Such is the post-mortem appearance of a bird suffering from black-head, given by C. H. Higgins, pathologist of the Dominion Department of Agriculture.

The post-mortem findings in a fowl dead from tuberculosis, when considered in relation to the symptoms and general history, are characteristic. The liver is usually the principal organ affected, and there are lesions, from the size of a pin point to that of a large pea, which are white or yellow in color. The larger lesions, when cut into, give a gritty sensation as the knife passes through them. These lesions are distinct from the liver tissues, and may be quite easily separated from the liver itself. In the more acute cases the liver may be greatly enlarged, even to twice its normal size. This enlargement in chronic cases is noticeable. The spleen is usually involved, the lesions having the same characteristics as mentioned for those in the liver. The enlargement of the spleen is usual, and it may be four times its normal size. The intestines may or may not be involved. When lesions are present, we find nodules from the size of a small pea to that of a medium-sized nut. The minute dissection of these usually presents a free opening into the inside of the bowel, and at this point of entrance there is an ulceration. It is through this opening, from the nodule on the intestine to the interior of the bowel, that the bacilli gain access to and are so easily distributed by the droppings.

Other visceral organs are seldom involved. It is frequently observed that the joints, notably that of either or both hips, may be the seat of tubercular ulcerations. Such an ulceration is the cause of lameness during life.

It will be noted that the lesions on the liver in case of black-head are depressed, while those on the liver of the tubercular fowl are raised.

To Reduce Breakage in Transit.

To reduce the enormous breakage of eggs in transit, which yearly causes a loss of millions of dollars to producers, and raises the price of eggs for consumers, the United States Department of Agriculture, through its Bureau of Chemistry, is conducting extensive experiments to determine the safest manner of packing eggs for long and short shipment by rail. The waste from the breakage of eggs, according to official calculations, in New York City alone in 1909 was over 137,804,768 eggs, or over 11½ million dozen, out of a total consumption in 1909 of 127,689,600 dozens of eggs. In other words, about 9% of all eggs received in New York were cracked, and of these a large number were unfit for food use.

The Bureau, through the Food Research Laboratory, is now engaged in shipping eggs handled in different ways on long journeys to different points in the United States, and is carefully noting their condition on receipt at their destination. Shippers, railroad men, and commission men are co-operating heartily with the investigators. The railroads are claiming that their damage losses are such as to make the carrying of eggs an unprofitable commercial proposition.

In some Cornell experiments, sour skimmed milk was found to be a very beneficial food for chick rearing, and had no hurtful effect when fed from the first meal.

HORTICULTURE.

Outlook for Fruit.

The fruit crop report for June just issued by the fruit division at Ottawa, says that it appears certain that the late frosts will undoubtedly lessen the prospects for all kinds of fruits. The southwestern peninsula of Ontario has suffered more than the Niagara district. All correspondents complain of too dry weather. The apple crop bids fair to be almost as large, if not quite as large, as that of last year.

The Spy and Baldwin are the characteristic apples in Western Ontario, and this year these two varieties appear to be somewhat short. Nevertheless, a good crop is reported generally. Eastern Ontario and Quebec is a region of small orchards, not too well cared for, and for two years has suffered severely from the ravages of the Tent Caterpillar. Even the crop that has set in many cases will scarcely mature on account of the weakened condition of the trees; in fact, in many of the smaller orchards, perhaps more than 50 per cent. of them, the trees have been completely defoliated. Those orchards that have been well sprayed and well cultivated have a good crop. It will be a difficult matter to make any helpful estimate of the number of these orchards, but speaking generally this district will have a light apple crop. The Annapolis Valley, on the contrary, is likely to have a better crop than last year. The only adverse condition there was the rather cold and somewhat dull weather during the blossoming period, which may interfere with pollenization. Spraying and cultivation are quite general in this district.

The plum crop has been injured by frosts in Ontario, and plums have set only fairly well in British Columbia. The commercial peach-growing districts have been little damaged. A large crop is expected. Early peaches are not so promising as later varieties.

Cherries are likely to be a medium crop only. Strawberries are reported a light crop in nearly all districts in Ontario, and the frost also did a great deal of damage to early potatoes.

The Tent Caterpillar in Eastern Ontario, Quebec, and New Brunswick is still the feature of the season. The infestation appears to have worked its way west as far as the Georgian Bay district. British Columbia also complains of some serious local infestations. The infestation of last year has had its effect. One implement dealer in Montreal reports having sold 187 spraying outfits this spring, or as many as in any previous four years of his experience. Many other reports show that spraying is being done on account of the Tent Caterpillar where it was never done before.

The Codling Moth is not yet in evidence. Bud Moth evidently is becoming a serious menace in orcharding. Cutworms are worse than usual, and many correspondents report the White Grub (larva of the June beetle) as doing serious injury in strawberries. In British Columbia and parts of Quebec, the Aphis is reported troublesome.