

CONTROL OF PULLORUM DISEASE IN POULTRY

By F. C. BOBBY, Superintendent of Poultry Husbandry, Wellington.

DURING the past five years the Department of Agriculture has pursued a campaign of testing poultry breeding flocks for pullorum disease. Considerable success has been achieved during this period, but a still greater response from poultry producers is needed if the desired control of this disease is to be effected. The progress indicated in this survey of the work carried out so far should act as an inducement to those who have yet to accept blood testing as essential. The information will also be of interest to poultry producers who have tested their breeding stock in past years.

PULLORUM disease is common in all poultry-producing countries. Fowls and turkeys are commonly affected, but ducks and geese are resistant and infection is rarely recorded. Pullorum is normally a disease of young chickens and frequently results in heavy mortality during the first 10 days of brooding, but serious losses among adult birds have been recorded. Fortunately serious trouble among grown birds has not been recorded in New Zealand so far.

Method of Transmission

The disease is caused by a bacterium known as *Salmonella pullorum* and infection may be spread in a number of ways between chickens or adult stock. The most important method of transmission, however, is from the breeding hen to her chicks through hatching eggs, but misunderstandings about this still exist.

A hen may be affected with pullorum disease in her ovary and yet show no outward sign of suffering from this disease. Such a hen will appear normal in all respects, may have an excellent egg production record as a pullet, and will in consequence be included in a breeding pen on merit. Yet the hatching eggs from this bird are likely to contain the disease organisms and, should they hatch, the chicks may die from pullorum disease. Chicks so infected from their mother are not only likely to die but are also a source of infection for healthy chicks. In this way a batch or brood of apparently healthy chickens may



Fig. 1—Taking the sample of blood.

become infected. The chance of an outbreak of pullorum disease among chickens is directly influenced by the number of infected or "carrier" hens in the breeding flock.

No Scouring in Adult Birds

Pullorum disease was originally called B.W.D., bacillary white diarrhoea or white scour. These terms refer to the disease as it affects chickens, in which it produces a white diarrhoea or scour, but this condition does not apply to adult birds. In both male and female adult birds the disease organisms are usually located in the sexual organs and consequently do not cause scouring. The belief is still held by some poultry producers that their breeding birds are free from pullorum disease because no signs of a white scour have been observed.

Though "carrier" hens cannot be detected by outward appearances, fortunately it is possible to identify infected birds by a comparatively simple and efficient test and thus prevent them from being included in a breeding pen. By this test the Department has been able to identify thousands of "carrier" hens, most of which would have been included in breeding flocks.

All communications about blood testing should be addressed to the "Poultry Instructor, c/o the Department of Agriculture," at one of the following centres:—

Auckland (three instructors);
Hamilton (one instructor);
Palmerston North (one instructor);
Hastings (one instructor);
Wellington (two instructors);
Christchurch (two instructors);
Oamaru (one instructor);
Dunedin (one instructor).

No effective treatment for chickens suffering from pullorum disease is known, but in any case it is obvious that prevention by removing the "carrier" birds is the soundest method of control.

Method of Testing

The method of testing birds in New Zealand may be described briefly as follows:—

A drop of blood is obtained from the comb of the bird to be tested by snipping a very small piece of comb with scissors (Fig. 1). A drop of what is termed pullorum antigen is placed on a clean glass slide or plate (Fig. 2), and to this is added the blood drawn from the comb (Fig. 3). The two are mixed by gently tilting the glass slide (Fig. 4). The glass slide is placed on top of a hot water tank, as it is desirable that the blood and antigen be kept at about blood heat. Within about a minute it is possible to decide from the appearance of the blood and antigen whether the bird being tested is infected with pullorum disease. If the bird is not infected, the spot on the glass slide remains unaltered, but if infection is present, the mixture of blood and antigen clears, leaving clumps of cells in the liquid. These clumps are clearly visible, as the antigen contains a purple stain which colours the clumps and leaves the surrounding liquid clear.

Fig 5 shows tested blood from a healthy bird and an infected bird. Birds which are infected and react to the test are termed "reactors" and are the "carrier" birds referred to previously.

Officers of the Department are responsible for carrying out this test, and any poultry producer wishing to have his birds tested should apply in writing to the poultry instructor for his district.