Tuberculosis of Fowls

By ROBERT GRAHAM and E. A. TUNNICLIFF

A brief statement of the cause of this disease, how it may be recognized in a flock, and how it may be combated.

Chickens in the final stages of tuberculosis are weak, their combs and skin are yellow, they lose flesh and are unthrifty, have swollen joints and are lame.
A microscopic, rod-shaped organism known as *Mycobacterium avium* causes tuberculosis in chickens. This shows the organism, stained red, from the liver of an infected chicken. It is magnified 1,040 times.
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Tuberculosis is a common disease of chickens in Illinois and in some localities is regarded as one of the most destructive plagues of the poultry industry. It is spread by the intermingling of healthy and infected flocks and thru the sale of apparently healthy but infected chickens and eggs for breeding and hatching. Altho tuberculosis seldom is suspected until the flock is badly infected, the prevalence of the disease in some districts of the state demands the united efforts of flock owners and veterinarians if it is to be held in check and eventually eradicated. Swans, geese, and ducks are resistant to the disease but it is common to both chickens and turkeys.

A microscopic organism known as Mycobacterium avium is the cause of tuberculosis in chickens. This organism has many of the characters of the ones which cause the disease in man and cattle, but extensive investigations have shown that the avian, human, and bovine types are distinct in many respects.

Tuberculous infections in man, cattle, and fowls are associated with their specific type of organism in a majority of cases. However, the human type is not always confined to man or even to mammals, nor the avian type to birds, while the bovine type commonly occurs in swine and occasionally other animals, not excluding man. On the other hand, the existence of tuberculosis in men, cattle, and poultry on the same premises cannot be taken as evidence to prove that the avian type of the disease can be transmitted to other species of animals. From a practical viewpoint, however, every precaution should be taken to prevent swine, and even calves, from associating with tuberculous chickens. As an added precaution the eggs from chickens known to be infected and tuberculous carcasses of fowls should not be used for food, even tho thoru cooking destroys the infectious character of these materials.

Thrives in Dark, Damp Places
Infected chickens may spread the disease by discharging the organism in the feces and from open lesions in the skin or joints. In rare cases, the disease may spread by the discharges from the nasal passages and the mouth. The infection survives in damp places protected from the sunlight and gets into the intestinal tract of other chickens thru feed and water. From the intestinal tract it enters the circulation and localizes in the liver or other parts of the body. Insanitary conditions, such as overcrowding, improper ventilation, and lack of sunlight in the houses pave the way for the spread of the disease. Infected laying hens
may transmit the organism of avian tuberculosis thru the egg. Healthy flocks often contract the disease by associating with infected chickens

![Image of the liver in chickens]

**Fig. 2.—The Liver Is the Most Common Seat of Tuberculosis in Chickens**

This organ may be greatly enlarged and imbedded with yellowish white tubercles varying in size from a pin point to a hazelnut.

or by eating uncooked tuberculous offal of poultry. Sparrows and other flying birds and drainage streams may possibly carry the disease from farm to farm.

**Symptoms Often Obscure**

Tuberculosis may be present in the flock for weeks or even months before any symptoms are noticed. The final stages of the disease are
TuBERCULOsis OF FowLS

marked by weakness, paleness of the comb, skin, and mucous membranes; loss of flesh, unthriftiness, swollen joints, and lameness. The appetite usually remains normal until a few days before death. Mature chickens rather than young stock die from tuberculosis, altho it is probable that chicks hatched from infected eggs die during the first few weeks of life before the disease is recognized.

**Advanced Stages Easily Recognized**

Advanced stages of fowl tuberculosis usually are not hard to recognize when an autopsy is made. However, it is necessary to use the microscope and find the tuberculosis organism in suspicious lesions before a positive diagnosis can be made. The tubercles, or tuberculous nodules, in chickens look very much like the cheesy nodules of tuberculosis in other animals. The liver and spleen are primarily infected in fowls, rather than the lymph glands, as in cattle and swine.

**Tuberculosis Centers in Liver**

The most common seat of the disease in chickens is the liver. This organ may be greatly enlarged and imbedded with yellowish white tubercles varying in size from a pin point to a hazelnut. The spleen often is irregular in shape and covered with whitish yellow tuberculous nodules. Lesions of tuberculosis occur less frequently in the lungs, the ovaries, and the kidneys of chickens than they do in other animals. If the intestinal wall is involved, small tubercles may be scattered over the intestines and supporting membrane, while large tubercles in the wall of the intestine may be accompanied by ulcers on the inner lining.

In some cases nodules on the outer covering of the intestinal wall and liver resembling tuberculosis may be caused by parasites or tumors and should not be mistaken for tuberculous lesions. On the other hand, there is a type of tuberculosis in chickens known as the Yersin type, which is not accompanied by the formation of nodules. When the characteristic lesions cannot be found, a definite diagnosis of tuberculosis depends on finding the organism with the aid of the microscope. The Laboratory of Animal Pathology and Hygiene of the College of Agriculture, University of Illinois, is prepared to help farmers who do not have the necessary equipment for doing this work. A fee of $1.00 is charged to partly cover the cost of materials used in making the diagnosis.

**Medicines Entirely Useless**

Medicines are entirely useless in treating fowl tuberculosis. Prevention is the only successful method of control. Healthy chickens should not be allowed to come in contact with infected flocks, and uncooked
Fig. 3.—If the intestinal wall is involved, small tubercles may be scattered thickly over the intestines and the supporting membranes

garbage containing poultry scraps should not be fed to chickens. Eggs used for hatching should be bought only from flocks that are known to be free from the disease.

Since tuberculosis has been found in sparrows that have died or been caught near infected poultry yards, the part which flying birds may play thru their feeding habits in carrying the disease from flock to flock should be recognized and guarded against. The possibility of rats, mice, and drainage streams carrying the virus of avian tuberculosis from farm to farm should not be lost sight of as one means whereby the disease may be introduced.

In tuberculous flocks all chickens which react to the tuberculin test, as well as those which are known to be infected, should be destroyed. Yards, houses, coops, and feeding troughs should be cleaned thoroly and disinfected.

Sunlight Checks Tuberculosis

Since direct action of sunlight destroys the tuberculosis organism, poultry houses should be built to admit the most sunlight. Hot lye
water (one pound of lye to 40 gallons of water) applied with a broom will aid in cleaning houses, while 3-percent cresol (U. S. P.) is a reliable disinfectant. It may be applied with a spray pump.

Infected lots should be plowed and sown to crops. In addition to disinfecting poultry houses and disposing of infected chickens, owners should take special care to see that young chickens are kept away from mature stock and placed on fresh ground. The practice of marketing all chickens more than two years old from flocks that have been infected should be followed to guard against a recurrence and development of the diseases. This is in line with the practice of selling old hens because their laying power decreases as they get older.

The relatively short productive life of domestic fowls makes it practicable in badly infected flocks to entirely restock without great cost, inconvenience, or delay, altho infected chickens should not be sold for food. Healthy stock should not be brought on the premises for a few months after the infected stock has been disposed of and the houses and lots cleaned and disinfected.

Valuable assistance and information often may be obtained from local veterinarians in controlling infectious diseases of this kind.

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**FIG. 4.— THIS ROOSTER GAVE A POSITIVE REACTION TO THE TUBERCULIN TEST, AS SHOWN BY THE ENLARGEMENT OF THE LEFT WATTLE**

The tuberculin test is recommended as an aid in detecting tuberculosis in chickens. In giving the test, avian tuberculin is injected between the layers of the skin of the right or left wattle with a hypodermic syringe. The presence of the disease is indicated if a circumscribed swelling develops at the point of inoculation within 48 hours. The test is harmless and healthy chickens do not react. The value of the test in detecting tuberculosis is dependent largely on the skill of the operator. Veterinarians should be employed to apply the test.