

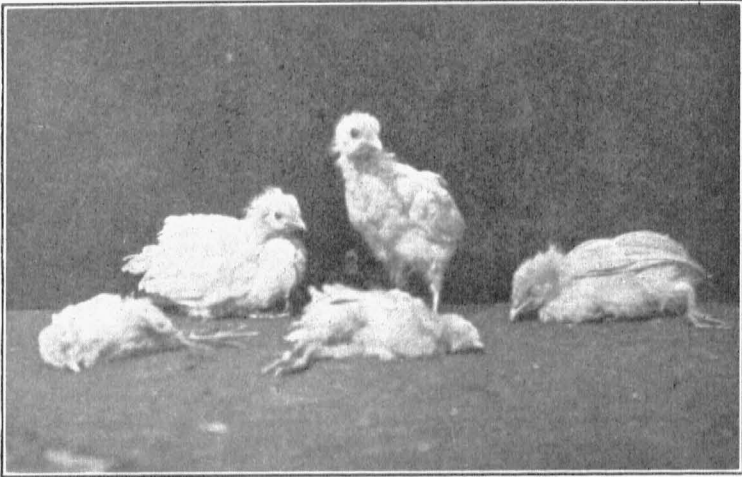
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Coccidiosis in Fowls



A group of chicks affected with coccidiosis. A microscopic examination of the droppings of each one of these birds showed the coccidia in large numbers.

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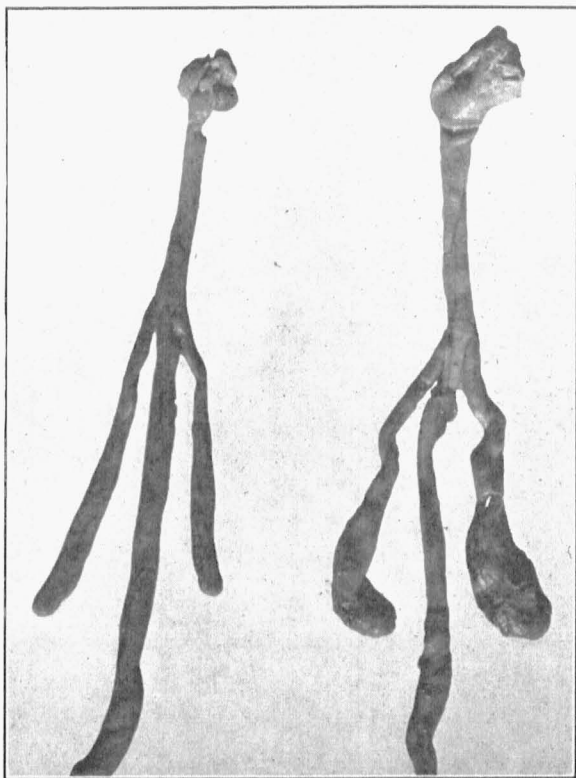


Fig. 2.—(At right) The blind pouches and adjacent parts of the intestines of a normal bird.

(At left) Diseased pouches of a bird, showing distension caused by cheesy core contained in the pouches. This is more often seen in the chronic form of the disease.

Coccidiosis in Fowls

A. J. DURANT

Coccidiosis is undoubtedly the most common disease of young chicks, with the single exception of pullorum disease (bacillary white diarrhea). Mature birds are sometimes affected with a chronic form of coccidiosis. It is not unusual for it to cause heavy losses in young turkeys also.

Unless an early diagnosis is made and treatment provided, heavy losses will occur. It is most prevalent in the spring and summer months. This is due to two facts: (1) the chicks are at a susceptible age during that time, and (2) the warm, damp spring weather is favorable for the development of the coccidia from the resting form into the infectious stage.

CAUSE

Coccidiosis is caused by a very small animal parasite that can be seen only with the aid of a microscope. This parasite is called *Eimeria avium* and develops in the inner lining of the intestines causing irritation and inflammation of varying degrees.

In young chicks, the portions of the intestines most commonly affected are the first six inches of the organ next to the gizzard and the blind pouches (ceca). In mature birds the entire length of the intestines may be involved.

NATURE OF THE PARASITE

The complete life cycle of the parasite is very complicated and since knowledge of this is unnecessary for a paper of this nature, only a simple outline giving the necessary information for practical control measures will be given.

The eggs or resting stage of the parasite are passed out of an infected bird in large numbers. After these egg-like bodies have remained in a warm, damp soil or an unclean brooder house for three or four days they have reached the infective stage. Chicks feeding over infected ground take up the infection with the food and in a few days develop typical symptoms of coccidiosis.

SOURCE OF INFECTION

Contaminated soil and brooder houses are probably the most common sources of infection, though the disease may be carried to a flock on clean ground by pigeons, sparrows, soiled shoes of persons walking over contaminated ground. The parasite lives over from one year to

the next so that the disease is likely to occur year after year on the same ground. Adult birds may serve as carriers of the disease to contaminate clean grounds. Chicks may contract the disease by running in orchards or fields that have been fertilized with chicken manure within the last two years. The disease is not, to our knowledge, transmitted through the eggs from a carrier hen to the baby chicks.

SYMPTOMS IN YOUNG CHICKS

In very young chicks ten days to three weeks old, usually the first indications of coccidiosis are ruffled feathers, and an inclination to gather close to the stove as if chilled. Closely following these symptoms, blood may appear in the droppings. The disease may then spread rapidly through the brood until fifty to seventy-five per cent are showing signs of the disease. In older chicks, the symptoms are not so pronounced. They may appear slightly droopy, have ruffled, soiled plumage accompanied by a white or watery diarrhea. The birds also have a general unthrifty appearance. In chicks ten days to two weeks old the course of the disease is very rapid, and the birds die in from one to three days. Birds seven to eight weeks old usually die in four or five days. In general, the older the bird the longer it lives

Another symptom of coccidiosis is a condition known as coccidial roup. Birds from one to three months of age are the ones more commonly observed with these symptoms. Birds affected with this form of coccidiosis appear to have roup and the general symptoms are swollen heads, the eyes are closed and there is a swelling and accumulation of material around the eye-balls. Pressure on these swellings will cause a milky-white semi-solid material to be pressed out between the eyelids. This may be mistaken for ordinary roup but is different in one important particular and that is that in coccidial roup or roup due to coccidiosis there is no odor accompanying the swelling. The milky-white material and lack of odor will help one to distinguish this from ordinary roup since in ordinary roup we have an offensive odor and the material is a dirty yellow in color with a cheesy consistency. It sometimes happens that coccidial roup will be the first symptom noticed in a flock and for that reason the poultrymen should have this information in regard to this form of the disease; otherwise it may be mistaken for ordinary roup.

GROWN BIRDS MAY BE AFFECTED

It is not unusual for grown birds to become affected with a chronic form of coccidiosis. As a rule, only a limited number in a flock will contract the disease. In affected adults, there is a loss of appetite, pale comb and wattles, wasting away, and often paralysis of the legs. The sick birds may live for weeks.

CHANGES OCCURRING IN THE ORGANS OF AFFECTED BIRDS.

The changes that are found on examination of birds dying from the disease are usually in the intestines. The most constant changes are found in the blind pouches (ceca).

In young chicks in which a bloody diarrhea is a marked symptom, the blind pouches contain a mass of bloody material and the walls of the intestines are severely inflamed. Both pouches are usually affected. In the more chronic form the pouches are distended and filled with a hardened yellowish-white mass—the center of which is a cheesy material of a dirty yellowish color.

In the early stages of the disease, the part of the intestine located next to the gizzard and extending down about six inches (duodenum) shows severe inflammation of the inner surface.

In grown fowls, the changes are not as marked as in younger birds. A chronic inflammation of the intestines is usually the only gross change observed.

HOW TO TELL THE DISEASE

Bloody diarrhea is a sure sign of coccidiosis and is usually seen in very young chicks. In case this is not present, as is often the case, a microscopic examination of the droppings or of the material found in the blind pouches of the dead chick will reveal a large number of the coccidia, and definitely establishes the diagnosis. Another finding upon which considerable dependence may be placed is the presence in the blind pouches of the hardened core already referred to.

It is not possible to diagnose the disease definitely in adults without a microscopic examination, though the disease may be strongly suspected if the symptoms already described are present.

In case of a suspected outbreak of coccidiosis, it is well to remember that chicks are very seldom affected with this disease under ten days of age. The author has diagnosed hundreds of cases and has never observed this disease in chicks younger than ten days old. This fact will be of assistance in telling the difference between coccidiosis and pullorum disease (bacillary white diarrhea). In general, the former attacks chicks later in life, after they are fourteen days old or older. Typical pullorum disease causes the greatest losses from the seventh to the ninth day after hatching.

CLEAN GROUNDS AND SANITATION AID IN CONTROL

Movable brooder houses should be thoroughly cleaned, using hot lye water (one pound of lye to forty gallons of water). All parts should be as clean as a kitchen floor and then be allowed to dry. Using one tea-

cup of Compound Cresol to each gallon of water, the interior of the house should then be thoroughly soaked with this disinfectant. The house should be moved to clean ground, well away from the other poultry houses and runs. If possible the range selected should be fifty to seventy-five yards away.

Select, if available, a slope that will be well drained. An effort should be made to have a range on which a three-year rotation can be practiced. This will mean that three sites will be needed, moving the brooder house to one of the sites each year, which will allow each plot to be vacant for two seasons.

MANAGEMENT OF OLD RUNS TO HELP CONTROL COCCIDIOSIS

In cases where the runs are limited and it is not possible to furnish clean range each year, the ground should be plowed deeply and seeded heavily with wheat, oats or rye. The droppings should be removed frequently and the floor and litter kept clean and dry. A warm, damp litter in the house is conducive to the development of coccidiosis, even though the chicks are not running on the ground.

WHAT TO DO IF THE DISEASE APPEARS

Coccidiosis may sometimes invade a flock, even under the best conditions of sanitation. If young chicks are placed on grounds where the disease has occurred the year preceding, coccidiosis is almost certain to make its appearance in the flock anywhere from fourteen days to three months after the chicks are put on the grounds.

Fortunately we have a successful method of combating this disease. Beach of California has found that by feeding a special ration containing a large percentage of some form of milk that the disease can be quickly controlled and cured in a flock. That is, a flock may be back to normal in appearance in ten to fourteen days after the treatment is instituted. It should be emphasized, however, that even though the milk treatment is applied to an infected flock, unless the other suggestions can be carefully carried out that the chicks will not respond so well to the treatment. This treatment will work especially well where an early diagnosis is made and the measures recommended are applied soon after the disease makes its appearance.

There are two systems of feeding which are very successful in the control of this disease. Either one will work equally well and it depends on the farmer's situation as to which one may be applied most economically.

Ration 1 consists in supplying the chicks with sour milk or buttermilk constantly, removing the mash and water and giving an abundance of greens. A small amount of chick grain should be fed in the morning, and a somewhat larger amount at night. The chicks should have a full

crop of grain when they go to roost. Allow no other feed than suggested during the feeding treatment.

Ration 2 consists in feeding a mash containing 40 per cent of dried milk. A reliable and successful formula consists of

20 pounds of bran
20 pounds of shorts
20 pounds of corn meal
40 pounds of dried milk (either dried skim milk or dried buttermilk)
4 pounds of bone meal and
1 pound of table salt

Keep this mash before the chicks constantly with an abundance of greens and allow plenty of water but feed no grain.

Continue one of these methods of feeding for seven to ten days or until the condition of the flock has decidedly improved, then gradually increase the amount of feed until the chicks are again on a normal ration. In case there is a reappearance of the affection, the flock should be put back on one of the suggested rations for sick birds. After a brood has had the disease and has made a recovery it is not likely to be troubled with it any further that season, except for occasional chronic cases in adults. The birds seem to acquire some immunity to the disease after one attack.

TREATMENT FOR GROWN BIRDS

In adult birds affected with coccidiosis it is best to carefully cull the flock and remove all birds that are showing signs of the disease. These should be placed in quarantine quarters and put on one of the rations suggested in the foregoing. These birds will make a nice recovery, as a rule, unless too badly affected at the time they are taken for treatment. By culling the flock and treating only those affected, considerable expense will be saved and good results may be obtained.

KEEP AFFECTED CHICKS WARM

Chicks affected with coccidiosis require more warmth than normal ones and an abundance of heat should be supplied, not only under the hover but also in the brooder house. If this is not done, loss from crowding under the hover or in corners may result, even in the day time.

On a large commercial poultry farm where coccidiosis was present, an experiment was conducted to determine how many of visibly affected chicks could be cured by the milk treatment. In this experiment the importance of having warm comfortable surroundings for the sick chicks was well illustrated. About 200 chicks were put in a brooder house on the 40 per cent dried milk ration and a careful check was kept on the chicks. As often as chicks recovered from the disease they were removed and other sick chicks replaced them so that the number remained

about the same at all times in the brooder house. It was found that on cold days where the fire went out in the brooder stove that the mortality rate was high and that where favorable conditions were maintained that the losses were practically nothing, and most all of the birds made a good recovery.

The floors should be kept dry and clean. Visibly sick birds should be isolated from the apparently healthy ones unless the majority of the flock is showing signs of infection. Where there is doubt as to the diagnosis of the disease, consult your local veterinarian, or send live, affected birds by parcels post, special delivery, or prepaid express to the Veterinary Department of the Missouri Experiment Station at Columbia.

There is no medicine that can be recommended for the treatment of coccidiosis at this time. It is much better to watch the flock closely for any signs of the disease and depend on the milk treatment rather than any other method. No measure is going to be successful in the control of coccidiosis unless careful attention is given to sanitation. The three-year rotation for the prevention of coccidiosis should be carried out in preference to any other methods of prevention and this system can be carried out on most Missouri farms.

SUMMARY

1. Coccidiosis causes heavy losses annually in young chicks in this State.
2. The parasite which causes the disease lives over in the soil from one year to the next.
3. Contaminated soil and unclean brooder houses are probably the most common sources of infection. Adult birds, pigeons, sparrows, and soiled shoes of persons walking over contaminated grounds may also serve as carriers.
4. Bloody droppings are a sure sign of coccidiosis. If this indication is not present, a microscopic examination of the droppings will show the parasites.
5. Clean grounds and sanitation will aid in the control of the disease. A three-year-rotation of grounds should be practiced.
6. In case of an outbreak of coccidiosis, the feeding of a special ration containing a large percentage of some form of milk will quickly control the disease.