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A Natural Infection of Quail by B. Tularense.

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Studies indicating that several species of game birds are susceptible to experimental invasion by *B. tularense* have previously been reported by Parker and Spencer[1] and by Green and Wade.[2, 3] These findings indicated that a careful search might reveal natural cases of tularemia in birds.

Parker has recently demonstrated that experimental tularemia may be produced in quail by feeding infective material. The infections so produced were fatal. In a report of this work, Parker[4] cites 2 cases of human tularemia in which the infection may have been obtained from quail.

The experimental demonstration and subsequent isolation of *B. tularense* in a quail dying in the wild is here reported. A flock of 10 or 12 quail living near the outskirts of Minneapolis was under the observation of near-by residents. On February 17th, at the height of Minnesota winter, the covey, which had apparently decreased in number to 6, was accidentally flushed. One bird was unable to fly and was picked up. A second flew blindly into the side of a building but resumed flight in another direction. The 4 remaining birds were described as having an unsteady and unnatural flight. The captured quail was taken inside a house and died during the night. The next day it was brought to the laboratory for examination. As the carcass was frozen, necropsy was delayed until the following day. This quail is designated as No. 1.

On February 21st, another resident of the community followed the tracks of a single quail and found the bird lying dead at the bottom of a snow bank. He buried the carcass, which was already frozen, in the snow bank. Three days later it was picked up, but was not brought to the laboratory for necropsy until February 26th,

[1] Parker, R. R., and Spencer, R. R., *Sixth Biennial Report of the Montana State Board of Entomology*, 1925-1926, 30.

[2] Green, R. G., and Wade, E. M., PROC. SOC. EXP. BIOL. AND MED., 1928, xxv, 515.

[3] Green, R. G., Wade, E. M., and Kelly, W., PROC. SOC. EXP. BIOL. AND MED., 1928, xxvi, 260.

[4] Parker, R. R., *Public Health Reports*, in press.

5 days after the bird was found dead. This quail is designated as No. 2.

Quail 1. At necropsy this quail was found very emaciated. Careful examination failed to show macroscopic lesions in any of the organs. A single whip worm was found in the intestine. A guinea pig was injected with emulsified liver subcutaneously in the left inguinal region. A pigeon was inoculated intramuscularly with the same emulsion. The guinea pig died on the sixteenth day after inoculation, with the left inguinal nodes greatly enlarged and infiltration in the subcutaneous tissues of the left inguinal region. The right inguinal region was normal. The liver and spleen were thickly studded with nodules typical of tularemia. Pieces of liver and pieces of spleen from this guinea pig were emulsified and inoculated into 2 guinea pigs each, all 4 guinea pigs dying on the fourth day following, with lesions typical of tularemia. From one of the guinea pigs inoculated with liver, *B. tularense* was isolated in pure culture. The characteristics of this culture appeared typical, and it was further identified by specific serum agglutination. The pigeon inoculated with liver from quail No. 1 did not develop any symptoms. Its blood contained no agglutinins 18 days after inoculation, and at necropsy, 19 days after inoculation, it appeared to be normal.

Quail 2. Upon necropsy quail No. 2 appeared to be in a state of good nutrition. Careful examination failed to show any macroscopic lesions or the presence of parasites. An emulsion of liver injected into a guinea pig failed to produce glandular enlargement or symptoms of illness, and upon necropsy, three weeks later, the guinea pig appeared to be normal.

Of the 6 quail observed after disease was known to be present in the covey, 2 only are known to have died, but none of the others have since been seen. The fact that the pigeon did not develop any disease upon inoculation is evidence that no infectious disease other than tularemia was present in quail No. 1. The failure to isolate *B. tularense* from quail No. 2 cannot be considered a conclusively negative finding in view of the lapse of time between death and necropsy. The presence of *B. tularense* in one bird of a covey which apparently was afflicted with disease and was known to be diminishing in size, would indicate tularemia as the probable destructive factor.