

CIRCLING DISEASE OF SHEEP.

Specimens were received from several small outbreaks of this condition. The lesions previously noted—namely, foci (in the brain) of polymorphs and lymphocytes and perivascular cuffs—were consistently present. In several cases organisms were present in the foci, and where this occurred they were always of the same appearance—short gram-positive rods. One living affected sheep was forwarded, and from its brain pure cultures of an organism of this sort were obtained. Intracerebral inoculations of brain emulsions from this sheep, and of pure cultures of the organism, into hoggasts induced typical circling disease and similar histological changes. Intravenous injections of the organism into sheep did not set up the disease, but similar injections in rabbits caused an acute meningitis, the organism being present in enormous numbers in the inflamed meninges.

It is hoped that further cases will be available during the coming season in order to discover whether this organism is constantly present; to settle the question as to whether there is a filter-passing virus infection to which the organism is secondary, and also to continue the search for the path by which the organism enters the brain of affected sheep. One attempt to discover whether a filtrable virus was present in affected brain was made during the past season, but was inconclusive.

FOOT-ROT IN SHEEP.

An opportunity arose in the autumn to observe an outbreak of foot-rot in a flock of sheep. The trouble appeared suddenly in a large percentage of the flock as an inflammation of the skin between the two digits. This skin appeared red, then appeared a little damp, then later white and dead; or in many cases an increase in growth of the epithelial layer had taken place, and there was bleeding, scab, and pus formation. In such cases the horn of the inner side of the digit became underrun with a highly noxious pus, and this pus progressed right underneath the sole of the digit. From the commencement the sheep were intensely lame, and consequently lost weight. The organisms found present were mixed cocci and large numbers of *B. necrophorus*. No spirochaetes were found at any time in the outbreak.

Treatment of the feet was attempted with a variety of pastes and fluids, but without much beneficial effect. The best agent apparently was strong copper sulphate solution. Where the sole was underrun no treatment was of any avail, but paring as far as possible, followed by soaking in the copper sulphate solution, might have helped to some extent. Where the scalded condition alone was seen, drying powders helped. The majority of sheep took ten to fourteen days to heal. Some six to eight weeks later a number of sheep which had had an underrun sole again became lame, this time with an abscess formation at the coronet, evidently through an upward movement of the organism *B. necrophorus*, which was almost pure. Many of the worst affected sheep were left with deformed feet and a cankerous condition of the toe of the digit, a condition which does not seem to heal completely afterwards.

The part of the outbreak which was of most interest was the striking way in which sheep in different paddocks, but particularly the flock, suddenly showed the scalded condition. It appeared to be dietetic, yet there was no flush of grass, and the sheep had been on fairly bare pastures. One week before the condition was noticeable the flock had been on a comparatively rich paddock, but then were depastured on a very poor paddock for three days, and finally put on a medium type of pasture, dry but green and not long, but top-dressed.

On three occasions material from a scalded or eroded area was placed between the claws of sheep and kept in position. Some cases were scarified, but no sheep became infected, and if *B. necrophorus* or any other organism was at the bottom of the condition—i.e., if the disease were contagious—this method of infection should have been effective. The bacterial invasion, therefore, would appear to have been entirely secondary.

RYE-GRASS STAGGERS.

Rye-grass staggers in sheep (and cattle) showed up in several districts where the pasture had been particularly dry, and where rain had fallen a short while previously. Blood and spinal fluid analyses from cases and brain sections showed no abnormality. It seems possible that one is dealing with the Vitamin A deficiency plus ergotism complex which has been noticed in ergotism in human beings.

TUBERCULOSIS IN SHEEP.

Two cases have come to hand during the year, arising in meat-works. One was preserved on receipt, and so was useless for inoculation purposes, but the second was inoculated into experimental animals and was proved to be actually a tubercle bacillus invasion of the sheep. Further cultural work is being attempted to type the organism. It is curious that two cases should crop up within a month of one another and be the first cases of tuberculosis in sheep ever recognized in this country.

COCCIDIOSIS.

Two further cases of coccidiosis have occurred in lambs, but no losses suspicious of this disease in acute form have occurred, the specimens having been received from meat-works only. The farms of origin were without suspicious mortality in lambs.

DERMATITIS FOLLOWING DIPPING.

A further case of thickening and hardening of the scrotum of rams, with atrophy of the testes, has been seen, with every suspicion that the dermatitis oedema was the result of dipping with an arsenical dip incorrectly mixed.

MYCOTIC DERMATITIS.

Mycotic dermatitis has been recognized during the year in specimens sent from Lincoln College. Inspectors of Stock have been, following instruction, sending in specimens of wool, and two cases have been received, one from Otago and one from Marlborough. The condition cannot be considered prevalent, but it needs watching and, where possible, eradicating. Inspectors are alive to this.

LIVER NODULES.

A condition where small white spots are seen on the surface of the liver of lambs was given attention. Histological work, and the examination of livers in meat-works suggests that the fibrous areas in question are the result of a cysticercus invasion of the liver early in life. Occasionally the cysticercus is able to pass through the liver and become an adult in the peritoneal cavity of the animal, on other occasions the cyst dies on the surface of the liver, and at other times beneath the surface of the liver. Usually it would appear that the cyst died and was reabsorbed, leaving as a mark of its former presence old burrowings and a small damaged area of the liver, which appears as a white spot on the surface but actually shows damage of the liver to some depth in section.