

ACTINOMYCOSIS.

A commencement has been made to classify all specimens of actinomycosis coming in for examination, and valuable results should be available for the next annual report.

SHEEP DISEASES.

ANTE-PARTUM PARALYSIS.

Further work has been carried out on this problem during the year.

(1) Biochemical work in samples received from field cases and in samples from experimental cases on the Laboratory farm. Results are given later in the Biochemical Section report.

(2) Trial of insulin, adrenalin, and glucose on the course of the disease. No curative results were obtained.

(3) *Experimental work at the Laboratory.*—(a) Three sheep, chosen for condition and the possibility of twin lamb pregnancy, were placed in a shed about two to three weeks before lambing was expected, and fed on a very small quantity of hay only. In ten days one sheep developed typical ante-partum paralysis with the usual chemistry of the blood and urine. A second sheep became paralysed but not comatose, and remained down until lambing one dead and one live lamb. No albuminuria was present in this case, and possibly the fact that the kidney did not become involved may have accounted for absence of further symptoms. The third ewe lambed normally. In all these cases there was an increase in acetone in the urine as soon as starving commenced, and on occasion a trace of diacetic acid. No sugar was ever seen, nor did albumen develop until ante-partum paralysis commenced. This experiment will be repeated.

(b) Two sheep on the farm developed ante-partum paralysis naturally. The flock was badly checked by shortage of feed and foot-rot, and that no doubt led to the onset of the disease in the one case. The other was a sheep which had been watched carefully and whose blood had been analysed over a long period. She was kept at first on good pasture to increase the blood T.N.P.N., and then on very poor paddocks to find how low the T.N.P.N. would fall normally. Ante-partum paralysis resulted.

It seems from observations that two different dietetic factors may set up the trouble, the one a check, the other overfeeding, both setting up a fatty infiltration of the liver and so curbing the action of that organ. By feeding correctly, ante-partum paralysis is prevented.

CASEOUS LYMPH-ADENITIS.

Results of work performed in 1930-31 were published in the annual report for that year. In this report a continuation of the work is given.

(1) Those sheep which had been naturally infected and brought to Wallaceville for examination have been carefully watched over the year. Abscess rupture has occurred in one ewe only during that time, twice from the inguinal and twice from the right precrural glands. At the end of the year all the sheep of this group were killed with the following results: Two with large encapsulated abscesses palpated without change on each occasion for two years still showed pure growth of Preisz Nocard bacillus. Five with glands slightly fibrosed and showing very little damage except for a brown discoloration near the periphery. These glands would have passed palpation in flocks and in the meat-works, and would scarcely have been recognized on incision. One with new abscesses which had developed in the mediastinal, bronchials, and right prescapular. This case is one of very great interest in that the right supramammary gland had shown an abscessed condition and was opened and evacuated on the 19th October, 1930. The suggestion now is that the bacillus of Preisz Nocard entered the blood-stream and infected the thoracic glands as described. Such being the case, an earlier suggestion of the possibility of opening glands and evacuating the contents by farmers themselves is not justified. The result of this experiment is to indicate that sheep whose abscesses have once discharged and thoroughly evacuated do not tend to produce further abscesses. Whether it would be feasible to return those where such rupture has occurred and which appear to be normal by palpation, to the flock, is a point which might be considered where large numbers of breeding-ewes are involved.

(2) The remaining two sheep, of six which had been fed with cultures of caseous lymph-adenitis, were killed after twelve and twenty months respectively, and were found to be infected only in the retropharyngeal glands. In the latter sheep the pus was becoming calcareous.

(3) A wether which in last year's report was described as having a growing abscess in a gland following infection from shear cuts was killed at the end of the year. A bronchial gland, right precrural, left prescapular, and left inguinal were all infected with a pure growth of Preisz Nocard, evidently the result of the heavy infection from infected shears.

(4) Four lambs were fed from the 21st October to the 12th January weekly with 5 c.c. of culture from New Zealand strains, and it is proposed to keep these for two years, running with the flock. Four other lambs fed on three occasions with actual pus from affected sheep have not as yet shown any lesion. No post-mortem examinations have been made, as these lambs are being used in other work.

Lesions from lambs killed in meat-works were examined during the season, with a result that of those lesions actually seen 8 were positive, 3 indefinite, and 33 negative cases of Preisz Nocard infection, the negative cases being due to *Bacillus pyogenes ovis* or to mixtures of that and staphylococci, &c.

PULPY KIDNEY DISEASE OF LAMBS.

Work was carried on by Mr. Gill this past year at Oamaru instead of Ranfurly, as better arrangements could be made there for bacteriological examination of the intestinal contents of affected lambs. A scarcity of material was again encountered, but enough was obtained to confirm last year's finding—namely, that there was a highly potent toxin in the small gut of affected lambs, the nature of which suggested a bacterial origin—and to extend it by showing that, as was anticipated, this toxin was still present after passing the material through a bacteriological filter. Cultural examination gave several strains of an organism closely allied to *B. welchii*. On further studying these strains at Wallaceville it has been found that, given suitable cultural conditions, they produce toxins that are not neutralized by *B. welchii* antitoxin.

It is considered that absorption of toxins produced by these organisms is the cause of the disease. Work is being pushed on as rapidly as possible, and it is hoped shortly to publish the details of this aspect of it, together with the mass of data that has been obtained regarding the epidemiology of the disease. This latter is considered of great importance, as the incidence of the disease appears to be negligible unless the lambs have been predisposed by some digestive disturbance—generally brought about by a too copious supply of milk combined with inadequate exercise.