

Photosensitization.—The exceedingly warm summer with abnormal pasture conditions suggested the possibility of the occurrence of "facial eczema" in stock in view of outbreaks having occurred in past seasons of similar climatic conditions. With this in view, an article by Mr. McIlwaine, District Superintendent, Wellington, was published in the February issue of the *Journal of Agriculture*, in which the factors leading up to the disease were discussed and advisory measures suggested from experience gained in the 1935 outbreak. In so far as cattle are concerned, very little of the trouble appeared until after the close of the period dealt with in this report (31st March). Immediately subsequent to this, however, one of the worst outbreaks as affecting cattle which has occurred in New Zealand unfortunately took place in the Waikato. This will, however, necessarily be more fully dealt with in the next annual report.

SHEEP.

In some districts the season was not a particularly good one for fat-lamb raising, this being reflected in the large percentage of lambs graded "second," particularly at freezing-works in the Wellington district.

Facial Eczema (Photosensitization).—I regret to have to record the autumn of 1938 as one in which probably the most extensive outbreak of the condition in sheep known as facial eczema has occurred, the disease being of particular magnitude in the South Auckland district. The summer was an exceptionally warm one, with dry conditions of feed in January. This was followed by heavy rainfalls in the Waikato during February, with resulting rapid growth of grass, the disease making its appearance towards the end of February. In March weather conditions in South Auckland were particularly dry and there was a tendency for cases of facial eczema to lessen. Unfortunately, at the end of March copious rains fell, which by effect on pasture-growth precipitated a serious outbreak of the disease during the month of April. The trouble was also experienced in other centres of the North Island—Poverty Bay, Hawke's Bay, Manawatu, Wanganui, and Taranaki districts all experiencing outbreaks of the disease, but not at all so serious as the outbreak in South Auckland.

As mentioned in the section dealing with this disease in cattle, an article appeared in the February issue of the Department's *Journal* dealing with the disease and referring then to the great possibility of its occurrence in the autumn, as in the light of past experience the abnormal seasonal conditions prevailing were likely to produce conditions of pasture which would precipitate the disease. The article contained reference to the last outbreak which occurred in 1935, with particular regard to the Manawatu, and included reference to the best-known means of reducing losses from the disease by feed-management. Experiencing by the 1935 outbreak, many farmers in the Manawatu were successful in greatly reducing their losses this year.

The outbreak during April will not be fully dealt with in this year's report, which includes the period up to and ending 31st March. It can be stated, however, that an extensive research organization has been set up in the Waikato to fully investigate every aspect of the disease. Full inquiry into the condition includes the pathology and biochemistry of the disease in the animal, chemical analysis of pasture, complete survey of pasture conditions by agrostologists, &c., the whole involving what must necessarily be a long-term investigation.

The committee of workers includes officers from the Department of Scientific and Industrial Research, and the work is being co-ordinated by Mr. J. F. Filmer, B.V.Sc., of the Wallaceville Laboratory staff. From the farmers' viewpoint, representation on the committee is effected by the inclusion of three members of local farmers' organizations, which gave helpful co-operation during the outbreak.

Full and continued research is most necessary in order to elucidate the factors which evidently precipitate the disease in summers of abnormal dryness. It is definitely a disturbance of digestive and liver functions in the animal, which are brought about by certain conditions of pasture. We are indebted to the South African workers on this disease at Onderstepoort for much valuable light on its causation, and the latest report from there which deals with the isolation from the plant of the heterogenic factor which produces liver disturbance and jaundice in the animal. This aspect is being closely followed here to ascertain its application to New Zealand conditions.

Lamb-mortality in Canterbury.—The heavy losses in lambs and hoggets which have been occurring in Canterbury for some seasons past called for a survey of the position. During the year two departmental Veterinarians have been detailed to carry out investigations into the cause of the mortalities. Mr. Knott being located at Christchurch and Mr. Ewer at Ashburton, whilst Mr. Jones, from the Wallaceville Laboratory, was stationed at Christchurch to carry out parasitological work. The departmental officers are collaborating in the survey with officers of Lincoln Agricultural College.

The survey involves a detailed study of all the conditions obtaining on farms on which losses occur. So far the investigation has shown that some losses from entero-toxæmia (pulpy kidney) occur in much older lambs than are usually attacked by this disease, and even adult sheep have died from this cause. Experimental vaccination has been carried out, and results will be closely watched. The survey has also already thrown some light on the question of parasitism in lambs and ewes. In considering the parasite problem the pasture conditions are being studied in relation to the nutritional aspect, which undoubtedly plays an important part. It has been decided to commence a wide range of pasture analyses in Canterbury, and for this duty an officer of the Chemistry Section will be made available.

Infectious Entero-toxæmia (Pulpy Kidney).—During the year the vaccination of ewes as a means of conferring immunity to their lambs against pulpy kidney developed to a greater extent, the greatest extension taking place in the Dunedin district, where the vaccine was used on fifty farms, some 27,000 ewes being vaccinated. Vaccination was also carried out on a number of farms in the Canterbury district, and Mr. Blair, District Superintendent, Christchurch, reports the results to be satisfactory.