

When cattle were used to control pasture he found lambs were in a normal state of health.

Mr. Josland reports that the blood of affected lambs showed only a slight anæmia with a normal colour index. Judging by controls the blood calcium, magnesium, NPN, leucocyte count and differential leucocyte count were normal. Inorganic phosphorus and total solids were slightly lowered. There was also a slight degree of imperfect calcification of bones.

MAIROA MORTALITY IN SHEEP.

Opportunity was taken to analyse a few samples of blood and bones from sheep showing anæmia and cachexia, typical, it was said, of the sickness said to exist amongst Mairoa sheep. In blood the values for calcium, magnesium, and non-protein nitrogen were within normal limits. Hæmoglobin and red-cell counts were markedly lowered. The ash-value for bones in one case were 54.3 per cent. and 56.1 per cent. in the heads of the femur and humerus respectively. It has been found by Mr. Josland that these two points of the bones are the first two to show a lowering in ash-content when defective mineralization is occurring.

Post-mortem examination of the Mairoa sheep under discussion revealed many *Bunostomum* species present, and with the analyses suggests that the Mairoa trouble is largely parasitic and not due to deficiencies of minerals.

PIG DISEASES.

One hundred and twenty-nine specimens were comprised very largely of lungs, spleen, and blood from pigs which had died from doubtful cause. Many such mortalities were considered to be due to *B. suispestifer*, and that organism was as often present in lung lesions as in pericarditis as was the *Pasteurella* organism. A certain amount of testing by the agglutination reaction on blood was carried out to find adult carriers, but much more of this type of work should be done.

POULTRY DISEASES.

Owing to lack of facilities very little investigational work with diseases of poultry has been carried out. One condition known as leukemia was, however, given serious consideration by Mr. Webster, and experiments are still incomplete. Mr. Webster reports:—

An outbreak of fowl-leukemia occurred in one pen of mixed White Leghorn and Black Minorca pullets. The pen in question contained in the vicinity of one hundred and eighty birds of the two breeds, in approximately equal numbers. In the course of six weeks seventeen cases of leukemia occurred among the Minorcas, but not a single case was seen in the Leghorns. Attempts were made to transmit the disease by various methods—(a) Feeding minced neoplastic tissue; (b) intra-venous inoculations of emulsified neoplastic tissue; (c) tissue-grafts of tumour beneath the liver capsule; (d) intra hepatic inoculations of tumour emulsion. These transmission experiments were undertaken in both Minorcas, which were presumably susceptible, and in Leghorns, which under natural conditions appeared immune. The tumour tissue used was taken from leukemic birds slaughtered in an advanced stage of the disease, and the transfers were made with a minimum of delay. The results were consistently negative, save in one Leghorn pullet fed minced tumour. This bird died a month later from generalized leukemia. It appears extremely doubtful, however, if this isolated case can be regarded as a successful transmission, and much more probable that it was a spontaneous case of the disease already present in the early stages when the bird was selected for experimental purposes.

Microscopic sections were prepared from liver, spleen, kidney, ovary, and bone marrow in every case examined. A study of these sections showed that in every instance the leukemia was of the lymphocytic type. There are three types of this disease recognized—viz., leucocytic, erythrocytic, and lymphocytic. Other workers state that the two former are definitely transmissible, whereas the latter is not. The work undertaken at Wallaceville seems to support the latter statement, if the case of the disease in the experimental Leghorn bird is considered as spontaneous and not transmitted.

The blood picture of the affected birds showed very little abnormality until the latest stages of the disease, when an increased white-cell count was manifest. At this stage, however, the clinical symptoms are obvious. Blood counts were made on all the birds in the affected pen when the disease first became apparent, but they did not afford any information as to which birds were later to succumb.

According to some workers, an hereditary factor plays a part in the appearance of this disease, and with a view to watching this possibility the Laboratory has taken over a hundred chicks hatched from eggs laid by Minorcas in the affected pen. These birds have now reached the laying stage, but so far no cases of leukemia have appeared.

It has been recently claimed by an American worker that the disease is not transmissible and is not neoplastic in the true sense, but is in the nature of a hyperplasia of lymphoid tissue in response to the stimulation of continued infection with one of the *Salmonella* group. An experiment is at present under way to test this hypothesis. Minorca cockerels have received daily intravenous injections of 1 c.c. of a broth culture of six different *Salmonella* strains over a period of three weeks, and are now under observation to see whether leukemic lesions will manifest themselves.

Considerable green-leg was evident in the early summer in young birds due to overcrowding and exceptional warmth.

MISCELLANEOUS.

Vitamin D assay of several New Zealand fish oils has been completed by Dr. M. M. MacOwan. The results expressed in international units per gram are as follows, and may be compared with good cod-liver oil which would contain 100 international units per gramme: cel-body oil, 47; ling-liver oil, 500; groper-liver oil, 2,250 red-cod-liver oil, 10; whale-body oil, nil. The Vitamin A and D contents of fresh grass and of hay have been assayed biologically as the petroleum ether extract of grass and hay. Fresh grass is higher in Vitamin A than hay, while the Vitamin D content is the same in both instances.

Ragwort Alkaloid.—An alkaloid prepared by Dr. J. R. Hosking of the Dominion Laboratory from *Senecio jacobaea* was fed to guinea-pigs in varying doses over a period of four weeks, but no liver lesions were produced. A further alkaloid similar to that isolated by Manske and called Jacobine, is under trial.

Smut Feeding Trials with Rats.—Smuts supplied by Dr. G. H. Cunningham of the Plant Research Station, from New Zealand forage plants, are being fed to rats, and the toxic effect noted with a view to extending trials to larger animals, should any of the fungi be found toxic.

THE FARM.

With the assistance of a carpenter the farm staff succeeded in building a six-compartment concrete and wooden pigsty for experimental work with young pigs. The numbers of stock carried on the farm have increased slightly, following the better pasture provided by the newly laid down paddocks. The last of the five plots in native grass has now been ploughed up and put down in permanent English pasture. The health of stock has been good, and all animals came through the dry weather very creditably. The Farm Overseer, Mr. J. Evans, in spite of difficulties, has kept the farm in very good order.

A fire swept over the hill, burning five hundred young trees.