

HUNTERVILLE DISTRICT.

It was recently brought under notice that certain areas near Rangiwahia gave disappointing results with breeding-stock, abortion in both ewes and cows being common, and apparently endemic. On visiting the locality it was found that the pastures were poor, having been down for forty years, with very little top-dressing. Analyses of soils and pastures are expected to throw light on the trouble, which appears to be due to phosphate deficiency. Top-dressing with phosphates and the feeding of a bonedust lick is recommended.

SOUTHLAND.

Investigation has proceeded of a deficiency disease among sheep in the Morton Mains district, near Invercargill. The general symptoms are allied to bush sickness. Analyses of soils, pastures, and animal-tissues so far indicate possible deficiencies of phosphate, iron, and iodine. A difficulty in the way of an iron-deficiency hypothesis is that the soils are loams, a texture much finer than anything so far found associated with the recognized bush-sick areas. Further investigation is planned for the coming year.

PULPY-KIDNEY DISEASE IN SHEEP.

At Ranfurly an experiment in feeding to ewes a lick containing sulphur in the form of gypsum was carried out to ascertain what effect it might have in preventing the development of pulpy kidney. Other work on pulpy kidney included the analysis of a large number of samples of milk from ewes in the North Island whose lambs were affected.

B. C. ASTON, Director.

THIRD ANNUAL REPORT OF THE MINERAL CONTENT OF PASTURES INVESTIGATION AT THE CAWTHRON INSTITUTE.

During the period under review work has proceeded actively both in the field and in the chemical laboratory.

I. TITANIUM IN NEW ZEALAND SOILS AND PASTURES.

Considerable time has been devoted to an examination of the titanium content of a number of New Zealand soils and pastures. At the time when this investigation was commenced it was thought possible that titanium compounds, present in pasture grass or in dust on the pasture, might interfere with phosphate assimilation in the animal-body. The small amounts of titanium found in pasture have given little support to the possibility of titanium ingested by the animal interfering in any way with phosphate assimilation, and actual feeding experiments have definitely shown that sheep are little affected by comparatively large quantities of titanium in their feed. One of the interesting features of the titanium determinations in both soil and pasture was the close correlation between percentages of iron and titanium found in both soil and pasture samples. No correlation of a similar nature was found between titanium and manganese. It seems possible that a low percentage of titanium in either pasture or soil may prove of help in identifying areas where bush sickness is likely to occur.

II. BUSH SICKNESS AT GLENHOPE.

In the spring an investigation was commenced on certain pastures at Glenhope where bush sickness has been reported for a number of years. An attempt has been made to determine the seasonal variation in the composition of pastures causing bush sickness, and to compare the composition of these pastures with that of healthy pastures in the vicinity. A number of sheep also was placed on a typical area of bush-sick pasture in order to study the incidence of this ailment. The sheep did well until the end of November, but then began to go off rapidly. During January two sheep were badly affected, another two were slightly affected, and the fifth remained in fairly good condition. By the middle of February one sheep had died, another was so badly affected that it was killed, another two sheep showed definite symptoms of bush sickness, and the fifth still remained comparatively healthy.

Iron ammonium citrate was used as a drench two or three times a week on two sheep affected with the ailment. Since the commencement of drenching with iron ammonium citrate great improvement has taken place in the condition of the sheep. They are more active and can now be worked with dogs without difficulty. The skin and gums, formerly showing little tone and scarcity of blood, have markedly improved in appearance. The wool, formerly lustreless and of a dead appearance, has begun to show more life and lustre. A definite break in the wool has occurred corresponding to the commencement of drenching with iron ammonium citrate, and the new growth of wool shows lustre and elasticity. The wool of the sheep which has not received iron ammonium citrate continues to show a dead appearance, and little growth of wool is taking place.

The following symptoms appear to be typical of bush sickness at Glenhope: Brightening of the eyes at an early stage in the incidence of the ailment, followed by weeping of the eyes and loss in weight. The sheep begin to be weak on their legs, and cannot be driven. The skin and gums are pale in colour and the heart-beat is accelerated. The wool is of a dead appearance and without lustre, and retardation of growth takes place. When badly affected, watering of the eye stops, but the sheep are very soft and flabby about the mouth. According to farmers in the Glenhope locality, sheep frequently begin to go off in three or four weeks after being placed on bush-sick pastures. The worst period for incidence of bush sickness is the late spring and midsummer period, when growth of pasture is soft and rapid. From April to October, when feed is relatively hard and dry, little trouble from bush sickness is experienced.