

ANIMAL EXPERIMENTS.

The experiments at Glenhope and the Sherry Valley have given further proof of the great value of cobalt-salt licks and of cobalt top-dressing in overcoming sheep ailment. At Glenhope sheep very seriously affected with bush sickness have not only completely recovered, but have been maintained in perfect health for a period of fifteen months when grazed on a typical unhealthy pasture top-dressed with superphosphate containing 2 lb. of cobalt chloride per acre.

In the Sherry Valley the use of a salt - bone-meal lick containing 15 oz. of cobalt chloride per ton has enabled ewes with lambs to be carried successfully for two seasons.

At Morton Mains, Southland, experiments have been continued on the value of cobalt and cobalt plus nickel drenches and the value of pasture treatment with cobalt salts. The inclusion of nickel in the drench solution has been associated with greater live-weight figures than those from the cobalt-drench treatment, but there is still some doubt as to whether the difference in live-weight from the two treatments is statistically significant. Excellent results have been obtained by the use of 10 lb. of cobalt chloride per acre for pasture top-dressing. Lambs have been carried on through a second season on top-dressed pastures, and very satisfactory live-weight increases have been made. Corresponding lambs on non-top-dressed pastures have suffered severely from Southland ailment, and a high percentage of deaths has occurred.

Owing to dry weather experienced during the past season in Southland the conditions have not been favourable for the conduct of animal trials. No sickness has developed either in the treated or the control groups of sheep.

At Westport cobalt drenches have given wonderful results in overcoming ailment in calves grazing pastures established on pakihi land. There is considerable evidence to show that the cobalt-drench dose for calves on pakihi pastures must be increased above 7 mg. cobalt per week. With this dose some calves failed to progress satisfactorily. When the dose was increased to 36 mg. cobalt per week, calves seriously affected with ailment made a rapid recovery. On the different blocks of the pakihi reclamation scheme of the Lands Department all classes of cattle have shown great benefit as a result of using a combined lick containing equal parts of Nelson soil, dairy salt, and steamed bone-meal supplemented with cobalt chloride at the rate of 16 oz. per ton.

COBALT STATUS OF NELSON PASTURES.

A number of typical Nelson pastures have been sampled regularly during the season for cobalt estimations. The analyses show that the unhealthy pasture at Glenhope has a very low cobalt content. Figures as low as 0.01 p.p.m. of cobalt have been obtained for this pasture. The cobalt content appears to vary somewhat during the season, but an average value of 0.03 p.p.m. cobalt probably represents fairly well the status of this pasture. Healthy pastures in other parts of the Nelson district have given values ranging mainly between 0.10 p.p.m. and 0.20 p.p.m. cobalt on the dry basis.

COBALT STATUS OF WESTPORT PASTURES.

A number of samples have been obtained from pastures established on the pakihi lands near Westport, and also from typical alluvial soils of the Buller and Orowaiti rivers. The pakihi pastures showed an average content of 0.05 p.p.m. cobalt, while pastures on the alluvial soils ranged from 0.16 p.p.m. to 0.33 p.p.m. cobalt on the dry basis. One interesting feature of the analytical data for the pakihi pastures was the low copper content of certain samples collected from the peaty types of pakihi land. The copper figures suggest that on certain areas copper supplements in addition to cobalt may be required to give the optimum effect.

COBALT STATUS OF SOUTHLAND PASTURES.

Samples of pasture have been collected regularly from replicated plots with a view to determining the seasonal variation in the cobalt status. In addition, a commencement has been made with the sampling of pastures for cobalt estimations over an extended area of Southland. The presence of an ancient loess soil as a predominant type in the Gore-Invercargill district and the discovery that cobalt salts overcome sheep ailment at Morton Mains on this soil type suggests the possibility that cobalt deficiency occurs in varying degrees of intensity over a large area of pasture land.

Cobalt estimations, so far available, suggest that pastures on the loess type of soil contain only 0.05 p.p.m. cobalt on the dry basis. Pastures on the alluvial soils of mixed origin have given much higher values for cobalt.

COBALT STATUS OF ASHBURTON PASTURES.

Preliminary work has been done on selected pastures in the Ashburton County. The results so far obtained indicate a fairly satisfactory cobalt status of the pastures and suggest that stock ailment—so prevalent in February and April of this season—was not caused by cobalt deficiency.

INFLUENCE OF COBALT TOP-DRESSINGS ON THE COBALT STATUS OF PASTURE.

Several experiments with different cobalt compounds used at varying amounts per acre have been established both in the Nelson district and at Morton Mains, Southland, to determine their effect over an extended period in increasing the cobalt content of the pasture. In every case notable increase in the cobalt content of the pasture has taken place. In one experiment where 10 lb. of cobalt chloride was used per acre, the cobalt content, eighteen months after the application of the cobalt top-dressing, was still double that of the untreated pasture. The results so far obtained suggest that comparatively small applications of cobalt salts, if renewed each season, will effect a marked increase in the cobalt content of the pasture, thereby providing a satisfactory cobalt supplement.