A B S T R A C T

SOIL AND MINERAL SUPPLEMENTS IN THE TREATMENT OF BUSH-SICKNESS,

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Investigations on bush-sickness reported in Bull, 32 of the N.Z. Department of Scientific & Industrial Research showed that an ailment among sheep at Glenhope, Nelson, resembled closely typical "bush-sickness," The sheep were anaemic and chemical analysis of' blood samples showed great deficiencies of total solids and of iron,,

Analyses of' pastures taken from healthy and unhealthy pastures in the same district showed that the iron content of the healthy pasture was frequently little better than that of the unhealthy pastures, This anomaly suggested that the soil contaminating pasture provided a supply of iron which was valuable to stock.

With a view to securing further information concerning the value of soil and other iron compounds in overcoming "bush-sickness," a series of field trials was initiated at Glenhope in the spring of 1931, and continued during the 1932 season.

During the first season favourable progress of the sheep by the use of limonite and of Moutere Hills soil was obtained in the earlier part of the season. Later in the season, however, the sheep went off in condition.. It was considered that the reason for this was that the sheep were not taking the licks over the whole season.

In 1932 the sheep were drenched With various' iron compounds, (1) Onekaka limonite, (2) Nelson soil, from the Cawthron Institute grounds, and (3) iron ammonium citrate. A fourth group without drench served as a control. All the sheep grazed in rotation two paddocks known to be associated with considerable mortality from "bush-sickness." The drench experiments were commenced early in October 1932 and were continued with but little modi'fication until the middle of April 1933 when certain sheep affected with "bush-sickness" were drafted out from the control and limonite groups. At this date one of the sheep receiving iron ammonium' citrate was not doing well, but the remainder were quite healthy. All the sheep receiving Nelson soil were perfectly healthy and were in fat condition.

The following table gives an idea of the course of the live-weight increase or decrease throughout-the season.

	1932		1933				
Group	Oct. 12	Nov. 29	Feb. 16	Apr. 16	Apr. 16*	May 15	June 18
Control ...	70.8	85.7	86.3	85.6	90.2	89.0	78.5
Limonite Ore...	65.1	83.9	84.6	75.9	81.0	81.3	73.0
Nelson Soil ...	68.1	84.1	90.4	96.6	96.6	98.8	93.1
Iron ammonium citrate	65.3	75.3	85.3	88.3	95.4	101.5	96.5

* After. elimination of sick sheep..

The foregoing live weights show that the limonite and control groups'havc declined rapidly in condition towards the end of the season, while the sheep on the 'Nelson soil and iron ammonium citrate. drenches have shown only the small decline in condition characteristic of winter grazing,

The most outstanding feature of these experiments is the great success which has attended the use of Nelson soil, It is reasonable to expect that many other New Zealand soils will prove equally valuable. Soils therefore may be just as important as the pastures, growing thereon in supplying certain essential constituents required by stock,

The failure of Onekaka limonite in these Glenhope experiments, however, suggests that the supply solely of suitable iron-containing compounds is not sufficient for the prevention of ailment. No suggestion at the present time can be offered concerning the value of other - possibly minor - constituents in overcoming "bush-sickness" at Glenhope, but it must be emphasised that our knowledge of the exact role of elements such as iron, copper, manganese etc. in the formation of haemoglobin is incomplete, and *the* presence of very small quantities of certain elements may have a profound effect on the proper functioning of the animal system,