

preference for them. Probably the best results are not obtained until the second and subsequent seasons after green-manuring and regrassing. The Analyst's Assistant (Mr. C. R. Taylor) at Rotorua reports as follows :—

Iron Treatment of Stock.—Apart from the very comprehensive trials with various iron compounds designed to overcome bush sickness in sheep at Atiamuri, the results of which have already been supplied in all detail (see *Journal* for March and June, 1932), a very large measure of useful work has also been accomplished at Tokoroa and other iron-deficient districts by way of feeding dairy cows with a limonite lick. The results, without exception, have been astounding and beyond all expectations, so much so, in fact, that settlers are looking forward to the coming season with the utmost confidence. The Tokoroa district alone has consumed well over twelve tons of limonite since January and not one single complaint has so far come to hand, but praise for the treatment is universal. To quote an extract from one settler's letter which may be taken as typical of the general feeling hereabouts, will no doubt be of interest: "I commenced feeding limonite about the end of January, 1932, and the stock are looking splendid. There are also twenty Jersey cross calves on the place, the first year I have succeeded in rearing a decent bunch. Looking fine. . . ." One could quote case after case similar to the above related by enthusiastic users of the limonite treatment.

The future of limonite is tremendous, and its importance in the economic life of the farmer on affected country is so great that no stone should be left unturned in making its usefulness known as widely as possible and without undue delay.

WAITOMO COUNTY (VOLCANIC LOAM).

Resulting from a spring season exceptionally conducive to mortality in sheep in the Mairoa district, a somewhat disastrous experience attended the sheep experiments in this locality. Even a good top-dressing with lime and super, although showing marked improvement in its effect in mitigating the malnutrition, was not sufficient to stop the mortality. The experiments were then taken over by the District Superintendent, Live-stock Division, Auckland, under the control of a committee consisting of the Director-General, Assistant Director-General, and the Chief Chemist, which had been set up on the 5th January, 1930, owing to the necessity of economizing in supervision expenses, but despite expert veterinary attention it was found necessary to terminate them. Lack of facilities in the way of cattle to control surplus feed probably contributed to the result, and it was thought advisable, especially as some of the paddocks top-dressed with mixtures (5-2 and 3-2) of lime and superphosphate, had only been stocked for a very short time, to commence a new series of experiments, using sheep from an outside district (Taihape), and arranging for adequate control of the growth with cattle. This has now been done. Sampling of the replicated plots was undertaken by a visiting officer subsequent to dispensing with the local assistant.

A large number of samples from the replicated enclosed pasture plots at Mairoa and Kopaki have been analysed, the results of the latter being reported in the fourteenth quarterly report to the Empire Marketing Board. The most striking features at Kopaki were the high contents of phosphoric acid and lime, the low iron content, the small seasonal variation, and the lack of marked response to top-dressing. The application of carbonate of lime depressed the manganese content slightly, but any effect on the already low iron content was masked by contamination due to soil particles which could not be entirely eliminated.

Estimation of sulphur in pasture samples from the experimental paddocks at Mairoa revealed no significant increase in sulphur content as a result of manuring with gypsum (sulphate of lime).

Bush sickness on soils of similar origin to those at Kopaki (Taupo pumice) has been reported in districts adjoining that locality, such as Mangapehi. Analysis of soils and pastures is being undertaken, and a limonite lick has been recommended.

TE POPO DISTRICT, TARANAKI (SANDSTONE).

On thin-volcanic-ash-covered hills of sandstone in the broken country of this district, a considerable mortality has been experienced in very young lambs, and difficulty in obtaining any fat lambs. After consultation, a lick of iodized salt, bone-meal, oxide of iron, and molasses was recommended and found to be very readily taken by all classes of stock. The result was the avoidance of deaths at birth and a much better growth in lambs.

TAIHAPE DISTRICT.

Analyses of soils and pastures from Rangiwahia district show a high lime-requirement and a deficiency of available phosphoric acid in the soil, and a lower lime and phosphorus content in the pasture from the unhealthy northern slopes than from the healthy southern slopes.

MORTON MAINS DISTRICT, SOUTHLAND (ALLUVIAL SILTY LOAM).

Much attention has been devoted to this district owing to the increasing trouble in rearing lambs. Two visits were paid, during December and February respectively, the first just before and the second after the mortality had commenced. A large number of soil and pasture samples were collected for analysis, and a general survey made of the affected area. The collection of further samples is being arranged.

Briefly the history is as follows: The topography of the country is gently undulating, with many boggy depressions growing red tussock. The soil is alluvial, probably deposited in a shallow sea and then elevated, in texture a leached silty loam, overlying gravel of rounded quartz.

Till recently cattle were the stock chiefly grazed, and before phosphatic top-dressing became general were often affected by "Waihi disease" (aphosphorosis or phosphate deficiency). Heavy applications of lime, burnt or ground, were the rule, the pastures being frequently broken up for cropping. When phosphate was adequately applied to the pasture the "Waihi disease" disappeared. With the replacement of cattle by sheep, however, lambs, which previously were got away fat in small numbers, could no longer be reared. On dairy-farms, however, those lambs carried remained healthy, and sick lambs from neighbours' farms recovered. Sickness usually appears in December. Lambs which till