

type hitherto not met with in the Rotorua County, it was found that the creek-waters naturally contained an amount of soluble iron salts sufficient to make the water distinctly chalybeate to the taste. This may be one of the reasons why the stock enjoy such phenomenal health and are so productive in the heart of this poor country.

Physiographical Report.—Arrangements which were made whereby Professor Cotton should examine and report on the physiography of the affected lands were carried out to a certain point, the work then being interrupted by Dr. Cotton's visit to Europe and America. A preliminary report has been received.

OTHER DEFICIENCY DISEASES.

There are, no doubt, diseases due to mineral deficiency other than iron in the North Island, and work has been commenced in three areas entirely detached from the Rotorua and adjoining counties—viz., in Waitomo County (two diseases) and in Otorohanga County.

A series of soil-samples collected in the Ngaroma district have been analysed and reported on. Field experiments in the top-dressing of pasture are in progress on a number of selected farms.

MORTALITY AMONG LAMBS IN CENTRAL OTAGO.

The mortality due to what is known as "pulpy kidney" or renal congestion, occurring in lambs in Central Otago, has been further investigated in conjunction with the Live-stock Division. Additional samples of pasture and soils were obtained during the period of the mortality, and are being analysed. An article giving some preliminary results appeared in the *Journal*. The presence of albumin in some and sugar in other samples of urine from affected lambs was a new feature detected in connection with this trouble.

SOILS.

The soil survey of Rotorua County has been continued and the top-soil map of the southern portion of the county was published in the *Journal*. A subsoil map of the whole county has also been completed for publication. Additional work is required in areas from which only a few samples have been taken, and this will be carried out as opportunity offers.

A further visit was paid to the deteriorated hill country of the Stratford-Whangamomona district, and a series of soil-samples collected for analysis. A considerable number of soil-samples have been collected and are being examined in the Laboratory, with reference to the malnutrition trouble in stock at Mairoa, near Te Kuiti. Samples have also been obtained from other districts in which deficiency in mineral nutrients is suspected.

The event of the year, in soil research, was the First International Congress of Soil Science, held in Washington, U.S.A., in June, 1927. The Congress was attended by the representatives of twenty-five countries, New Zealand being represented officially by Mr. T. Rigg, Agricultural Chemist and Assistant Director of the Cawthron Institute. The work of the Congress covered all phases of soil problems and crop-production, particular attention being given to methods of soil-classification. Special facilities were given to the delegates to visit the principal experiment and research stations and institutions.

A sample of soil from Kenya Colony was analysed, and suggestions as to manurial treatment were supplied. The sample was a clay loam, extremely deficient in total and available phosphoric acid, but well supplied with other plant-foods.

FERTILIZERS.

The number of unofficial samples of fertilizers received from purchasers for comparison with the vendor's invoice certificate is steadily increasing, thirty-four samples having been submitted during the year. In one case (that of a "special mixture") serious deficiencies were disclosed, and a substantial rebate was obtained by the purchaser. Seven samples were received from Inspectors under the Fertilizers Act. In no case did analysis disclose any discrepancy to the prejudice of the purchaser.

In my last report mention was made of the inauguration of a system of examination in London of samples from all shipments of basic slag exported from England and the Continent of Europe to New Zealand. During the last four months of the year samples of fifty-six consignments of slag were analysed at the Imperial Institute, with the following results: Slag with minimum guarantee 17 per cent. phosphoric acid—Complied with guarantee, 42; below guarantee, 4; slag with minimum guarantee, 20 per cent. phosphoric acid—Complied with guarantee, 3; below guarantee, 7. In only two instances, however, was the deficiency greater than 1 per cent. The importers of slag found to be below guarantee were notified of the Imperial Institute's results before arrival of the shipments. The citric-solubility of the basic slag was in all cases satisfactory. In one instance the fineness of grinding was slightly below the minimum guarantee of 80 per cent.

During the 1927 session of Parliament the Fertilisers Act, 1927, was placed on the statute-book. The new Act, which replaces the Fertilizers Act, 1908, provides, among other things, for complete disclosure of the components of fertilizer mixtures, in addition to the usual statement (now simplified) of the chemical ingredients. The measure prohibits the sale under the description of "fertilizer" of any material in respect of which a brand could not be registered under the Act, and provides for a simplified form of registration by vendors who do not import or mix their own fertilizers. Regulations under the Act are now in preparation.

The registration of vendors of fertilizers under the Fertilizers Act has been carried out as in previous years. The altered methods of registration under the new Act will in the coming year involve a considerable increase in the work of checking and certifying the registration of brands, and in correspondence with vendors.