

Valuable information may result from the attempt to correlate the iodine content of the thyroid glands of grazing animals with the soils upon which they have been depastured. A circular has been sent out to Stock Inspectors by the Director of the Live-stock Division, requesting them to forward glands for analysis wherever it is possible to obtain a satisfactory history. It is hoped in time to obtain a picture of the normal iodine uptake for the various districts. This may then be used to indicate the probable need of stock for supplementary iodine in the form of licks.

#### PULPY-KIDNEY DISEASE IN SHEEP.

At Ranfurly an experiment in feeding a lick containing sulphur in the form of gypsum to ewes 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.

#### SOILS.

A rapid survey of the soils of the Mohaka district was undertaken and a report furnished to the Progress Association there on the results of analyses. The soils were varied, comprising fine subaerial pumice on the gentler slopes, papa or mudstone on the steeper slopes where the pumice covering had been removed by erosion, and river-terraces of resorted material. The pumice soils varied from sandy silts to sandy loams, being on the whole finer than those of the Rotorua district, and therefore less likely to give rise to deficiency diseases. Iron was found to be low in the pastures, the immunity of ruminants to iron starvation (bush sickness) up to the present being probably due to the natural change of pasture provided by the papa and river-terrace soils.

A report embodying many analyses of soils from various parts of Taupo County, and South Rotorua County, especially Native lands, was furnished to the Native Department. It is confidently anticipated that the knowledge of the physical and chemical characteristics of soils thus made available will be of great value in bringing pumice lands under settlement. Work on the volume weights of pumice soils has been continued. Ultimately this method may afford another clue to the delimitation of bush-sick lands. A report with analyses was also prepared for the Lands Department on certain areas of the Waotu district, Matamata County, and of South Rotorua County, with the object of aiding in opening new lands for settlement.

For the Cook Islands Department analyses were made of a number of taro and other soils from the Cook Islands. Some of these were practically coral sand, others were from volcanic hills. The outstanding deficiency was of phosphate, but nitrogen and potash were also low in some cases. A soil analysed for the Forestry Department from Parengarenga was found to be very poor and acid and to contain a relative excess of magnesia.

In certain coastal areas of the Hauraki Plains development of sterile patches in the pasture has given rise to some concern. An investigation and analysis of some of these areas revealed several injurious conditions all traceable to the influx of saline water from the drains and subsoil. The lime in the soil has been largely replaced by magnesium and sodium, which occasioned what is known as a "deflocculated" or "puddled" clay with a slightly alkaline reaction. Manurial treatment can afford only a temporary improvement, and the solution must lie in the provision of adequate drainage and the cultivation of those species of pasture plants and crops which naturally flourish under such conditions—*e.g.*, strawberry-clover and rape.

Constant touch has been maintained with the newly constituted Bureau of Soils, Rothamstead, England, and interchange of useful information has resulted. On account of the difficulty sometimes experienced in the mechanical analysis of pumice soils due to the unusual nature of the particles, an analysed sample was forwarded to the Bureau of Soils for test analysis. The results reported confirmed the conclusions already arrived at in this Laboratory, and indicated the need for certain variations from the standard procedure when dealing with pumice soils.

#### LIMESTONES.

One hundred and sixty-four samples of limestone were received for analysis during the year. Great variations are shown in the fineness of grinding of some of the commercial ground limestones. Consideration has been given to the possibility of providing for some means of regulating the quality of ground lime supplied by commercial firms. The field is being explored by the periodical sampling and analysis of the various companies' products.

#### FERTILIZERS.

During the year seven official samples were taken under the Fertilizers Act. Numerous samples have been received from farmers for checking. In the case of one special mixture analyses of samples from different parts of the consignment showed marked discrepancies. Representations were made to the firm, who agreed to exercise closer supervision in future mixings. With this exception, no discrepancies materially to the prejudice of the purchaser were found in any of the samples.

The Inspector of Fertilizers has now got the work of registration of brands thoroughly organized and running smoothly. The question of advertising and propaganda matter, some of which was likely to be misleading to the public, has been the subject of a considerable amount of attention and correspondence. The advisability of making some provision in the Act to regulate such matter is now under consideration.