Samples of uncontaminated pasture from these plots are being obtained whereby it is hoped to secure exact data concerning the variation in mineral content and composition of the pasture with soil-type and manurial treatment.

The occurrence of "wasting" in cattle reported recently at Kopaki confirms the opinion previously expressed that the trouble affecting sheep in this particular area is similar to that experienced on the pumice soils of the Rotorua district.

Wairarapa.—The results of three seasons' work on this area are embodied in a paper which appeared in the *Journal of Science and Technology* for March, 1931. It is there conclusively shown that—

(1) The phosphoric-acid content of the pasture was highest in the summer with greatest rainfall, lowest in that with least rainfall, and intermediate in that with intermediate rainfall, and that the nitrogen content varied correspondingly. The lime content varied in the reverse order.

(2) The general trend of the phosphoric-acid and nitrogen content of the Wairarapa pastures is to increase rapidly to the maximum in the spring, falling with the summer, and reaching the lowest figure in the autumn. Calcium (lime), on the other hand, is lowest in the winter and increases with the progress of the seasons, giving the maximum figures in the autumn.

Taranaki.—A comprehensive report on the second autumn series of pasture-samples from the Taranaki District was incorporated in the Tenth Quarterly Report to the Empire Marketing Board. The fall in phosphoric acid and nitrogen content in the autumn which has been found to be of widespread occurrence was strongly marked. Lime was somewhat more variable though usually showing a considerable increase from spring to autumn. The analyses of the soil-samples taken in conjunction with the pastures have also been completed and will be of use in recording the soil-types of the province.

Marlborough.—During the late autumn of 1930 an investigation was commenced into the nature and causes of endemic "bentleg" in sheep on certain poor danthonia hill country in the Wairau Valley. A poor all-round composition of the pastures was disclosed, but analyses are required at other seasons before coming to a definite conclusion.

As lime and phosphate were both low in the pastures, feeding experiments were instituted to discover which deficiency, if either, was primarily responsible for the disease. Arrangements were made to feed bone-meal and salt to the flock on one of the affected paddocks, and citrate of calcium (lime) and salt in another. The latter was abandoned owing to the sheep refusing to take it. In the former case a report just to hand states, "It has been ascertained that the percentage of lambs found to be affected by the 'bowie' conditions was only about one-fourth as great as that of the preceding season." It must be said, however, that the disease was this season not so prevalent.

Hunterville District.—It was recently brought under notice that certain areas near Rangiwahia gave disappointing results with breeding-stock, abortion both in ewes and cows being common, and apparently endemic. In the locality it was found that the pastures were poor, having been down forty years with very little top-dressing. Analyses of soils and pastures are expected to throw light on the matter, which appears to be due to phosphate deficiency. Top-dressing with phosphates and lime, together with the feeding of a bonedust lick, is recommended.

Southland.—Investigation has proceeded of a deficiency disease among sheep in the Morton Mains district, near Invercargill. The general symptoms are allied to bush sickness. Analyses of soils, pastures, and animal tissues so far indicate possible deficiencies of phosphate, iron, and iodine. A difficulty in the way of an iron-deficiency hypothesis is that the soils are loams, a texture much finer than anything so far found associated with the recognized bush-sick areas. Further investigation is planned for the coming year.

Iodine Deficiency.

Miss B. W. Simpson, on exchange from the Rowett Research Institute, Aberdeen, investigated during the year the distribution of iodine in New Zealand pastures and the animals grazing thereon. In the districts, Fendalton and Tai Tapu (Christchurch), and Karori (Wellington), the maximum iodine content of the pasture occurs in late autumn and winter and the minimum about midsummer. Analyses of a large number of thyroid glands, some abnormal, taken throughout the season 1929–30, have been published. It is concluded that "the iodine content of the thyroids of lambs born and bred on definite areas seems to give a fair indication of the amount of iodine available on those areas."

It has also been shown that—

1. (*a*) Garden plants assimilate an increased amount of iodine when applied to the soil:
   (*b*) The addition of iodine to food grown in the Wellington area and fed to young rabbits improved their rate of growth:
2. (*a*) Additional lime added to the ration of rabbits on a basal ration low in iodine did not promote the formation of enlarged (goitrous) thyroid glands:
   (*b*) A lick containing Kerol, salt, lime, sulphur, bone-meal, and rock phosphate added to the basal ration promoted increased growth in the rabbits as well as reducing the size of their thyroid glands:
   (*c*) The addition of lime alone to the basal ration had little effect either upon the rate of growth or the size of the glands of rabbits:
   (*d*) Large glands with a very low iodine content were produced by feeding animals with food grown on a goitrous area.

The effect of feeding iodine to laying hens has been studied in districts where iodine is deficient. The method is a convenient one of increasing the amount available for human consumption on account of the concentration of iodine that then occurs in the eggs.