A list of the areas upon which mineral deficiencies were known to occur was drawn up and submitted to the Research Council, as follows:—

(1) Pongaroa district, on East Coast: Well-marked phosphate deficiency.
(2) North Taranaki and Norsewood (Hawke's Bay) districts, where "Waihi" disease in dairy cows occurs; also referable to phosphate deficiency.
(3) A large area suspected or known to be affected with iron deficiency (bush sickness) in the Rotorua, Tauranga, and Matamata Counties.
(4) An area in the King-country exhibiting marked lime deficiency accompanied by some phosphate deficiency, and affected by a malnutrition in sheep, suspected to be due to calcium starvation.
(5) Areas in the Nelson District near Glenhope, Sherry River, French Pass, and West Wanganui Inlet, where conditions similar to bush sickness occur in sheep.
(6) Areas in the South Island at Ashburton and the coastal districts of Southland, where a condition in cattle arises similar to the "Waihi" disease of the North Island.

*Distinguished Visitors.*

As a result of Dr. Orr's brief visit to New Zealand in June, 1928, it was agreed that certain work should be done in connection with the pastures on which temporary sterility and more or less allied diseases in cattle and unusual mortality in sheep occurred. That an exchange of one of the workers from the Rowett Research Institute and the Department's laboratory would be arranged, if possible, and that an attempt be made to have the period of the investigation increased from two to five years if the Empire Marketing Board could extend their contribution for that period. All of these three matters have been successfully initiated. Miss Simpson arrived here in exchange in January, 1928, and Mr. I. J. Cunningham left in March, 1929, to take up work at Rowett. The extension of the grant from two to five years has been agreed to by the Empire Marketing Board, and certain work has been begun in connection with temporary sterility and other diseases not strictly within the scope of the term "mineral deficiency" disease, but which, nevertheless, may be influenced by the nature of the food supply.

The visit of Dr. Orr and Sir John Russell to the Australian States and New Zealand had a very salutary effect on the recognition of the importance of chemistry in agriculture.

*Personnel of Staff.*

The officers whose salaries are wholly or in part paid out of the Empire Marketing Board's grant for research into the mineral content of pastures, for the agreed contribution from the New Zealand Government supplementing it, are as follows: Empire Marketing Board's grant—Mr. R. E. R, Grimmett, analyst (part paid); Mr. C. M. Wright, country analyst; Mr. E. C. Boulton, assistant to country analyst; Mr. P. H. Sykes and Mr. F. Thompson, laboratory cadets (part paid); Director of New Zealand grant (part paid). New Zealand contribution—Mr. R. E. R. Grimmett, and Mr. I. J. Cunningham, analysts (part paid).

Mr. Theo. Rigg is making a separate report on the grant to the Cawthron Institute, Nelson (see *N.Z. Journal of Agriculture*, Vol. 38, No. 5, May, 1929—"Mineral Contents of some Typical Pastures in Waimea County").

Mr. Grimmett has been engaged for a great portion of his time in the field, during portion of which he was collecting soil-samples in the pumice lands between Rotorua and Taupo Lakes. He was provided with an assistant, paid out of other funds. It was thought that his salary in future had better be paid out of the General Government fund, although much of his work will be in connection with mineral-contents work; and his salary and expenses will accordingly not be charged against the Marketing Board's grant. Mr. Wright and his assistant, Mr. Boulton, have devoted all their time to the Mairoa and pumice-lands field experiments in connection with malnutrition diseases due to suspected deficiency in pasture. Their salaries and expenses are entirely charged to the grant.

Miss Simpson, of the Rowett Institute, arriving in New Zealand in January, 1929, has been particularly occupied with the analysis of plant and animal specimens with a view to ascertaining whether low iodine content is associated with malnutrition. Samples of thyroids, milk, blood, pasture, &c., are being examined. The average iodine content of twenty-five samples of milk was found to be 44 $\nu$ per 100 c.c. The work has not yet been in progress long enough to enable any general report to be made on this aspect of the research.

*Soil Research.*

In addition to the work more immediately concerned with the composition of pastures, must be mentioned the soil-analyses supervised by Mr. F. J. A. Brogan. Samples have been taken in furtherance of the extension of the soil survey of Rotorua and Taupo Counties, and two papers have been prepared for publication.* This work of classification of the soils will no doubt assist in demarking the boundaries of the bush-sick areas, and so is connected with the work of malnutrition due to pasture deficiency. No part of the expense of this soil-work has been charged against the Marketing Board's grant or the subsidies.

Cases where the pasture has been killed out by poisonous salts in the soil have been investigated, and one paper prepared for publication†; another is in preparation.

The work for the past year has provided additional evidence that where deficiency diseases in stock occur it is not possible to tell by mere inspection of the pasture whether it will or will not support stock in a healthy condition over lengthy periods, although stock may be kept healthy, and even, under certain conditions, fattened, if the period of grazing is restricted to a few months.

* Since published in *N.Z. Journal of Agriculture*, May and June, 1929.
† Since published in *N.Z. Journal of Agriculture*, April, 1929.