

out that the application of nitrogenous fertilizers in New Zealand to lands deficient in phosphates tends to produce a rank growth of crop and increases susceptibility to plant-diseases. In view of these circumstances it was not considered advisable to give much encouragement to the proposal for the local manufacture of nitrogen fertilizer compounds. The Department has obtained a supply of Chilean nitrate of soda, and the Instructors in Agriculture for Canterbury, Otago, and Southland are arranging for experiments to be conducted with this fertilizer.

Potash.

A sample of wood-ashes from the Hamilton sawmills was analysed in June, 1919, and found to be of good quality, containing 5.37 per cent. of soluble potash and 9.96 per cent. of potash soluble in hydrochloric acid—total potash. There was practically no demand for these ashes. Another sample of wood-ashes sent in by a farmer in the Kawakawa district was analysed and found to contain 4.23 per cent. total potash, 3.14 per cent. soluble potash, 1.24 per cent. phosphoric acid, and 32.04 per cent. lime.

Inquiries regarding the production of potash from seaweed have been received. Owing to the prospect of the liberation of supplies from Alsace and other European sources, there seems to be less likelihood than ever of economically producing potash fertilizer from local sources.

With regard to the imports of potash, the Director-General has been in communication with the High Commissioner and also with the manufacturers of mixed fertilizers in New Zealand. Supplies of Alsatian potash salts and German potash salts are now available in New Zealand.

The utilization of wood-ashes from sawmills has not in practice proved a success, owing chiefly to the lack of interest displayed by the producers of the by-products. The amount available from this source is, moreover, very small.

"Radio Manure."

Early last year a fertilizer called "Radio Manure" was brought under the notice of the Department, and was duly registered under the Fertilizers Act. This manure is mixed at Hamilton, and has been offered for sale in various parts of the North Island. It has been freely advertised by pamphlets and in the newspapers, and many farmers have given testimonials that the compound is efficacious as a fertilizer. The mixture consists mainly of coaldust and limestone, with a small amount of phosphate. The Department made arrangements to have the "Radio Manure" tested by experiments under the supervision of the Instructor in Agriculture, Auckland, and the Fields Instructor, Wanganui. The Stratford trials were conducted on new land, free from the influence of previous manuring, and it was found that the yield of turnips from the plot treated with "Radio Manure" was practically the same as the yield from the control plot, which was unmanured. At the same time plots treated with ordinary commercial fertilizers gave a very much higher yield. Some of the vendors had suggested that the manure was exceptionally radio-active, and would consequently have a beneficial effect on plant-growth. A sample was therefore submitted to Professor Marsden, of Victoria College, and the result of his test showed that the radio-activity of "Radio Manure" was less than that of ordinary Wellington soil. Moreover, the experiments conducted in England so far indicate no hope of the successful employment of radium ores as an aid to either horticulture or agriculture. An official sample of "Radio Manure" was analysed in this laboratory and found to be below the guaranteed analysis as registered under the Fertilizers Act. As the deficiency was materially to the prejudice of the purchaser, a prosecution was instituted. The case against the vendors was heard in the Magistrate's Court, Marton. The evidence of the prosecution was not contested, but the case was dismissed on the technical point that the information had been laid against the manager of the company instead of against the company. Arrangements have been made to publish the details of the case, as well as the results of departmental trials, in the *Journal*, so that the farming community may be informed of the position in regard to this reputed fertilizer.

"Carbon, Iron, and Lime Mixture."

Another "fertilizer" which is much advertised and is being sold in the Auckland Province, is called the "Carbon, Iron, and Lime Mixture." This is not sold as a fertilizer, but only—it is presumed—as a substance to supplement or dilute fertilizers. It is manufactured by an Auckland firm (quite distinct from the mixers of "Radio Manure"), but it is also composed mainly of coaldust and limestone. The Department has analysed several samples, and field experiments are being conducted to ascertain the agricultural value of the mixture.

Fish Products.

Inquiry has been made as to whether a fish- and shark-products company could be started in the North. It would appear that far more definite data are required as to the constancy of the supplies before any definite advice could be given. It is known, of course, that immense quantities of fish and sharks visit certain parts of the coast at intervals, but definite information is wanting as to the daily catches of material which can be relied upon, even during a season of a few months. The products from such an industry would be chiefly insoluble nitrogenous fertilizers, fish-oil, and fish food.

DEFICIENCY DISEASES.

A report has been submitted to the Director-General, and to the Director of the Live-stock Division, who controls the bush-sickness experimental farm at Mamaku, suggesting new lines of experimental work, and steps have been taken to initiate several new experiments.

The experiments of Glenhope have been continued. The deficiency disease in that area is now considered to be very similar to bush-sickness. What is also a similar trouble has been reported from Tuatapere, Waiau Valley, Southland. The soil of the Tuatapere locality was analysed. The lime-magnesia ratio was unbalanced, and the lime-requirement test showed that $2\frac{1}{2}$ tons of carbonate of lime per acre were required.