

The following table shows the number of soil-samples received from the various districts, and the average lime-requirement expressed as a percentage of carbonate of lime. The method used, as in previous years, was the unmodified Hutchinson-MacLennan method.

| Number of Samples collected. | District. | Average Percentage of Carbonate of Lime (CaCO ₃) required. |
|------------------------------|--|--|
| 34 | North Auckland | 0.46 |
| 22 | South Auckland | 0.40 |
| 7 | Taranaki (Stratford district) | 0.43 |
| 20 | Hawke's Bay | 0.26 |
| 4 | North Wellington (Raeitihi district) | 0.57 |
| 13 | Manawatu | 0.27 |
| 7 | Wairarapa | 0.26 |
| 11 | Marlborough | 0.17 |
| 31 | Nelson | 0.33 |
| 5 | West Coast | 0.44 |
| 22 | Otago | 0.23 |
| 31 | Southland | 0.42 |
| Total 207 | | |

FERTILIZERS.

Administration of the Fertilizers Act.

The samples drawn under the Fertilizers Act for the period under review were more than double the number taken during the previous year. Even this number is, however, short of that which should represent the samples taken in order to ensure that the Act is being generally complied with.

Of the fertilizers analysed for the purposes of the Fertilizers Act, twenty-two unofficial and fifty-three official samples were received. Of the unofficial samples three (or 13 per cent.) were found to be deficient to the prejudice of the purchaser. Of the official samples eight (or 15 per cent.) were found to be deficient. Convictions were recorded in all cases which were brought before the Court. The details of these cases have been duly published in the *Journal* from time to time.

The returns of the importation of fertilizers have been collated and published every quarter in the *Journal*, in which the annual figures, with a review by the Chemist, have also appeared (June, 1920).

Phosphates.

The scarcity of several popular kinds of fertilizers, such as basic slag, superphosphate, and bonedust, has drawn attention to the possibilities of finely ground high-grade island phosphate, such as that from Nauru and Ocean Islands, in which the New Zealand Government has now so large an interest. To make known the facts of the matter articles have been prepared and published in two issues of the *Journal*—namely, "Phosphates: The Present Position," in July, 1920, and "The Use of Nauru Island Phosphate: Efficacy of the Ground Raw Material," in December, 1920. It is satisfactory to learn that the writer's opinion as to the value of finely ground phosphate on New Zealand soil is borne out by British and American authorities.

The Wallaceville pasture top-dressing experiments should go far to demonstrate in a practical manner the value of raw phosphate rock. A further article on this series of field experiments was published in the *Journal* for October, 1920, and another has been prepared for publication.*

The prediction (see *Journal* for February, 1919) that economy of phosphates could be effected by applying lime to land which has been heavily phosphated in the past and which still requires dressing to obtain profitable results has obtained support from an experiment at the Ruakura Farm of Instruction, where 1 ton of burnt lime gave 2 tons 8 cwt. of hay, while 3 cwt. of Ephos phosphate gave only 2 tons 9 cwt. The reason for this phenomenal success with lime on light soils is suggested in the June, 1919, *Journal*, page 80.

Nitrogen from the Air.

One must notice the report by Mr. Evan Parry entitled "Nitrogenous Manures in New Zealand" (*Journal of Science and Technology*, September, 1920, Vol. 3, No. 3), in which the suggestion, discussed in this Department's *Journal* for September, 1919, that the Bowen Falls, (Milford Sound) should be "harnessed" to manufacture nitrates for artificial fertilizers received his disapprobation.

DAIRY PRODUCTS.

The analysis of samples of butter, cheese, and milk have been continued as in previous years, and casein has been added to the list of substances tested for export. The large number of export butters which were submitted for verification of the grader's test of water-content and found to contain more water than is allowed, necessitating reworking to lower the water-content before being permitted to leave the country, should be noted. Of forty-six samples analysed forty-one were found to contain water in excess of 16 per cent.

* Since published in *Journal* for July, 1921.