

Other soil work undertaken during the year has included the analysis of samples in connection with the investigation of malnutrition in stock in the districts of Poverty Bay, Waikato, Wairarapa, Canterbury, and Central Otago, besides special analyses of soils for Divisional Directors, and determinations of lime-requirement in samples sent in by Fields instructional officers.

LIMESTONES AND LIMES.

Following are brief descriptions of some of the more useful of the 103 samples of limestones submitted for analysis:—

X/1277 was a soft white carbonate of lime from Mount Gladstone, Marlborough. Though containing only 58.5 per cent. carbonate of lime, its soft texture would render it a useful source of lime for local application. X/1278, from Kamo, Auckland, was a white semicrystalline stone containing 96.5 per cent. carbonate of lime. This would be a very suitable stone for production of quicklime. Y/150 was a soft, easily ground shell deposit from Napier district. It contained 93 per cent. carbonate of lime. Y/153, from Waipara, Canterbury, was from a deposit occurring in the form of a fairly fine powder, containing 66 per cent. carbonate of lime. Y/158-160, from Hastings district, Hawke's Bay, were calcareous sinters ranging from 79 to 86.4 per cent. carbonate of lime. Y/215 was a useful coarse shelly grit from Onehunga, Auckland, containing 80.1 per cent. carbonate of lime. Y/216, a hard shell limestone (80.5 per cent. carbonate) was from Hedgehope, Southland. Y/263-68, a series of six hard, semicrystalline limestones from Te Akau, Ngaruawahia, ranged from 80 to 97 per cent. in content of carbonate of lime. The higher-grade material would produce an excellent quicklime. Y/270 was a specimen of calcite (pure crystalline carbonate of lime) from Kopua, Hawke's Bay. Y/303-10 were a series of hard, semicrystalline limestones of high grade, from Tinui, Wairarapa. Their carbonate-of-lime content varied from 89 per cent. to 97 per cent. Y/572 was a moderately hard stone from the Cricklewood locality, Canterbury; it contained 94.5 per cent. carbonate of lime. Y/583, from Albury, North Canterbury, was a hard limestone of excellent quality, containing 96.25 per cent. carbonate. Y/631 was a friable calcareous sinter from the Greymouth district. It was stated that this substance, which contained 89 per cent. carbonate of lime, could be dug out with a shovel, and it would therefore require no treatment beyond air-drying to make it suitable for application to the land. Unfortunately, such deposits as this are usually of very limited extent. Y/503, from Wairoa, Hawke's Bay, was a shell limestone of high grade (91 per cent. carbonate). Y/851, from a shell deposit at Onewhero, Auckland, contained 85.5 per cent. carbonate of lime. Y/837 was a friable sandy limestone from Albury, South Canterbury, containing 77 per cent. carbonate of lime. Y/1083, from Hawke's Bay, was a shelly conglomerate, containing 91 per cent. carbonate of lime. Y/1087 was a friable white carbonate of lime, 97.5 per cent. pure, from Ngapaenga, South Auckland. Y/1107, from Martinborough, Wairarapa, was also a friable calcareous deposit, containing 76 per cent. carbonate of lime. Y/839, a calcareous sinter from Wainui beach, near Gisborne, contained 94 per cent. carbonate of lime.

A number of commercial ground limestones were also examined for quality and fineness of grinding. Y/299, from Gore district, was a fairly well ground limestone containing 81 per cent. carbonate of lime. Y/338, from Westport, was a high-grade limestone (94.25 per cent. carbonate) of moderate fineness. Y/149, from Kakahu, Canterbury, was well ground, and contained 85 per cent. carbonate of lime. Y/669 was a finely ground stone, containing 89 per cent. carbonate of lime, from Dunback, Otago. Y/734, from Oamaru, was 97.5 per cent. pure, and was a well-ground sample. Y/574-76 were from Southland; Y/574 and 575 contained 60 per cent. and 76.5 per cent. carbonate of lime respectively; Y/576 was of much greater purity—91.5 per cent.—and was very finely ground. Y/557, from Limchills, Southland, was ground to a satisfactory fineness, and contained 90 per cent. carbonate of lime. Y/1073, from Toko, Taranaki, contained 86 per cent. carbonate, and might with advantage have been more finely ground. Y/1076 was a fairly well ground stone of low grade from the North Auckland district; it contained 64.1 per cent. carbonate of lime. Y/838, from Silverdale, Auckland, was a well-ground stone containing 74 per cent. carbonate of lime. The prices charged for these commercial ground limestones (where stated) varied from 12s. to 18s. per ton, bags extra.

Several samples of quicklime and slaked lime were also analysed. These were all found to be well "burnt" from good-quality limestones.

INVESTIGATION OF WHEAT AND ITS PRODUCTS.

The formation of the New Zealand Wheat Research Institute has now been completed, and research laboratories have been established at Christchurch. Difficulty was encountered in securing a suitable experimental mill, and it was ultimately arranged to transfer to the Institute the Allis-Chalmers mill belonging to this Laboratory, the Scientific and Industrial Research Department agreeing that any milling-work required by this Department would be carried out by the Institute.

The investigation of the milling and baking qualities of New-Zealand-grown wheat and flour, which has been a feature of the work of this Section during the past seven years, and which has evoked many expressions of appreciation, will now be discontinued so far as this Laboratory is concerned, and will be carried on by the Wheat Research Institute.

The question of setting up standards of quality for wheat offals (bran and pollard) has received further consideration, and a recommendation has been made with a view to reaching a decision that will be satisfactory to millers and consumers.

TOXICOLOGICAL.

No positive results were obtained from the ten specimens of organs and ingesta submitted by veterinary and stock officers in connection with cases of suspected poisoning of stock. The difficulty of obtaining adequate material for examination in these cases continues, notwithstanding the explicit instructions issued to all officers concerned with the health of stock.