

builders and architects. As time progresses, the need for the greater utilization of stone in all construction work renders it imperative that definite scientific information regarding such matters as durability, water-absorbitive capacity, strength, and other characteristics should be available. In view of the increasing use of the Dominion's extensive gravel-supplies for roadmaking, concrete and ferro-concrete construction, more investigations of the character and behaviour of the various forms of gravel have become necessary in order to afford sound guidance to road engineers, builders, and contractors.

The behaviour of the gravel deposits which occur on great lengths of the beaches in the Dominion has also been made the subject of investigation. Particular attention has been devoted to the rate and peculiarities associated with the abrasion that proceeds, and this information will prove of considerable value in harbour-works, shore-protection, and land-reclamation schemes.

This laboratory has also carried out the testing of road-materials. Numerous samples of rock, gravel, stone, and fillers used in connection with highway-construction have been submitted to careful tests.

In addition, the Laboratory's staff has acted in a consultative capacity in furnishing reports to the Public Works Department concerning the geological features to be taken into consideration where large constructive works are proposed.

REPORTS OF THE RESEARCH COMMITTEES OF THE COUNCIL OF SCIENTIFIC AND INDUSTRIAL RESEARCH.

Dairy Research.

Advisory Committee: Hon. George Fowlds (Chairman), Mr. A. Morton, Mr. T. A. Winks, Mr. W. Grounds, Mr. W. Goodfellow, Mr. Q. Donald, Professor H. G. Denham, Dr. C. J. Reakes, and Mr. W. Singleton. Director of Research: Professor W. Riddet.

During the year work has been concerned mainly with securing staff, providing buildings and equipment, and making the other necessary arrangements preliminary to commencing work at the beginning of the 1928 dairy season.

Temporary buildings to accommodate the chemical and bacteriological laboratories have been erected at Palmerston North in proximity to the experimental dairy factory erected by the Massey College Council.

Dr. F. H. McDowall has been appointed to the position of Dairy Research Chemist, and Mr. H. R. Whitehead to that of Dairy Research Bacteriologist. Both officers have undergone a specialized training in their respective sciences in relation to dairying in dairy-research institutions of Great Britain, and during the past year have investigated the conditions of New Zealand dairy-produce as it arrives at its overseas destination. An officer has been appointed as Farm Dairy Assistant, and during the year has been engaged upon investigations into the daily fluctuations in milk and butterfat yield of the dairy herd at Massey College. Arrangements have been made for the scientists appointed to procure while in England the best scientific apparatus for the laboratories, in order to ensure that the most up-to-date equipment will be available when the work is in full operation. Arrangements have been made to provide the Hawera Dairy Research Laboratory, as from the beginning of July, 1928, with funds for the purpose of permitting its continuance as a research station in the Taranaki District. Similar arrangements for the promotion of research at the Hamilton laboratory of the New Zealand Co-operative Dairy Company have been made. These stations thus will be enabled to work in co-operation with the main station at Palmerston North. The large volume of records now available from the group herd-testing associations are being subjected to statistical examination in co-operation with the Census and Statistics Office with a view to ascertaining the nature of certain trends and variations occurring in the milk and butterfat production of a large number of New Zealand dairy-cows.

Investigations have also been proceeding in the direction of ascertaining the economic utilization of heat and power in dairy factories. Co-operation with the Lister Institute in investigations upon the vitamin content of New Zealand butter has been continuing at Otago University since the middle of the 1927 dairy season.

Wheat Research Institute.

Advisory Committee: Professor H. G. Denham (Chairman), Mr. James Carr, Mr. W. W. Mulholland, Mr. C. J. Talbot, Mr. C. E. Boon, Mr. F. H. Hawker, Mr. R. K. Ireland, Mr. R. J. Lyon, Mr. W. Pratt, Mr. C. H. Hewlett, Mr. J. W. Hadfield, and Mr. D. Colquhoun. Director of Research: Dr. F. W. Hilgendorf.

During the year negotiations which had been proceeding between wheat-growers, flourmillers, bakers, representatives of Lincoln College, and the Departments of Agriculture, Industries and Commerce, and Scientific and Industrial Research, were finalized, and a scheme of co-operative research launched. Owing to the complexity of the position, statutory authority empowering the collection of the necessary funds by means of levies on wheat and flour was secured in a section of the Finance Act of 1927. Regulations giving effect to this and establishing the research organization were gazetted on the 24th February, 1928, and the fully-constituted committee held its first meeting on the 9th May, 1928.

Funds for this research will be provided by means of levies secured in equal amounts from wheat-growers, flour-millers, and bakers, on the following basis: Wheat-growers, 1½d. per 50 bushels of wheat sold; millers, 1½d. per ton of flour milled; bakers, 1½d. per ton of flour purchased. On an average yield of 6,000,000 bushels of wheat, these levies are expected to yield approximately £2,000. To this sum will be added an amount from the Department of Scientific and Industrial Research on a pound-for-pound basis.