

CEREAL LABORATORY, CHRISTCHURCH.

The staff at the Cereal Laboratory, Christchurch, where the milling, baking, and chemical testing and research are in progress, had, on account of the peculiar climatic conditions, an unusually large amount of work to do in connection with the 1932 harvest. Millers handling the 1932 season crop found it exceedingly difficult to produce flour satisfactory to the bakers, but a large number realized that the Institute could provide guidance in the direction of blending of wheats which would assist them to overcome some of the difficulties with which they were confronted. Samples accordingly poured into the laboratory, so that it became necessary to run the mill two shifts a day and employ an extra miller.

In 1931 the total number of samples milled amounted to 690, and this was considered a good performance, but in 1932 the numbers rose to the remarkable total of 2,497. In consequence of the large increase made upon the services of the Institute, valuable assistance was rendered in many cases whereby millers were enabled to maintain a relatively satisfactory quality of flour, and the bakers and the public were saved from the worst effects of probably the most difficult wheat-ripening season known in the history of New Zealand.

In South Canterbury and North Otago floods at harvest-time succeeded the drought during the growing season, and great quantities of sprouted wheat were put on to the market. There was naturally a reluctance on the part of millers to buy such wheat, and it became their rule to submit most lines to the Wheat Research Institute before purchases were completed. It was estimated that samples totalling 150,000 bushels of sprouted wheat were dealt with by the Institute, and as the result of the tests carried out approximately 85,000 bushels, which otherwise would have been rejected by millers on the usual tests applied, were found to be still suitable for milling purposes. Farmers were thus enabled to dispose of such grain at milling prices.

The plant-breeding department, in collaboration with the Department of Agriculture, has made many attempts to find a wheat of high quality that would, under some special conditions of soil or climate, give a payable yield. For instance, Marquis was included in elaborate field trials over nine years in fifteen different localities, but failed to give a constantly payable return anywhere. The wheat that promises to fulfil the requirements has now apparently been found by the Laboratory Branch. It is Jumbuck, which has been grown on a small scale in a few localities for many years, but its cultivation did not spread because it did not appear to have any outstanding merit of any sort. It was a fair yielder, but its baking-quality was not known because the quantity of it that any miller was able to include in his grist was so small that it made no difference to the resultant loaf. However, when the millers started to send to the Institute samples of individual wheats to be milled and baked it was found that Jumbuck was by far the best-quality wheat grown in New Zealand, and this has encouraged its cultivation to a marked degree. The area under Jumbuck during the 1932-33 season probably exceeded 5,000 acres. The yield from eighteen farms in the Manawatu averaged 48 bushels per acre, and from fifteen farms in Ellesmere 55 bushels per acre. Thus Jumbuck is obviously a satisfactory yielder in such a season as that of 1932-33, and its quality equals or surpasses that of any Canadian wheat grown in New Zealand. It is possible that the discovery of the high baking-quality of Jumbuck may, to a considerable degree, solve the chief difficulty of improving the quality of the average of the wheat grown in New Zealand.

The 1932 wheat, to whose quality reference has previously been made, was produced under conditions of abnormal drought during the ripening-period. The grain dried off, rather than ripened, and to this fact is ascribed the subsequent difficulties in the bakehouse. Wherever special areas had normal or nearly normal spring rains, the wheat and flour produced were of normal quality, and even special fields where moisture content was kept up by special cultivation, gave a satisfactory product. To avoid droughts in the future is beyond our skill, but the lessons of the 1932 harvest have shown that after specially dry summers extra care must be taken in the blending of wheats for flour-manufacture, and that with this extra care the worse effects of drought on flour-quality can be avoided.

GENERAL.

The Institute has maintained a regular contact with all sides of the wheat industry. Co-operation with the Department of Agriculture has enabled the Institute to provide valuable fundamental assistance in regard to seed certification. Consequently, the quality of seed now in general use throughout the wheatgrowing districts has greatly improved regarding its purity and freedom from various diseases. The association between the Institute and the Department of Agriculture, in connection with seed certification, field trials involving manurial treatments, and varieties, has proved most valuable, and has been the means of modifying the growing of wheat to a marked extent.

The Institute, in its collaboration with the milling industry, has enabled several new side-lines of the industry to be developed. Examples of these may be quoted in the production of wheat malt, the preparation of wheat derivatives rich in vitamin E, and the general development of the wheatmeal industry.

The work of the Institute has also assisted in clearing up the question of stock-feeds derived from wheat and other cereal products, so that useful information is now available for any extension of concentrated feeding of stock which may be in contemplation. The Institute has handled a large number of inquiries from bakers throughout New Zealand, who have referred to it specific problems which have arisen directly in ordinary baking practice. Regular articles have been supplied to the press, and particularly to the *Bakers' and Grocers' Review*, which reaches a large number of bakers, regarding measures which may be adopted with advantage in baking practice.