

Cytogenetic studies of chromosome duplications and multiple mutations in wheat have been concluded, and three papers are in the press overseas. At the invitation of the United Nations, an introductory paper has been written for the United Nations Scientific Conference on Conservation and Utilization of Resources. Studies of the effects of various methods of selection and of the inheritance of quantitative characters in wheat have been continued.

#### CEREAL CHEMISTRY, MILLING, AND BAKING

The investigation of factors causing the dark crumb colour in bread made from higher-extraction flours has been continued, and, though as yet incomplete, a much fuller understanding of the oxidative processes involved has been attained. This, it is hoped, will be of use in studying the normal dough-maturing mechanism, and the investigation is being pursued with these broader possibilities in mind.

Two or more sacks of Hilgendorf flour were distributed to each of forty-eight bakers for commercial tests. The results have confirmed the laboratory finding that Hilgendorf is a high-quality blending wheat.

The average vitamin B<sub>1</sub> content of the 1948 commercial flours was 3.50 p.p.m. The figure for 1947 was 3.60 p.p.m.

Several hundred wheat hybrids from the Institute's breeding-station were milled and baked as part of the selection procedure. Protein analyses were made on crosses of which there was insufficient wheat for other tests. Milling, baking, and protein tests were made on samples from the Department of Agriculture's wheat variety and manurial trials.

The flour-testing service of the Institute was extensively used by millers to assist them in the control of the baking quality of the 80 per cent. extraction flour. The usual monthly tests on all flours were made for the Wheat Committee. The characteristics of the 80 per cent. extraction flour milled in this year made necessary a change in the standard test-baking process, and, because of the commercial implications of the results of the test, the industries were consulted beforehand. The new test satisfactorily predicts the full-scale performance of 80 per cent. extraction flours.

Following the tendency shown in recent years, many bakers submitted loaves for criticism and advice. Bread from nearly all the bakeries in one main centre have been sent at monthly intervals for report, and in many instances improvement has resulted. Officers visited several districts to assist bakers and millers to overcome technical problems.

One short course for bakers was held, and addresses were given to each section of the bread industry.

At the request of the Wheat Committee and of the Rabbit Destruction Council, the Institute gave technical advice on the milling of a special pollard for rabbit-poisoning.

#### OVERSEAS VISIT

The chief executive officer, Dr. O. H. Frankel, represented the Department at the Eighth International Congress of Genetics at Stockholm and at a Commonwealth meeting of plant-breeders at Cambridge. He visited many scientific institutions in Britain, France, Belgium, Holland, Sweden, and Denmark, and spent four months at the John Innes Horticultural Institution, Merton, London.

#### PUBLICATIONS

FRANKEL, O. H.: "A New High-yielding Wheat Variety—WRI-Yielder" *N.Z. J. Agri.*, 76, 117-119.

———"Hilgendorf Wheat of outstanding Baking Quality." *N.Z. J. Agri.*, 76, 221-222.  
FRANKEL, O. H., and FRASER, A. S.: "Basal Sterile Mutants in Wheat." *Heredity* 2, 391-397.

STERN, ROSA: "Comparative Study of the Effects of Cysteine Hydrochloride and Papain on Unsalted and Salted Doughs." *Cereal Chem.* 25, 220-228.