New freezing mixtures have been assessed for use in railway refrigerator cars. Two test shipments of frozen fish, sent from Vancouver to Eastern Canada, showed good results.

Fermentation studies, which earlier produced butanediol from low-grade wheat and surplus crops for use as antifreeze and as a source material for numerous organic chemicals, have been extended. Progress has been made in the fermentation of beet molasses for the production of glycerol. Papers of a glassine or parchment type have been made from several of the cereal straws. A flash-drying unit for processing gluten is currently yielding a product of high quality.

Medical Research.—Most of the activities of the Division of Medical Research will be carried on, as heretofore, in the laboratories of the medical schools and hospitals throughout Canada. In addition to considering applications for grants-in-aid for research and making recommendations to the Council concerning these, the Division, through its Advisory Committee, reports to the Council in respect of medical research fellowships, which were established in 1946. Over $236,000 was awarded in the form of grants-in-aid by the Division of Medical Research in 1947-48, and 33 medical research fellowship appointments were made. It is hoped that these fellowships, which are open to Canadian medical graduates, will be the means of training young men and women so that their lives may be devoted to research and teaching in the medical schools of Canada.

Radar and Electronics.—In radar and electronics substantial contributions have been made. In harbour control, the original installation was made at the Naval Signal Station located at Camperdown, N.S., overlooking the entrance to Halifax Harbour. Since then, a nine-inch display with accurate ranging facilities has been added. The design of a second antenna has been completed. Procedures are being worked out for the use of shore-based radar in the identification and guidance of incoming ships that are not equipped with radar. Merchant marine radar equipment provides assistance to navigation in restricted waters and serves to give anti-collision warnings. A small low-cost ship-borne radar set has been designed for the use of merchant shipping. Trials during 1947 showed that blind navigation of the entrances to Toronto harbour and identification of every wharf within the harbour is possible. Great interest has been shown by lake navigators in the specially fitted motor vessel "Radel" during operations on Lake Ontario off the Scarboro Field Station. Demonstrations of the usefulness of radar are arranged from time to time for the benefit of ship owners and navigators.

A direct-reading electronic instrument, designed to locate hot joints on power lines, has been given extensive field tests that have demonstrated its practical value. Comparison has been made of the pulse method and the resonance method used to locate faults in electric power cables.

Physics.—In the Division of Physics many practical problems have been studied and fundamental work has been done in several fields.

Magnetometer surveys were carried out during the latter part of 1947 in co-operation with the Department of Mines and Resources and with the assistance of the Royal Canadian Air Force. The magnetometer, trailed by a cable behind an aircraft, records the changes in the earth's magnetic field as the aircraft passes over the land to be surveyed. The results, automatically recorded in the aircraft, provide the data for accurate topographic maps and indicate the location of mineral