evaporated milk during sterilization are being investigated. Microorganisms related to food are studied, particularly those that grow in cheese, in high salt concentrations and at low temperatures. Model systems for the study of freshwater microbial ecology are under investigation. A national culture collection of about 3,000 yeasts, bacteria and fungi is maintained.

Considerable effort is devoted to questions of animal and plant physiology. Studies of the mechanisms by which mammals, birds and man adapt to cold have provided important basic information on cell, muscle and metabolic activity, and help to explain practical problems such as the high death rate of newly born caribou. Fundamental plant processes such as translocation are investigated, and a study is being carried out on strains of blue-green algae believed responsible for cattle deaths. Plant fibres such as cellulose—the skeletal material of plants—and the structure and function of plant cell components are also examined.

Other studies involve fermentation mechanisms and enzymology, and the structures of proteins, polysaccharides and lipids. One group, among its other projects, is engaged in long-term statistical studies of protein variability in wheat, a factor that influences overseas wheat sales. The work has been expanded recently to include the effects of weather factors on protein content.

Radiation Biology.—The general objective of the Division of Radiation Biology is to undertake fundamental research into the effects of radiation on living things and their components. This is best done by combining the efforts of scientists in several biological disciplines. The Division is still in its formative stage, awaiting the completion of a new laboratory at the end of 1967.

To date, biochemical studies have included theoretical studies of radiation doses resulting from internal contamination of workers, the action of X-rays on purified enzymes, the action of ultraviolet light on nucleic acid components, and the metabolism of radioactive tellurium in animals. The most prominent causes of death of animals or men from exposure to ionizing radiations are destruction of the blood-forming tissues (spleen and bone marrow) and severe damage to the intestinal wall; in addition, sublethal doses of radiation cause immediate destruction of lymphatic tissues such as the thymus gland. Therefore the Division has devoted considerable effort to investigating the effects of gamma-rays on these three types of tissues.

Applied Chemistry.—The Division of Applied Chemistry is concerned with supplying new scientific information for the development of Canada's natural resources and chemical industries. Although formerly much of the work involved the solving of immediate specific problems, a larger part of the effort is now being devoted to more basic studies. This avoids conflict with industrial laboratories and consultants and, in addition to providing fundamental information, often produces practical results. For instance, a long-term investigation on the contacting of fluids and solids—an operation vital to many chemical engineering procedures—has resulted in a successful commercial operation for drying grain. The same method has been extended to chemical reactions and to removing liquids from other materials.

Another long-term project of considerable industrial potential has concerned the factors responsible for the stability, or the destruction, of suspensions of solids in liquids and a method was devised for easily separating almost any suspended solid from the liquid surrounding it. The same technique can be used to prepare dense spherical agglomerates of selected composition. Work on separation processes has been expanded to include the separation of dissolved solids. It has been shown that virtually all dissolved salts can be removed from water by filtration through an appropriate medium, and tests with other materials are in progress. Then, too, the study of chemical reactions at very high pressures—carried on over the past several years—has resulted in the successful preparation of a stable polymer that could not be produced by conventional means. The development of a procedure for anodically depositing metal oxide films resulted from