

noise records in the ten-centimetre region.

A five-million-volt van de Graaff generator has been completed for the Atomic Energy Project to assist in nuclear studies and a one-half million volt unit has been completed for the Division of Chemistry. A third accelerator of the cavity-type, employing excitation at a frequency of 3,000 megacycles, has been built experimentally and an eight-million-volt output has been realized.

Various electronic devices have been completed, including: a pH monitor, which measures and controls the pH of biological culture media to a high degree of precision; an infra-red detector for locating hot joints on power transmission lines; and a panoramic ionosphere recorder which sweeps through a frequency range of 1 to 20 megacycles for determining the character of the ionosphere. The Division has embarked on a fundamental study of dielectric theory and a laboratory for this purpose is now being set up.

Both fundamental and applied investigations on food preservation, utilization of agricultural crops and residues, fats and oils, plant science, animal science, and statistics are being carried on in the Ottawa laboratories of the Division of Applied Biology.

Studies have been continued on food bacteriology, especially microbiological content of butter and assessment of various organisms as a measure of fecal contamination in egg products. Most of the previous chemical studies on egg products have been completed, with the exception of fundamental work on the browning reaction in dried egg powder. After many difficulties, butter containing 16% moisture (the legal maximum) was consistently produced from the Fritz continuous butter-making machine. Work on seaweed extracts has been resumed. From rape and mustard oils, edible shortenings were produced that could not be distinguished by flavour and odour ratings from commercial shortenings prepared from other oils.

In non-food uses of agricultural products, many moulds and bacteria are being examined, both in laboratory and pilot-plant operations, with a view to the production of industrial chemicals. Work on the fermentation of grains has been carried to a stage of completion and similar studies are now devoted to other products such as molasses. Improvements were made in the pilot-plant separation of starch and gluten from wheat flour. Dry undenatured gluten was prepared in the laboratory and these findings are now being translated to pilot-plant operations.

Some expansion of research facilities occurred during 1948. Work on fundamental aspects of photosynthesis was continued on a larger scale, and a new project was begun on animal physiology. The Prairie Regional Laboratory was opened in Saskatoon on June 6th. Plans are under way for a Maritime Regional Laboratory in Halifax.

Since the opening of the Prairie Regional Laboratory most of the time of the staff has been spent on equipping the laboratories. During the closing months of the year, work was started on several projects in two main fields: fermentations and microbiology, and crop utilization.

In the first group work is proceeding on: (a) the production of fungal amylase for the conversion of starch to sugars; (b) production of butanediol, glycerol and lactic