known as PTR (Pool Test Reactor) was put into operation and is used to measure the reactivity of fuel elements both before and after they have been irradiated in one of the high-power reactors.

The Chemistry and Metallurgy Division includes a number of research groups which are making a co-ordinated attack on the problems of the preparation and processing of reactor fuel. The Division develops fuel elements for the NRX and NRU reactors and for power reactors. Experiments are providing essential information on the behaviour and suitability of different physical forms of the fuel, or different kinds of cladding to prevent corrosion of the fuel. Some of the work is being done in collaboration with the Department of Mines and Technical Surveys.

In the Physics Division work has continued on the study of nuclear structure, using the experimental facilities of the NRX reactor and the particle accelerators, such as the 3,000,000-electron-volt Van de Graaff Generator. A 10,000,000-volt machine, known as a Tandem Accelerator, was installed at Chalk River in 1958. This new type machine, which consists of two Van de Graaff accelerators placed end to end horizontally, has made it possible to carry out research programs on heavy nuclei with an accuracy and efficiency never before possible.

The activities of the Biology and Health Physics Division include the control of radiation hazards, the development of decontamination methods, the study of uses of radioactive isotopes in biological research, and the investigation of the effects of radiation on living organisms.

The marketing of radioactive isotopes and associated equipment is handled by the Commercial Products Division of AECL, which has its offices and shops in Ottawa. Canada pioneered in the production of radioactive isotopes and the Chalk River project now produces a variety of isotopes for use in industry, agriculture and medicine. The high flux of NRX enabled AECL to produce relatively large quantities of Cobalt-60, with a high specific activity, for use in cancer therapy units. The combined production of NRX and NRU will be required to satisfy the demand from many countries for Canadian units. By the end of 1958 a total of 133 cancer treatment machines had been installed in 24 countries.

Section 3.—Other Scientific and Industrial Research Facilities

Aside from the work of the National Research Council and Atomic Energy of Canada Limited, Canadian research is carried on by various federal agencies, provincial organizations, universities and industries. Several provinces in Canada have established provincial Research Councils to stimulate and support research on problems having special provincial significance. The universities, of course, form an extremely important part of the Canadian pattern of research. Much of their work is along fundamental lines but practical problems are not neglected, especially those of regional interest.

All three types of institutions—federal, provincial and university organizations—have an interest in problems of industrial significance: this is part of the current Canadian pattern of research. Though many Canadian industries now possess research facilities—some of them quite extensive—the main bulk of industrial research to date has been done under government auspices.

Thus the unique problems of the country, particularly its large area coupled with a small population, have led to a typically Canadian organization of research, of which a very strong associate committee system is perhaps the most distinctive feature.

Subsection 1.—Federal Organizations

Although research by industrial concerns has been slow to develop in Canada, government research has expanded rapidly, at first because of the need for speeding up the production of raw materials, which were for many years the basis of Canada's export trade, and secondly because of the more recent interest in the processing of these raw