

research and development, the design and construction of reactors for nuclear power and the production of radioactive isotopes and associated equipment such as cobalt-60 Beam Therapy Units for the treatment of cancer. For the greater part, the mining operations are conducted by private companies supported by export contracts that would have terminated in 1962, but are being revised so that some will be stretched out, without increase in total supply, to 1966.

Atomic Energy of Canada Limited has an eleven-man Board of Directors that includes individuals from private industry, public and private power companies, and the universities. The Company's major plant is near Chalk River, its Nuclear Power Plant Division is located near Toronto, and its Head Office and Commercial Products Division are both in Ottawa. The Company is collaborating with the Canadian General Electric Company Limited and The Hydro Electric Power Commission of Ontario in the building of a pilot atomic power plant, known as NPD-2 (Nuclear Power Demonstration), at Rolphton on the Ottawa River, 15 miles above the Chalk River plant. NPD-2 will generate 20,000 kw. and is scheduled for operation in 1961. AECL is also designing and constructing with the assistance of Ontario Hydro a full-scale nuclear power plant known as CANDU to supply 200,000 kw. This plant will be located at Douglas Point near Kincardine on Lake Huron and will be incorporated in the Ontario Hydro system. By agreement, Ontario Hydro will purchase the plant when it is in satisfactory operation.

To ensure that all other utilities are kept fully informed of the progress being made, the Government set up in 1954 an Advisory Committee on Atomic Power Development. This Committee, representing the utilities, meets periodically at Chalk River to assess the economic prospects of nuclear power throughout the country.

Because of the great pace of technological development in nuclear power throughout the world, AECL devotes a major effort to collaboration with many organizations. These include industrial firms and the scientific and engineering departments of universities in Canada and, through foreign government agencies and several international organizations, many technical groups in other countries. Close ties are kept with the United States Atomic Energy Commission and the United Kingdom Atomic Energy Authority, both of which have representatives permanently at Chalk River. More or less formal collaboration has been established also with the International Atomic Energy Agency, the Organization for European Economic Cooperation and Euratom as well as with India, France, Sweden, West Germany, Switzerland and Japan. Visits have also been exchanged with other countries.

During 1959, AECL announced that further expansion at Chalk River would be limited and that a site to receive the next major research and development facility had been selected in Manitoba on the Winnipeg River, about 65 miles from the city of Winnipeg. A notable event of the year was the commissioning of the first privately owned high-power experimental reactor in Canada at McMaster University, Hamilton, Ont. Information on Canadian nuclear reactors now established or under construction is given in the statement on p. 418.

Chalk River Project.—The Chalk River Project is a research and development establishment. Basic and applied research is carried on by about 200 professional scientists and engineers supported by 300 technicians devoted to research in nuclear physics, nuclear chemistry, radiobiology, reactor physics, radiation chemistry, environmental radioactivity, physics of solids and liquids, and other subjects, using as their primary facilities the two major reactors, NRX and NRU, the auxiliary reactors, ZEEP, PTR and Zed-2, the tandem Van de Graaff accelerator and analytical facilities such as a precision β -ray spectrometer, mass spectrometers, electron microscope, multi-channel pulse analyzers, automatic recorders, analogue and digital electronic computers. A large number of these scientists and engineers are engaged part or whole time on the development of nuclear fuel, on preliminary design and optimization calculations for nuclear power reactors, on solving technical problems encountered in the operation of the reactors, on