

The Division of Building Research was established in 1947 to provide a comprehensive applied research program, which includes the development and maintenance of the National Building Code, in support of the construction industry. The Division of Mechanical Engineering is principally engaged in work on manufacturing and transportation technology to assist Canadian industry in improving productivity and in the development of new products and processes.

The Division of Chemistry conducts both short-term projects of relevance to the natural resource and chemical industries and long-term fundamental research in areas of scientific and technical importance. Projects include work on auto-oxidation of organic molecules, reverse osmosis and the extraction of oil from tar sands.

The Division of Physics, like that of Chemistry, conducts both basic and applied research. It also works on the maintenance of basic physical standards and the calibration of instruments. It provides advice and information to industry and carries out general research, particularly in the area of space, metal and plasma physics as well as photogrammetry and spectroscopy. Considerable effort is devoted to the development of instruments suitable for industrial production.

The Radio and Electrical Engineering Division includes the Astrophysics Branch (basic research in radio and optical astronomy and phenomena of the upper atmosphere) which also operates the Algonquin Radio Observatory, research sections engaged in projects ranging from fundamental mathematical research to practical applications of electronics and electrical engineering, and an engineering design section.

The National Aeronautical Establishment has, over the years, conducted its activities in the service of industry, acquiring and utilizing major items of test equipment, such as wind tunnels. The diminishing requirements of the aircraft industry have allowed more resources to be devoted to other areas, such as research in road and motor vehicle safety.

**Atomic Energy of Canada Limited.** With a current in-house R&D budget of \$65 million in 1973-74, AECL is responsible for research into and development of peaceful uses of atomic energy; in particular the development of nuclear power systems to meet Canadian needs (see Chapter 13, Energy) and improved applications of radioisotopes and radiation, as well as selected research in the fields of physics, chemistry, materials science and radiation biology. The main research and development centres are the Chalk River Nuclear Laboratories in Ontario and the Whiteshell Nuclear Research Establishment in Manitoba.

These activities have led to the development of the unique CANDU system of nuclear power, whose success was marked in 1973 by the completion of the Pickering Nuclear Generating Station, the world's largest operating nuclear station and, in the same year, the choice of Canadian designs for nuclear power plants planned by Argentina and the Republic of Korea. Research and development continue within AECL with three objectives: further development of the CANDU system beyond the Pickering model, support to Canadian industry to build up the manufacturing capabilities demanded by the rapid expansion of nuclear power and assistance in expanding the required infrastructure of facilities and trained personnel.

AECL also operates the Power Projects group at Mississauga, Ont., providing engineering services for the building of CANDU nuclear power stations, the Commercial Products group with laboratories and a manufacturing plant at Ottawa and South March, Ont., which processes and markets radioisotopes and designs and manufactures related equipment, and the Heavy Water group with responsibility for ensuring adequate supplies of heavy water from plants designed and built in Canada.

**The Department of National Defence** R&D activities are carried out for the most part by the Defence Research Board. Projects are varied and often have important applications in other areas as well as for defence. The present emphasis is on projects relating to the defence of Canada's frontiers, especially the North, including such problems as the adaptation of men and machines to extreme cold. Testing and standardization activities are conducted by the Canadian Armed Forces.

**The Department of Energy, Mines and Resources** promotes the discovery, development and use of the country's mineral and energy resources. To achieve this goal the Department conducts research and data collection in the earth, mineral and metal sciences. The Geological Survey of Canada, for example, carries out geological, geophysical, geodetic and topographical