SCIENCE

For over a century, individual Canadian scientists have been gaining international repute, among them Sir William Osler in medicine, Sir Charles Saunders for the development of Marquis wheat and Sir Frederick Banting for the discovery of insulin. The importance of science to the country's future was finally given official recognition in 1917, when the National Research Council (NRC) was established and given broad powers to aid and co-ordinate scientific activity in Canada.

The National Research Council

In its own laboratories, which comprise nine divisions of science and engineering, the National Research Council investigates problems of a practical nature which have either direct or long-term bearing on Canadian industry. It also supports investigations into basic research, particularly in physics, chemistry and biology.

To ensure a sound basis for science and for the training of scientists, the NRC administers a programme of grants and scholarships. This now totals some $11 million annually and provides the main direct aid to science in the universities. In 1962 the Council initiated a programme of industrial research assistance through which grants are made on a cost-sharing basis for long-term research undertaken by companies in Canada.

The NRC also maintains the physical standards for Canada, operates a national library of science, supplies free technical information to industrial firms on request, and supports a patent service which handles scientific developments and licenses them to industry.

The NRC provides scientific attachés for the Canadian Government in London, Washington, and Paris, and facilitates Canada's share in the work of international scientific organizations. From 1956 to 1962, Canada was host to eight international science congresses, with much of the financial aid coming from the NRC.

Government Research

In the federal departments, extensive programmes of research costing nearly $200 million a year are carried out in agriculture, fisheries, mining, forestry, wildlife and defence. Since 1960, emphasis has been placed on the study of the Polar Continental Shelf and other factors affecting life and navigation in the Arctic. Special studies are also being made on the earth's crust in Canada — an important contribution to the international Upper Mantle Project. New research vessels and marine laboratories are greatly expanding Canada's work in oceanography.

During the latter part of 1962, Canada became the world's third country to have a space satellite in orbit. The "Alouette", designed and built by Canada's Defence Research Board, was launched by the United States. The satellite was built to study the ionosphere. During its thousands of orbits above the earth's ionospheric belt, many important scientific data have been received by tracking stations in different parts of the world, where it was forwarded to the Defence Research Telecommunications Establishment in Ottawa. This valuable information on various aspects of the ionosphere is made available to all countries.

Academic Research

Science in Canadian universities is growing at an unprecedented rate; in 1962-63, some 4,400 graduates in science and engineering were enrolled for postgraduate degrees. New and costly installations — among them a nuclear reactor, a linear accelerator, low-temperature laboratories, computers, chemical-analysis systems — are greatly accelerating researches in the basic sciences. Much attention is also given at the universities to fields that have practical as well as scientific interest—for example, marine biology, auroral research, astrophysics, Arctic studies, geophysics, and weather research.

Atomic Research

Canada's main atomic research and development centre is at Chalk River, Ontario, and is operated by the government-owned Crown company, Atomic Energy of Canada Limited (AECL). The company is building a second research centre, known as the Whiteshell Nuclear Research Establishment, about 65 miles northeast of Winnipeg.

A main objective of AECL is the development of economic nuclear power, particularly for those regions in Canada which have fully developed the hydro-electric sites close to areas of demand. AECL has two nuclear power plants, both of which are directed to the need for large, base-load stations. The prototype Nuclear Power Demonstration Station, built at Rolphton, Ontario, with the co-operation of the Hydro-Electric Power Commission of Ontario and the Canadian General Electric Company Limited, has an electrical output of 20,000 kilowatts. AECL's Nuclear Power Plant Division is designing and building, with the co-operation of the Hydro-Electric Power Commission of Ontario, the 200,000 kilowatt Douglas Point Nuclear Power Station midway between Kincardine and Port Elgin, Ontario, on the eastern shore of Lake Huron.

Canada's major project in the international field has been the Canada-India Reactor (CIR). An improved version of the NRX reactor, CIR was built at Trombay, India, as a joint project of India and Canada, arranged through the Colombo Plan.

AECL cancer therapy unit