

- 1950** One of the most dramatic as well as beneficial applications of Canada's nuclear reactor technology was the development of the Cobalt-60 cancer teletherapy unit. Atomic Energy of Canada Ltd. has supplied these units for installation in hospitals all over the world.
- 1953** Dr. R. U. Lemieux, working at the National Research Council's Prairie Regional Laboratory in Saskatoon, Sask., achieved the first synthesis of sucrose. This substance is commercially known as cane or beet sugar and is still the cheapest energy-producing foodstuff. While the synthesis of sugar has no immediate industrial or commercial impact, its scientific value has earned Dr. Lemieux and his group world-wide recognition.
- 1954** The refinery of the Sherritt Gordon mine at Fort Saskatchewan, Alta., commenced operations using the ammonia-leach process worked out by Prof. F. A. Forward and his associates at the University of British Columbia. (Prof. Forward now is Director of the Scientific Secretariat, Prime Minister's Office, Ottawa.) The leaching method eliminates both roasting and smelting by treating the nickel concentrates from the mine with air and ammonia under pressure. The nickel, copper, cobalt and sulphur are dissolved, leaving iron and other impurities in the tailings. The copper is precipitated out of the solution by chemical means and the nickel, treated by hydrogen under pressure, is precipitated as a fine powder. It is noteworthy that this nickel refinery also recovers ammonium-sulphate fertilizers as a by-product, at the rate of some 70,000 tons annually.
- 1954-58** Relocation of Aklavik, N.W.T., to a new townsite, Inuvik, was the largest building research and town planning project ever to be undertaken in the Canadian North. The systematic studies connected with this undertaking revealed, for the first time, the extent to which permafrost can affect northern construction and the safeguards required to counteract the influence of permafrost.
- 195-** Dr. J. F. Morton, then with the Laboratory of Hygiene, federal Department of National Health and Welfare, developed the tissue culture used to produce the polio vaccine. The method, put into operation by the Connaught Laboratories, Toronto, represents a large part of Canada's contribution to the advance of polio immunization.
- 1962** U. V. Helava, working in the photogrammetric research section of the National Research Council's Division of Applied Physics, invented the Analytical Plotter—a revolutionary instrument which ushered in a new era in map-making, surveying and satellite photography. The Plotter substitutes mathematical projection for the mechanical projection on which all other plotters rely.
- 1962** Dr. Neil Bartlett, then an Assistant (now Associate) Professor of Chemistry at the University of British Columbia, achieved world-wide fame when he prepared the first true compound of the rare gas xenon. By successfully combining xenon with another gas to form a stable compound (a reaction previously regarded as impossible) he overthrew a number of existing theories on chemical bonding and also opened up a new field of scientific investigation which may lead to unexpected industrial applications.
- 1962** For the first time, a country other than the U.S.S.R. and the U.S.A. had a satellite in orbit, with the successful launching of Canada's *Alouette*. The satellite is still in orbit (1964), sending a wealth of valuable and reliable data back to the computing centre in Ottawa. Scientists, engineers and technicians of Canada's Defence Research Board share with Canadian aircraft and electronics firms the main credit for this remarkable space venture.
- 1963** G. L. E. Jarlan, working in the National Research Council's hydraulics laboratory, invented the perforated breakwater, a design likely to revolutionize the construction of sea walls. While conventional breakwaters do not permit berthing under heavy wave action, the design dissipates wave energy by a seaward vertical wall that is perforated by large-diameter holes and backed by a wave chamber. The wave entering the chamber is reduced by friction and turbulence; water spilling back out of the holes creates a counter-wave which meets the next on-coming wave and reduces its force. The constant filling and emptying of the chamber reduces the wave action, thus providing a quiet harbour for ships berthed on the opposite side of the structure. The world's first full-scale perforated breakwater was built at Baie Comeau, located on the north shore of the St. Lawrence River about 250 miles east of Quebec City.
- 1963** Automotive engineer John Smeaton developed a two-seater vehicle for use on any terrain or in water and in all extremes of climate. The vehicle, known as *Penguin* and manufactured by Pengor Limited of Carleton Place, Ont., is the latest of a whole family of transport facilities invented by Canadians for travel in the northern bush, e.g., in muskeg country. Thousands of these vehicles, which are light enough to be shipped by air, have been ordered by various industries, government departments, and sportsmen in Canada and abroad.