

A completely revised National Building Code was issued in June 1954 after more than four years of work by over 200 voluntary committee workers operating under the guidance of the Associate Committee on the National Building Code. All technical and secretarial work was done in the Division.

Field activities include studies on fires, soil problems on the new railway from Sept-Îles to the Quebec-Labrador iron ore deposits, soil freezing problems in most of the provinces, and permafrost research in connection with the new site for the town of Aklavik. In co-operation with the Meteorological Division of the Department of Transport the first Climatological Atlas of Canada was made available during 1954.

Most of the activities of the *Division of Mechanical Engineering* were again devoted to defence projects, but work in hydraulics, resulting primarily from the St. Lawrence Seaway development, increased sharply and the volume of work of interest to industry showed a steady growth. The demand for wind tunnel testing showed a significant increase during the year. In addition to development tests of new military aircraft, the low speed tunnel has also been used for investigating wind flow over the open bridge of a naval vessel, the effect of ice on the characteristics of a thin delta wing, and the stability of projectiles. The supersonic tunnels have been engaged on studies of different aircraft configurations aimed at reducing the drag in trimmed flight at supersonic speed.

The first flight of a reheat system in Canada was made during the year. In bench tests a part of the reheat fuel is injected before the turbine, thus cooling the turbine blades in addition to boosting the thrust. Problems include ignition, flame stabilization and screeching combustion.

In icing research a fully automatic system of electrothermal de-icing of aircraft has been developed. Current work is concerned with the icing of helicopters.

In the *Division of Radio and Electrical Engineering*, approximately one-half of the work in 1954-55 consisted of defence projects. The remainder of the program included problems in electrical engineering, electronics and radio physics, with emphasis on applications of interest to Canadian industry.

Work during the year included a microwave position-fixing system, remote control of fog alarm stations, merchant marine radar, assistance to the Canadian Wildlife Service, high voltage including the problem of radio interference from extra high voltage transmission lines, electronic detection of flaws in paper, the explosion hazard of static electricity generated by grain handling, transistors, vacuum tubes, microwave communication far beyond the horizon, antennas, radio astronomy, electronic music, high frequency standards, a forestry communication system, and electromedical research.

The administration of the foregoing laboratories has been placed on an entirely separate basis and exists only to serve the scientist. These service groups include the *Division of Administration* plus Central Workshops, the Library, the Patents Section, Canadian Patents and Development Limited (see p. 117), Plant Engineering Services, Public Relations Branch, Liaison Offices at Ottawa, London and Washington, and a Technical Information Service which assists Canadian industry by furnishing scientific and technical data on industrial problems.

Section 2.—Research in the Atomic Field*

Atomic Energy of Canada Limited (AECL), a government owned Crown company, operates Canada's main atomic energy centre near the town of Chalk River, Ont., 130 miles west-northwest of Ottawa. The company has a seven man Board of Directors that includes representatives of private industry, public and private power companies, and the universities, and is engaged in four main activities as follows: (1) the development of technology for economic atomic power; (2) fundamental scientific research in the atomic energy field; (3) operation of nuclear reactors and separation of nuclear fuels (plutonium and uranium-233); (4) production of radioactive isotopes and associated equipment, such as Cobalt-60 Beam Therapy Units for the treatment of cancer.

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