Navy bases and work closely with the RCN, particularly on problems related to anti-submarine devices. Other major naval research investigations undertaken concern corrosion, marine paints, and underwater sound behaviour.

Research and development of weapons and armament is undertaken by the Defence Research Board in co-operation with the Armed Services at various establishments. The largest of these is the Canadian Armament Research and Development Establishment near Valcartier, Que. Its principal activities include research on new explosives and propellants, and development and testing of new and improved weapons.

Research on telecommunications is carried out in two laboratories—the Radio Propagation Laboratory at Shirley Bay, Ottawa, and the Electronics Laboratory on the Montreal Road, Ottawa. These two laboratories, known collectively as the Defence Research Telecommunications Establishment, are primarily concerned with research in problems of communications and air navigation, with particular emphasis on basic research in the fields of radio propagation and electronic component development.

Research dealing with problems in Arctic operations is conducted at the Defence Research Northern Laboratory, Fort Churchill, Man. The activities of DRNL have recently changed considerably. Its major effort has been devoted to the Canadian Geophysical Year (IGY) program and the associated United States IGY rocket program at Churchill.

Special weapons is the generic term used to cover research on the defensive aspects of chemical, biological, and atomic weapons. This work is carried out at the Defence Research Chemical Laboratories at Ottawa; the Suffield Experimental Station at Ralston, Alta.; the Defence Research Kingston Laboratory at Barriefield, Ont.; and at the Department of Agriculture isolation station at Grosse Île, near Quebec City.

Military, psychological, clothing and food research is carried out at the Defence Research Medical Laboratories near Toronto, and in Canadian universities by means of a grant-in-aid program. Aviation medicine is an important field of activity but investigations include naval and army problems as well as studies on blood substitutes, infection and immunity, burns and wounds, the effects of noise on hearing, and other factors likely to affect a military man's efficiency and health.

Most of the basic aeronautical research program is carried out in Canadian universities. The principal fields covered are aerodynamics, aircraft propulsion and engineering materials. Applied research is carried out at the National Aeronautical Establishment at Ottawa, and by contracts with industry. A titanium research program continues to be the major investigation in the materials field. This is carried out by the Mines Branch of the Department of Mines and Technical Surveys, and the Universities of Toronto, Laval and Montreal, in co-operation with various industrial firms.

Another field receiving increased emphasis is the radio propagation problem caused by the disturbances in the upper atmosphere. This distinctly Canadian problem has been recognized as an important one with relation to military communications in the North, and the Defence Research Board has granted assistance to the University of Saskatchewan for the establishment of an Institute of Upper Atmosphere Physics, where research on fundamental problems of the upper atmosphere will be conducted, and where postgraduate training will be given.

Thus, the Board continues to support those fields of research that are of foremost interest to the Canadian Armed Services, and the program is under continual review to ensure that cognizance is taken of all changes in emphasis in defence requirements. Close liaison is maintained between the Defence Research Board and the Department of Defence Production to ensure that research and development activities are closely integrated with production.