

All three types of institutions—federal, provincial and university organizations—have an interest in problems of industrial significance: this is part of the current Canadian pattern of research. Though many Canadian industries now possess research facilities—some of them quite extensive—the main bulk of industrial research to date has been done under government auspices.

Thus the unique problems of the country, particularly its large area coupled with a small population, have led to a typically Canadian organization of research, of which a very strong associate committee system is perhaps the most distinctive feature.

**Federal Institutions.**—Although research by industrial concerns has been slow to develop in Canada, government research has expanded rapidly, at first because of the need for speeding up the production of raw materials, which were for many years the basis of Canada's export trade, and secondly because of the more recent interest in the processing of these raw materials and because of the necessity to meet the needs of national defence. Federal institutions involved in research include the Departments of Agriculture, Fisheries, Mines and Technical Surveys, National Defence, National Health and Welfare, Northern Affairs and National Resources, and Trade and Commerce; the National Research Council; and Crown corporations such as Atomic Energy of Canada Limited. A system of committees, with nationwide representation, eliminates unnecessary duplication of work from these national research organizations.

The scientific work of the Department of Agriculture is described at p. 395 of this volume, the work of the Defence Research Board in Chapter XXVIII (*see* Index), specialized work in scientific forest research in Chapter X, scientific services concerned with Canada's mineral resources conducted by the Department of Mines and Technical Surveys in Chapter XI, investigational work of the Department of Fisheries in Chapter XIII, the work of the National Research Council at pp. 371-375 and atomic research at pp. 375-379. The activities of the other federal institutions engaged in research are described briefly in the following paragraphs.

*Department of National Health and Welfare.*—The Department of National Health and Welfare supports both intramural and extramural research programs. Within the Department, the Food and Drug Directorate, Laboratory of Hygiene, Occupational Health Laboratory and various clinical services are engaged in scientific research in their respective fields. Special studies and surveys are conducted in social and medical economics by the Research Division. The extramural program consists of grants-in-aid of medical research at universities, hospitals and other research institutions from funds under the National Health Program. The Public Health Research Grant provides over \$500,000 per annum with allocations from the Mental Health, General Public Health, Tuberculosis, Child and Maternal Health and Crippled Children's Grants making up approximately \$1,250,000 additional funds. To co-ordinate medical research programs, meetings are held by representatives of the National Research Council, Defence Research Board, Department of Veterans Affairs, National Cancer Institute and the Research Advisory Committee of the Department of National Health and Welfare. These have provided for reasonably clear definition of the field of interest of each organization and have minimized uneconomical overlapping.

*Department of Trade and Commerce.*—Rapid development of grain production in Western Canada led to the passing, in 1912, of the Canada Grain Act. This Act is administered by a Board of Grain Commissioners responsible for control of the transportation, weighing, grading and warehousing of Canadian grain. The Board soon encountered problems that required scientific study and a Grain Research Laboratory was established at Winnipeg in 1913.

The Grain Research Laboratory is the main centre of research on the chemistry of Canadian grains. It is well staffed and equipped to provide the service required to help maintain and expand domestic and foreign markets for all types of grain. Each year the Laboratory provides certain information required by the Board for administering the