

The Department of National Defence and the Department of National Health and Welfare also maintain research laboratories. A system of committees, with nationwide representation, eliminates unnecessary duplication of work from these national research organizations.

Several provinces in Canada have established Provincial Research Councils to stimulate and support research on problems having special provincial significance.

The universities, of course, form an extremely important part of the Canadian pattern of research, much of it along fundamental lines; however, practical problems are not neglected, especially those of regional interest.

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. While 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, Resources and Development, and Trade and Commerce; the National Research Council; and Crown corporations such as Atomic Energy of Canada Limited.

The scientific work of the Department of Agriculture is described at pp. 373-375 of this volume, the work of the Defence Research Board in Chapter XXVII (*See Index*), specialized work in scientific forest research at pp. 468-469, investigational work of the Department of Fisheries at pp. 590-591; and the work of the National Research Council at pp. 341-346. The activities of the other federal institutions engaged in research are described briefly in the following paragraphs.

Department of Mines and Technical Surveys.—The Department of Mines and Technical Surveys maintains a number of scientific services concerned with Canada's mineral resources—geology, mineralogy, topography and other services. The Department's Bureau of Mines is extremely well equipped for the task of studying the mineral resources of the country. The Bureau is responsible for mineral, metallurgical and fuel research, and carries out mineral dressing, extractive metallurgy and other phases of work on minerals basic to plant practice. In its modern physical metallurgy laboratories, the Bureau works on corrosion and its prevention, foundry research, heat treatment, fatigue and stress and strain, and welding. It is equipped to work on gases in metals and possesses a machine for shot-peening.