

through the publication of papers giving the results of researches in the various departments of science and through the distinction conferred by membership in such societies.

Various departments of the Dominion and Provincial Governments have maintained scientific laboratories. Some of these have been concerned merely with routine examination or analysis, but in many cases research was undertaken. The research activities of Government Departments have, however, been inadequate to meet the needs of the situation. Less than 9 years ago, it was estimated that the amount expended annually by government laboratories for investigations of all kinds was less than \$325,000, of which less than \$100,000 was actually expended for research in government laboratories.

Twenty years ago the value of research was not appreciated by Canadian industries. A number of firms had routine testing or assay laboratories, but until 1905 there was none which employed research for the improvement of its manufacturing processes or of its products. The example of foreign firms has to some extent altered public opinion in Canada on this question, but the number of Canadian firms which apply research to their industrial problems is still very small. In 1917 the Research Council of Canada issued a questionnaire to the industries. Replies received from 2,400 of the leading firms in Canada showed that only 37 had laboratories for research; 83 employed as many investigators and 276 assistants, but the great majority of these were engaged only in routine examinations. Apart from salaries, the total amount expended in 1916 for research by all firms listed did not exceed \$135,000.

With the growth of Canadian wealth, the scientific equipment of the leading Canadian universities has been greatly increased and scientific researches are now being prosecuted on a considerable scale, as a result of the research scholarships granted by the National Research Council of Canada, or endowed, by various wealthy benefactors, in the leading universities of the country. An especially notable achievement is the discovery of insulin, a preparation which indefinitely prolongs the lives of those suffering from diabetes, by Dr. F. G. Banting, Dr. J. B. Collip and Mr. C. H. Best, working under the supervision of Prof. J. J. R. Macleod, Professor of Physiology in the University of Toronto. The Nobel prize in medicine for 1923 was awarded to Dr. Banting and Dr. McLeod for their discovery, and in the same year Parliament voted to Dr. Banting a life annuity of \$7,500, to enable him to devote himself entirely to medical research.

The importance of scientific and industrial research has been recognized in recent years by the creation of the Honorary Advisory Council for Scientific and Industrial Research, now known as the National Research Council and by the establishment of provincial research organizations, notably the Research Council of Alberta and the Ontario Research Foundation. Provincial research organizations are also being formed in Saskatchewan, Manitoba and Nova Scotia.

Subsection 1.—The National Research Council.

A synopsis of the history of scientific and industrial research in Canada, also full information regarding the establishment, organization and activities of the Honorary Advisory Council for Scientific and Industrial Research, more commonly known under the short title of "The National Research Council", will be found in previous editions of the Canada Year Book, notably on pp. 53-57 of the 1920 edition. It is therefore, only necessary to repeat that shortly after the outbreak