

diffraction of crystals, materials testing, and instrument design, and has many important developments to its credit, including the differential flotation process used on ores of the famous Sullivan mine.

Ayerst, McKenna and Harrison Limited has followed an extensive research program for some years in such fields as vitamins, antibiotics, liver extracts, bacteriological products, sex hormones, gland products, and veterinary medicines. It also does basic research and supervises the Canadian Government plant at St. Laurent for the large-scale production of penicillin.

Other companies with sizable research departments represent many diversified interests, for example: Canadian Industries Limited, International Nickel Company, Dominion Rubber Company, Imperial Oil Limited, Shawinigan Chemicals Limited, the Maple Leaf Milling Company, Canadian Breweries Limited and Canada Packers. There are, of course, many others.

To an increasing extent, recent scientific developments are leading to a reasonably swift industrial application, as shown by the establishment of such companies as Isotope Products Limited at Oakville, Ont., and Computing Devices of Canada Limited at Ottawa, Ont.

To date, however, a large amount of industrial research continues to be done under Government auspices, and sometimes with the co-operation of universities. Two further examples of this Canadian habit of co-operation between industries and other organizations may be cited: the Research Division of The Hydro-Electric Power Commission of Ontario, a provincial service, and the Pulp and Paper Research Institute, intimately associated with McGill University. These organizations are briefly described in the following sections.

*The Hydro-Electric Power Commission of Ontario.*—The Research Division of Ontario Hydro, with a present staff of 300, provides testing, investigation and research services for all phases of the utility's engineering design, construction work, and system operation and maintenance. The Division maintains a close liaison with other research organizations and power utilities, and staff members participate in the committee work of major technical societies and standardizing associations.

Electrical investigations pertain to improvements in equipment for generating, transmitting, distributing and utilizing power. Problems of electrical insulation, system disturbance recording, protection against lightning, energy metering and illumination are among those studied in such investigations. Attention is given to the performance and efficiency of power equipment, to improved measuring techniques, and to means of minimizing the hazards of electric shock.

Among the structural and mechanical topics studied are the following: metallic corrosion; stresses in structures; noise and vibration conditions; soil mechanics as related to foundations, roads, and earth dams and dykes; the physical properties of structural components and of numerous items such as conductor joints and line hardware; the mechanical performance and safety features of various types of machines; welding materials, techniques and applications; and a variety of problems associated with the design of concrete structures, the application of masonry materials, and the production, placement and quality control of all concrete used.

In addition to chemical analyses and tests performed on a wide range of materials and products purchased, chemical research work is conducted with regard to