

structure, to end-use development of new polymers. A recently completed modern research laboratory houses special laboratories for monomer research, polymerization and development work, electron microscopy, infra red spectrophotometry, micro-compounding and physical testing, and latex technology and applications. Other major facilities include rubber compounding and evaluation and technical service laboratories as well as several pilot plant units equipped for semi-commercial production and evaluation of new processes in both the free-radical and ionic systems.

Aside from the scientific research carried on by the expanding facilities of large individual companies, primarily for their own benefit, a great amount of industrial research continues to be done under the auspices of the federal and provincial governments, sometimes with the co-operation of universities. Two 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 of Canada, intimately associated with McGill University. The research work of these organizations is 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 such subjects as wood preservation, plastics applications, protective coatings, brush and weed control, lubrication, liquid electrical insulants, water treatment, thermal insulation, and corrosion prevention.

Other studies contributory and supplementary to the main branches of work are carried on in the fields of physics, biology, meteorology, petrology and mathematics.

*The Pulp and Paper Research Institute of Canada.*—Because so much of the Canadian economy is dependent upon pulp and paper the need has long been recognized for research on cellulose chemistry and other technologies associated with the use of cellulose. In 1913 the Federal Government established the Forest Products Laboratories in Montreal. Its Pulp and Paper Division began to receive support from the pulp and paper industry in 1925 and soon after started to work closely with the Chemistry Department of McGill University. The present building on the University grounds was opened in 1929 to provide increased accommodation and facilities for its expanding activity in pulp and paper research.