

project has been established at the University of Toronto in the form of a computation centre. This is operated by the University and financially supported by the Defence Research Board and the National Research Council, with the object of developing computation equipment and of training competent operators in this new and complex field of work.

**Industrial Research.**—Many small industries and some large ones in Canada have, in the past, been totally unaware of the value of research to their industries and to the country, partly because many Canadian companies are subsidiaries of companies in the United Kingdom and the United States, and partly because small companies find it impossible to finance their own research. This general problem is well recognized in Canada, but cognizance should be taken of Canada's vast areas, absence of concentration of similar industries, and proximity to the relatively vast research facilities of the United States.

What Canada has done about industrial research, in the face of these rather formidable difficulties, has been partly covered above: in one way or another Canadian universities, provincial institutions and federal organizations have aided Canadian industry and, although relatively little research has been done in Canada by industrial organizations, a very great deal of research has been done on their behalf.

This picture is changing rapidly. To-day, Canadian industries are becoming aware of the value of research and many industries now possess research facilities—some of them quite extensive. A survey made by the Canadian Manufacturers' Association a few years ago showed that over 360 of their member companies maintained laboratories in which more than 3,100 persons were employed in research, testing or control. Examples of Canadian industries with powerful research organizations are: Aluminum Laboratories Limited at Kingston, Ont.; Consolidated Mining and Smelting Company at Trail, B.C.; and Ayerst, McKenna and Harrison Limited at Montreal, Que.

Aluminum Laboratories Limited undertakes both fundamental and applied research; its divisions include an industrial group to bridge the gap between scientific development and commercial application, plus mechanical testing, metallography, electro-metallurgy, physics, chemical-metallurgy, analysis and documents. Experimental alloys are constantly being produced and tested for such properties as hardness and resistance to corrosion.

The Consolidated Mining and Smelting Company maintains a large Research and Development Division. It has special laboratories equipped for study in ore-dressing, electrolysis, gas reactions, metallographic and petrographic work, X-ray 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.