

considerably advanced. In the field of biology interesting results have been obtained on the effect of radiation in producing chromosome breaks.

In December a highly successful conference on the use of isotopes in industry was held in Ottawa to acquaint Canadian industrialists with possible uses of radioactive isotopes now being produced at Chalk River. Representatives were present from all major industries including pulp and paper, mining, chemical companies, milling, yeast manufacturers, textile companies, the rubber industry, manufacturers of pharmaceuticals, chief railways, electrical companies, manufacturers of cement, oil refineries, and the automobile and farm implement industries. About 120 leaders from Canadian industry were present at the Conference. The group included directors of research and other executive officers who came to discuss the technical use of isotopes with N.R.C. scientists.

Programme for the Conference included a demonstration lecture by Dr. D.A. Keys, Vice-President of the Council and Manager of the Atomic Energy Project.

Group discussions followed in which the industrial representatives were shown how the radioactive materials produced at Chalk River could be used in the control of industrial processes. For example, the amount of wear on a bearing can be determined easily and accurately; the thickness of gold plating on jewellery can be measured and controlled; what happens to the sulphur in coke used in iron blast furnace smelting operations, can be followed. Hundreds of peacetime applications exist for radioactive materials including the possible use of atomic energy for heat and power purposes.

In the pure chemistry branch, of the Division of Chemistry, work is continuing on various problems connected with the structure of alkaloids, and an investigation using radioactive tracers has been started on the synthesis of alkaloids in plants. One project employs radioactive atoms to trace the mechanisms of chemical reactions. First observations are being made using radioactive carbon in a study of some controversial aspects of the photochemical decomposition of acetone. Radioactive tracers are also being employed in investigations on the transition from the gaseous to the liquid state. A variety of physical chemistry problems are under investigation, including photochemistry, surface chemistry, spectroscopy, and calorimetry.

Work has started on the construction of new laboratories for the applied chemistry branch of the Division of Chemistry at the Montreal Road site. The new building, when completed, will provide badly needed additional laboratory facilities and will relieve the present congestion in the Sussex Street laboratories.

An appreciable fraction of the work carried out in the applied chemistry branch consists of tests and service work for Government departments and industry and the development of testing procedures or analytical methods in connection with the drafting of Government specifications. The major activities of the branch, however, are concerned with many long-term research projects in the applied chemistry field, some of which may be mentioned.

A study is being made of the factors which affect corrosion rates in the high-temperature corrosion of alloy