

not dyes and pharmaceuticals, but pitch for electrode manufacture and building materials, creosote for wood preservation and phthalic anhydride from naphthalene for resins and paints.

"Another chapter of Canada's story was opened up by the finding of uranium. At the turn of the century, the physics and chemistry departments of McGill University witnessed the basic discoveries by Rutherford and Soddy of the Transmutation of the higher elements by radioactive disintegration. In the 1930's a source of radium was discovered by Gilbert LaBine in the far Canadian north at Great Bear Lake and a radium refinery was built at Port Hope, Ontario. These radioactive materials proved of great importance to the United States during the development of the first atomic bomb. After the war large uranium finds were made, first in northern Saskatchewan and later in Ontario, notably at Blind River between Sudbury and Sault Ste. Marie.

"The extraction of this uranium generally requires sulphuric acid and sodium chlorate. For the new uranium mines in the Blind River area additional sulphuric acid capacity of upwards of 1,300 tons a day has been provided in the last two years. Most of this acid is made from pyrites at a new plant built by Noranda Mines Limited and the remainder comes from further utilization of fumes from the International Nickel Company's smelter at Copper Cliff.

"This again points up the dependence of our heavy chemical industry on the resource industries. The annual consumption of sulphuric acid per capita in Canada has risen continuously; it was 13 pounds in 1921, 45 pounds in 1938, and is running at 175 pounds today. This compares with a present figure of 100 pounds per capita in the United Kingdom and 185 pounds in the United States.

"The growing importance of the chemical industry as a part of the Canadian economy is well illustrated in a study prepared for the recent Royal Commission on Canada's Economic Prospects in which the consumption of chemicals and allied products is compared to the gross national product. The first year for which information is available is 1926, when consumption of chemicals was 2.4 per cent of the national product. By 1938, consumption had risen to 3.2 per cent, and by 1955 it was 5.1 per cent of a greatly increased national product. The predicted value for 1980 is in the neighbourhood of 10 per cent. The chemical industry clearly forms an increasing percentage of a rapidly growing gross national product.

"In terms of constant dollars, the value of chemical production in 1955 was four times that for 1938, but the effect of the application of chemistry to the economy is far greater. Chemical processes are penetrating into other industries not usually included in the definition of the chemical industry. The

petroleum refining industry, for example, once primarily a distillation operation, now comprises a highly complex series of chemical operations in which new gasolines are manufactured by synthesis from the products of cracking crude oils. A more unusual example, perhaps, is the food industries which not only are consuming more chemicals for processing and packaging, but are becoming the source of a variety of chemical products.

"The role of chemicals in Canadian exports should not be overlooked. At first sight it might well appear that the chemical industry makes but a small contribution to exports--actually some four per cent of total exports in 1957. Such a conclusion, however, would be mistaken. A large part of chemical production is consumed by the great export industries--pulp and paper, base metals and uranium for example--and hence chemicals play a vital part in the export of products derived from Canadian resources. Without chemical treatment, a much larger proportion of our resources would be exported in crude form with consequent loss to the economy.

"The early growth of the chemical industry in Canada was clearly linked with the rapid expansion in hydro-electric power development and with the production of minerals and forest products. Although some important wartime additions to the industry have continued in operation, the discovery and opening-up of large domestic oil and gas reserves, and most recently the new uranium developments, have provided the stimulus for much of the new chemical growth that has taken place since 1945.

"Looking ahead to the year 1980, the Gordon Commission has forecast that the consumption of chemicals will continue to grow at much the same rate. Undoubtedly the industry will show the effects of an expanding domestic market as population and secondary industry increase, but its growth is still likely to be governed to a considerable extent by the development of the resource industries of Canada, and by the degree to which their products are exported in more highly manufactured form."

\* \* \* \*

## NEW MINERAL MAP OF CANADA

The eighth edition of the mineral map of Canada, in colour, giving a comprehensive picture of the industry up to the end of 1957, and showing current producers, potential producing regions, and main geological divisions, has been issued by the Department of Mines and Technical Surveys.

Over 230 mines and 130 oil and gas wells, with the names of operating companies, are indexed, province by province, on the map. Among the new producers listed are the copper-zinc-silver mines at Manitouwadge in Northern Ontario, the nickel-copper mine at Rankin Inlet, Northwest Territories, the gas wells in