

less exposed to extreme fluctuations in production and employment. Exports of railway rolling-stock were relatively insignificant before 1944. In that year a program for the rehabilitation of European railways was undertaken and, since that time, contracts for France, Belgium, India, South Africa and Rhodesia, as well as countries in the Middle East and South America, have been completed.

The fifth largest manufacturing industry, petroleum products, had a gross value of output of \$660,000,000 in 1952, and is of tremendous significance in terms of Canada's balance of payments and strategic importance to the defence of North America. Measured in either bulk or value terms, world production of crude oil is the most important commodity entering international trade. Canada's growing industrialization is reflected in the rising rate at which crude oil is used and per capita consumption is now the second highest in the world. There have been three definite phases in the use of oil. The first, which began soon after 1860, was based on kerosene but light petroleum fractions were soon accepted as a cheap and efficient substitute. Other fractions, which make up the rich and complex mixture of hydrocarbons in crude petroleum, ranging from explosively volatile wet gases to heavy oils, waxes and asphalts, were beyond the technology of the day to unravel and the capacity of the economy to absorb. World War I and the maturity of the internal-combustion engine marked the second phase. The price of gasoline rose sharply and drilling activity increased all over the world. By 1930, surplus oil production had become general once more and from then until World War II there was from 20 to 25 p.c. surplus capacity in all branches of the industry. With kerosene consumption declining and the gasoline phase becoming general, middle distillates and the heavier ends overhung the market and frequently were sold at distress prices. Phase three, which developed out of the Second World War, is now asserting itself. For the first time, most refineries have few surplus products. Nearly everything from a barrel of crude is being marketed, it now being possible to gear production closely to fluctuations in demand. Behind all this lies modern refinery equipment and techniques, which are being used to 'crack' heavy fractions down to lighter ones and, more important still, the domestic oil heater and the diesel engine. Middle distillate consumption has been increasing much more rapidly than that of gasoline in recent years and now serves to underwrite much of the growing demand for crude oil. Although the history of the Canadian crude oil industry dates back almost 100 years, production did not begin to reflect the amount of exploratory drilling done in the Western Provinces until 1936 when Turner Valley was definitely established as a major oil field. Scattered discoveries of little commercial importance had been made before that time and natural gas had been found in abundance. With the exception of the discovery of the heavy crude area at Lloydminster in 1944, no other outstanding developments took place until early 1947 when the Leduc field was discovered. Output had been falling off but in the few years since the Leduc field came into production the Canadian oil outlook has been transformed. In 1947, domestic sources supplied less than 10 p.c. of the nation's needs. Since then, production has greatly increased and existing wells are now capable of producing nearly 50 p.c. of domestic petroleum requirements.