

and the production of several United States types of defence aircraft. On the civilian side several types of passenger aircraft were developed to meet Canadian flying conditions, especially in the vast areas of the North. These have met with a good response from purchasers abroad as well as at home. This development in aircraft production has been accompanied by the establishment of facilities for producing items new to Canadian manufacturing such as aircraft instruments, needle bearings, and special alloys to withstand the heat of jet engines.

Canada's railway rolling stock industry experienced peaks of activity during and immediately after the two world wars. It enjoyed several years of moderate prosperity in the 1920's but became one of the nation's most depressed industries a few years later. Generally speaking the level of activity in this industry has been closely linked with the financial position of the Canadian railways. The facilities of locomotive and car building companies, dependent almost entirely upon the railways' program of new investment in rolling stock, have been used in an intermittent fashion and prolonged plant shut-downs have not been uncommon. On the other hand outlay on repair and maintenance has usually been necessary on a continuing basis and railway shops and parts suppliers have been less exposed to extreme fluctuations in production and employment. From 1951 to 1953 the industry's sales increased.

The fifth largest manufacturing industry, petroleum products, had a gross value of output of \$695,000,000 in 1953 and is of considerable 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. 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 use of gasoline becoming general the production of middle distillates and the heavier ends outran the market and they were frequently 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 1946 domestic sources supplied about 10 p.c. of the nation's needs; in 1953 the proportion was 46 p.c.

In 1953 the sawmills produced about \$581,000,000 worth of planks and boards, shingles, railway ties and other sawmill products and thus ranked sixth among Canada's manufacturing industries. Since the early days of Canada the growth of the lumber industry