

custom ore concentrates shipped from the mine of North Rankin Nickel Mines Limited at Rankin Inlet on the west shore of Hudson Bay. Giant Nickel Mines Limited, whose mine is near Hope, B.C., commenced shipments of nickel concentrates to Japan in 1960.

International Nickel's Thompson project in northern Manitoba, with an annual production capacity of 37,500 tons, began producing electrolytic nickel in February 1961. The Thompson operation includes mine, concentrator, smelter and an electrolytic refinery utilizing artificial nickel sulphide anodes. Company properties under development in the Sudbury area are the Crean Hill, Clarabelle open pit and the Copper Cliff North. The company has a \$5,000,000 fluid-roast plant under construction at Copper Cliff. It also announced late in 1960 a further \$50,000,000 program to triple the capacity of its iron recovery plant. Feed for this plant is pyrrhotite tailings from which the nickel is first removed by an atmospheric ammonia leach.

Falconbridge Nickel, in the Sudbury area, has commenced a \$25,000,000 program which will include \$5,000,000 for a 100,000-ton-a-year iron recovery plant; \$10,000,000 to \$15,000,000 for a shaft and development program at the large Strathcona deposit, and \$7,500,000 to \$10,000,000 for plant expansion and refinement designed primarily to improve efficiency of operation.

Official ore reserves in the Sudbury area in 1959 were 264,864,000 tons for International Nickel and 46,182,450 tons for Falconbridge Nickel. These reserves, with those of northern Manitoba, assure the Free World of sufficient nickel for many years.

Copper.—Canada's copper mining industry continued to expand in 1960. Production reached a record high of 438,383 tons valued at \$264,336,899, exceeding the 1959 output by 43,114 tons and \$31,234,086. The increase in production was attributable to new mine capacity, increased capacity at some existing mines and increased production from the nickel-copper mines of the Sudbury district of Ontario as a result of a strong world-wide demand for nickel.

Six smelters for the reduction of copper and copper-nickel ores and concentrates are operated in Canada. In the Sudbury area, The International Nickel Company of Canada, Limited operates smelters at Copper Cliff and Coniston, and Falconbridge Nickel Mines Limited produces copper-nickel matte at its Falconbridge smelter. Hudson Bay Mining and Smelting Company Limited at Flin Flon, Man., smelts concentrates from its mines in Manitoba and Saskatchewan and, since September 1960, smelts concentrates from the Lynn Lake, Man., mine of Sherritt Gordon Mines Limited. Ores and concentrates from the copper mines in Ontario, Quebec and Newfoundland are smelted at the Noranda smelter of Noranda Mines Limited and the Murdochville smelter of Gaspé Copper Mines Limited, both in Quebec. Copper refineries are operated by International Nickel at Copper Cliff and Canadian Copper Refiners Limited at Montreal East, Que. The capacity of the Canadian Copper Refiners' plant was increased to 236,000 tons of copper a year in 1960 and the combined production of the two refineries totalled 414,000 tons at the end of the year.

In Newfoundland, the Tilt Cove mine of Maritimes Mining Corporation Limited and the Buchans Unit of American Smelting and Refining shipped concentrates containing 13,875 tons of copper in 1960. Exploration parties were active at several of the old copper properties on the Burlington peninsula and Atlantic Coast Copper Corporation Limited started construction of a 1,000-ton-a-day mill at Little Bay. Production from the latter property started in early 1961.

Although no copper production from New Brunswick was recorded in 1960, underground development was started at the Wedge property and was resumed at the Heath Steele mine. The Consolidated Mining and Smelting Company of Canada Limited constructed a mining plant and started shaft sinking and underground development of the Wedge property 36 miles southwest of Bathurst. Heath Steele Mines Limited unwatered its mine north of Newcastle and resumed underground development and exploration of the orebodies.