

Mining and Smelting Corporation Limited in New Brunswick. The value of 1964 production was \$43,556,719 compared with the value of 1963 production at \$41,425,891. At the beginning of the year the price was \$1.4020 per oz.t. and at year-end it was \$1.3930; average for 1964 was \$1.4000. Of the total 1964 output, 79 p.c. was by-product derived from base-metal ores, 19 p.c. came from silver-cobalt ores mined in northern Ontario and 2 p.c. from lode gold ores mined in British Columbia, Ontario and Quebec and placer-gold ores mined almost entirely in British Columbia and the Yukon Territory.

The Consolidated Mining and Smelting Company of Canada Limited, at its refinery at Trail, B.C., produced 7,347,590 oz.t., most of which was derived from lead and zinc concentrates originating in mines in southeastern British Columbia and in the Yukon Territory. The remainder of the Canadian output of refined silver was produced from blister and anode copper by Canadian Copper Refiners Limited in Montreal East; from blister copper by The International Nickel Company of Canada, Limited at Copper Cliff, Ont.; from gold precipitates by Hollinger Consolidated Gold Mines, Limited at Timmins, Ont.; from gold bullion by the Royal Canadian Mint at Ottawa; and from arsenical-silver-cobalt concentrates by Cobalt Refinery Limited at Cobalt, Ont.

Canada's largest sources of silver are the Hector-Calumet, Keno, Elsa and Silver King silver-lead-zinc mines in the Yukon Territory about 200 miles north of Whitehorse, operated by United Keno Hill Mines Limited, and the Sullivan lead-zinc-silver mine at Kimberley, B.C., operated by The Consolidated Mining and Smelting Company of Canada Limited. In the 15-month period ended Dec. 31, 1964, United Keno produced concentrates containing 7,270,911 oz.t. and in 1964 Consolidated Mining and Smelting produced concentrates at the Sullivan mine containing 2,897,791 oz.t. Other important producers of by-product silver included Mastodon-Highland Bell Mines Limited at Beaverdell in southern British Columbia; Hudson Bay Mining and Smelting Co., Limited at Flin Flon, Man.; Noranda Mines Limited (Geco Division) at Manitouwadge, Ont.; The International Nickel Company of Canada, Limited at Sudbury, Ont.; Brunswick Mining and Smelting Corporation Limited near Bathurst, N.B.; and American Smelting and Refining Company (Buchans Unit) in Newfoundland. In the Cobalt and Gowganda areas of Ontario a number of firms mined silver-cobalt ores from which 5,920,900 oz.t. of silver were recovered in 1964.

**Platinum Metals.**—Canadian production of the platinum metals in 1964 amounted to 374,988 oz.t., valued at \$25,196,159. This slight increase over the previous year resulted from increased 1964 nickel production; platinum metals are recovered as a by-product of nickel mining. The group consists of platinum, palladium, rhodium, ruthenium, iridium and osmium; all except osmium are produced in Canada. World markets for platinum metals were very strong in 1964. In the past several years, world production has been about evenly divided between Canada, the Republic of South Africa and the U.S.S.R. In 1964, sales by the U.S.S.R. to the non-communist world virtually ceased, causing a wide difference between the official platinum price, about \$90 an oz.t., and the free market price, up to \$140 an oz.t.

Platinum metals occur in Canadian nickel ores to the extent of about 0.025 oz.t. per ton of ore. In the treatment of these ores for nickel, the platinum metals follow nickel and are eventually removed as sludges from the electrolytic tanks in which nickel anodes have been formed. The sludge is purified and sent to precious metal refineries in Britain and the United States for recovery of the platinum metals. All of Canada's platinum metals production results from the treatment of nickel ores of the Sudbury district of Ontario and the Thompson mine in Manitoba.

**Cobalt.**—Cobalt is derived as a by-product from the smelting and refining of nickel-copper ores of Sudbury, Ont., and Lynn Lake, Man.; from nickel ores of Thompson, Man.; and from silver ores of Cobalt, Ont. International Nickel recovers cobalt from its refinery operations at Port Colborne, Ont., Thompson, Man., and Clydach, Wales, based on its Sudbury and Thompson ores. Falconbridge Nickel produces electrolytic cobalt in the