British Columbia, the largest copper producing province, accounted for 45% of Canada's production in 1987. Most of the province's production of copper is exported for treatment to offshore smelters and refineries which are located primarily in the Pacific Basin. A 4500 tonnes per year (t/y) solvent extraction and electrowinning plant at the Gibraltar mine produces electrowin cathodes.

Production in Ontario, the second largest producing province, is located mainly in Sudbury and Timmins. Two copper smelters and a copper refinery in Sudbury are supplied by mines in the area. A refinery and a continuous smelter in Timmins are supplied with ore from an underground mine. Some concentrate is also shipped to custom smelting facilities in Quebec. Ontario accounted for 36.6% of Canada's copper production in 1987.

Quebec and Manitoba produced 7.3% and 9.4% of production, respectively, in 1987. Smelting facilities in Manitoba (Flin Flon) and Quebec (Rouyn-Noranda and Murdochville) send anode copper to a refinery in Montreal East, one of the largest in the world.

The remaining production comes from mines in New Brunswick, Saskatchewan and Nova Scotia. Copper production in the Maritime provinces is a byproduct of the production of other metals.

Copper prices rose in the latter half of 1987, averaging US$0.80/lb. for the year on the London Metal Exchange, and continued to climb in 1988. Although production was expected to continue increasing in 1989, slow growth in demand was forecast and prices were expected to decline.

Canadian copper concentrates are smelted domestically or are exported to offshore custom smelters. In 1987, 381000 t of copper in concentrates were exported, of which 72% went to Japan. Canadian smelters in Quebec supplemented their domestic concentrate supplies in 1987 by importing scrap and 52000 t of copper in concentrates. Canadian refined copper production (491000 t in 1987), almost exclusively in the form of cathodes, is either shipped to domestic fabricators or exported, mainly to the US and Western Europe. In 1987, 215000 t were shipped to domestic destinations, 289000 t were exported (68% to the US and 30% to Western Europe) while 16000 t of cathodes were imported.

Copper is the preferred material when superior electrical or thermal conductivity and corrosion resistance are desired. Copper's main uses are for the transmission of electrical energy and electrical signals, for water transmission and heat transfer. Copper, as well, may possess definite bacteriological advantages: preliminary research has shown that Legionella pneumophila bacteria are inhibited by plumbing systems fabricated from copper whereas plumbing systems made from other materials did not show similar inhibition.

Iron Ore. The Canadian iron ore industry, ranked seventh in the world in 1987, produced 37.6 million tonnes valued at $1.25 billion.

The capacity of the Canadian industry has been reduced by mine closures from 67 million tonnes in 1982 to about 50 million tonnes in 1988. The industry employs over 6,500 persons, with six operating mines. The three plants located in Ontario are small and supply the domestic steel industry, while the three in the Quebec/Labrador trough are large export oriented firms. About 80% of the iron ore produced in Canada is exported; about 35% of the ore used by Canadian steel companies is imported, mainly from the United States.

The industry produces iron ore concentrates and pellets. Most of the iron ore sold in North America is in the form of pellets, while the concentrate is more popular in Europe and Japan. These products are available in a number of grades and types.

During 1988, the industry operated near capacity, due to high demand in the United States and Canada. Iron ore demand was expected to weaken by the end of 1989. Factors in this expected decline are a general decrease in economic activity and an increase in output by electric furnace steel mills that use scrap rather than iron ore.

In the longer term, demand for iron ore will continue to grow, as more environmentally benign new direct smelting processes enter operation, displacing traditional blast furnaces.

Nickel. Canada is the second largest producer of nickel in the world, after the USSR, accounting for a little over one-fifth of total production. In 1987, Canada produced about 188000 t, valued at $1.3 billion, compared to 163600 t in 1986.

Nickel is produced from mines at Sudbury, Ont. and Thompson, Man. Refined nickel is produced at Sudbury and Port Colborne, Ont., and Thompson, Man. A nickel refinery is also in operation at Fort Saskatchewan, Alta.

Cost reduction programs have been an important priority of producers in the past few years. The results have been encouraging and production costs at the Sudbury and Thompson operations, in current dollars, were actually lower in 1987 than in 1980.

Nickel prices on the London Metal Exchange (LME) rose in 1987 to an average price of US$2.21/lb. compared to US$1.76/lb. in 1986. Prices rose in the latter part of the year in response to strong nickel demand and tight supplies.