

previous year. Most Canadian silver is refined in Canada at the facilities of Cominco Ltd. at Trail, BC; Noranda at Montreal, Que.; and Agnico Eagle at Cobalt, Ont.

Lead. Lead is mined mainly as a co-product of zinc in New Brunswick, British Columbia, the Yukon and Northwest Territories. Minor amounts of lead are also produced as a byproduct of polymetallic ores in Ontario and Manitoba. Primary lead metallurgical works are located at Belledune, NB and Trail, BC.

In 1987, an estimated 391 000 t of lead in concentrates were produced, which was about 56 000 t more than in 1986. Refined lead production from all sources dropped by 41 000 t to 217 000 t in 1987, mainly as the result of a three-month strike at the Trail, BC operations.

The Canadian lead mining industry is generally considered to be internationally very cost competitive. The ore is of good grade and the mines are large and well equipped. The domestic lead smelting industry is currently undergoing a modernization program to enhance its cost competitiveness.

Platinum group metals. The platinum group metals, which include platinum, palladium, rhodium, ruthenium, iridium and osmium, occur in nature in close association and are chemically similar in many respects. Platinum and palladium are the most important members of the group in terms of both production and variety of uses.

Canada, the third largest producer of platinum group metals (PGMs) following South Africa and the Soviet Union, accounts for about 5% of total world production. Canadian production in 1987 was estimated at 13.5 million grams.

Platinum group metals are produced in Canada by two companies as byproducts from the mining of nickel-copper ores. Although the bulk of the PGMs are recovered from operations in the Sudbury, Ont. basin, small amounts of these metals are also produced at Thompson, Man.

The residue from the refining of nickel-copper matte, which contains platinum group metals, is shipped by one company to its refinery at Acton in the United Kingdom for the extraction and refining of PGMs. The other company ships a nickel-copper matte containing PGMs to its refinery at Kristiansand, Norway.

While the use of the PGMs, particularly platinum, in jewellery is important, their principal applications are industrial in nature. The unique attributes of the PGMs, including remarkable catalytic properties, chemical inertness, stability as electrical contacts and resistance to high temperature oxidation, make them indispensable in many industrial applications.

One of the largest single uses for PGMs is in the production of automobile exhaust catalysts. This use is expected to increase significantly in the future as governments move to introduce or improve automobile emission standards.

In addition to uses by industry or in the manufacture of jewellery, there has been a rapid increase in the production of platinum coins, wafers and small bars in recent years in response to growing investment demand. During 1988, the Royal Canadian Mint received approval for the production and marketing of a platinum coin to be known as the "Platinum Maple Leaf". It is expected that this program will utilize up to 4.7 million grams of platinum per annum. Almost 2 000 kg were produced and sold in 1988.

After reaching highs in 1986 of US\$665/oz. and \$151/oz., respectively, platinum and palladium prices eased somewhat during 1987 and 1988, although they remain relatively high by historical standards. Platinum prices averaged US\$555.96/oz. in 1987 while palladium averaged US\$131.40/oz. This strength has resulted from forecast increases in consumption, particularly for automobile catalysts; continued concern over the supply of these metals from the Republic of South Africa, the largest supplier of PGMs to the western world; and the threat of a renewed round of inflation.

With favourable market conditions, extensive PGM exploration is continuing in several countries. In Canada, a number of promising deposits have been identified on the basis of preliminary exploration programs. It is expected that several of these will eventually be brought into production. The most advanced property is a deposit at Lac des Îles, near Thunder Bay, Ont. where production was expected to begin in 1989.

Tin. Until recently, Canada was regarded principally as a tin consumer rather than a tin producer, although small amounts of tin concentrate were recovered as a byproduct of base metal mining at Kimberley, BC.

Canada relies on imports for its tin metal requirements except for small amounts recovered from recycled solders and detinning, and from primary tin-lead alloys production. Consumption fell from a 4 500 t peak in 1980 to about 3 600 t in 1987. Tin metal consumption is concentrated in tin plate produced by two large Canadian steelmakers.

Canada's first major tin mine started production under Rio Algom ownership at East Kemptville, NS in late 1985. The opening of the mine unfortunately coincided with the collapse of tin prices following the cessation of tin price-stabilizing efforts of the International Tin Council. After