

### 6.—Cobalt.

The major portion of the world's supply of cobalt has for almost two decades been derived from the silver-cobalt-nickel arsenides of the Cobalt district, the silver refineries at Thorold and Deloro in Ontario having practically controlled the world's production in recent years.

The ore bodies at Cobalt, discovered in 1902, carry silver, cobalt, nickel and arsenic. About 80 p.c. of the productive veins occur in the Keewatin, which consists of basic igneous rocks underlying the Cobalt series, the remaining 20 p.c. being about equally divided between the Keewatin and Nipissing diabase.

During the first six months of 1923, the Coniagas and Deloro smelters treated ores and residues from the district and marketed cobalt oxide, metallic cobalt and unseparated oxides of nickel and cobalt. The cobalt residues from the cyanide process were for the most part treated in Canada, although some of these, as well as smelter residues, amounting in all to 187 tons containing 62,880 lbs. of cobalt, were shipped abroad for treatment. The cobalt production of Canada during the first half of 1923 was 538,018 lbs., valued at \$1,533,351. For 1922 production and values see Table 2 of this section.

### 7.—Zinc.

The zinc mining industry of Canada has recently made rapid strides, largely on account of the application of the electrolytic method of treating the lead-zinc ores of British Columbia. The metallic recoveries from Canadian ores were about 56.3 million lbs. in 1922 as compared with 7.0 million lbs. in 1913. From an insignificant position in 1913, the country advanced to the fifth rank among the world's producers in 1922, with an output of about 3.5 p.c. of the world total.

**Quebec.**—The Notre Dame des Anges mines at Montauban, in the county of Portneuf, were until recently important shippers of lead-zinc concentrates. The chief ore minerals were ferruginous zinc blende, intimately associated with galena; the ore carried gold and silver values.

**British Columbia.**—The principal zinc mining regions are situated in the Kootenay district of British Columbia, where there are large deposits of silver-lead-zinc ore. The chief producing mine is the Sullivan in the Fort Steele division, where the ore worked is a replacement deposit of considerable size. Other active mines are located at Ainsworth and Slocan in the West Kootenay district and at Omineca in the Cariboo district.

The industry before the war was greatly retarded by unsatisfactory marketing conditions. The majority of the mines were essentially producers of silver and lead, and zinc blende occurred as an accessory ore. Until local smelting proved successful, practically all the British Columbia ores were treated at seven or more smelters in the United States, but the cost of freight to these, although covered by a combined 'freight and treatment rate' was necessarily an important charge against the ore. The high tariff on zinc ores exported to the United States was also a consideration. The smelter at Trail, originally intended on its erection in 1895, for the treatment of gold and silver-bearing copper ores, was made ready for the treatment of silver-lead ores at a later date. The electrolytic zinc plant was added for regular commercial operations early in 1916; its capacity is rated at a hundred tons per day.

The higher prices paid for silver during the period of the war led the producers of silver-bearing ores to expedite shipments, disregarding the increased quantity of zinc middling. No zinc is recovered in lead blast furnace smelting, and it is