

### 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. Large deposits of cobalt-bearing ores occur in central Africa, and the introduction into the world's markets of cobalt from this source has limited the market for the Canadian product to the extent that in 1926 Canada produced only 55 p.c. of the world's output.

The ore bodies at Cobalt, discovered in 1902, carry silver, cobalt, nickel and arsenic. About 82 p.c. of the productive veins occur in the Cobalt series (conglomerate, greywacke, etc.), about 11 p.c. in the Keewatin, the basic igneous rocks underlying the Cobalt series, and the remaining 7 p.c. in the Nipissing diabase.

The Deloro smelter treats ores and residues and disposes of cobalt oxide, metallic cobalt and unseparated oxides of nickel and cobalt. The cobalt residues from the cyanide process are for the most part treated in Canada, though some are shipped abroad for treatment. The smelter output of cobalt, computed as the metallic contents of cobalt oxide, nickel oxide and mixed oxides, together with the cobalt in cobalt ores exported from the mines, and including cobalt in speiss residues exported, amounted in 1927 to 877,375 lb. valued at \$1,763,543, as against 1,116,492 lb. valued at \$2,328,517 in 1925.

### 7.—Zinc.

The zinc-mining industry of Canada has recently made rapid strides, largely on account of the application of the electrolytic method to treating the lead-zinc ores of British Columbia. The metallic recoveries from Canadian ores were 149,938,105 lb. in 1926, as compared with 5,600,000 lb. in 1913, and constituting a record. From an insignificant position in 1913, the country advanced to the sixth rank among the world's producers in 1926, with an output of about 4.5 p.c. of the world total. Production in 1927 is estimated at 163,605,046 lb.

**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 in the Ainsworth and Slocan divisions of the Eastern district.

Before the war the industry 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. No zinc is recovered in lead blast-furnace smelting, as it is detrimental to operation.

The urgent demand for zinc during the Great War was largely responsible for energetic and aggressive action on the part of the Consolidated Mining and Smelting Co., owners of the Trail plant, in producing this metal; with this object in view, the erection of an electrolytic zinc refinery was commenced in 1915, rushed to completion and put into operation early in 1916. The company had then to turn