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THE SILVER MINING INDUSTRY IN CANADA, 1929.

- (a) The Silver-Cobalt Mining Industry.
(b) The Silver-Lead-Zinc Mining Industry.

Definition of the Industry.— Silver mining in Canada is not a distinct mining industry as silver generally occurs with other metals; with lead and zinc, with cobalt, nickel and arsenic; with lode and placer gold; in copper-gold ores, and in nickel-copper ores. Silver in lead and zinc ores and in cobalt-nickel-arsenic ores is generally the predominating factor in determining the marketability of such ores. Silver-lead-zinc mining is a very important industry in British Columbia, the Yukon Territory, and to a less extent in Ontario and Quebec, whereas silver-cobalt mining in Canada is restricted to Ontario only.

Production of silver, lead, zinc, cobalt and arsenic.- In 1929 the total production of these metals from all Canadian sources was as follows: silver, 23,143,261 fine ounces valued at \$12,264,308; lead, 326,522,566 pounds worth \$16,544,248; zinc, 197,267,087 pounds worth \$10,626,778; cobalt, 929,415 pounds worth \$1,801,915; and arsenic, 5,230,088 pounds worth \$171,320. The greater part of the arsenic was recovered as white arsenic at the Deloro smelter in Ontario and from silver-cobalt ores and the remainder was contained in arsenical gold ores shipped from British Columbia mines to foreign smelters.

Among the metals and minerals in Canada, lead held fifth place in 1929, silver eighth place, and zinc, ninth place in point of value. In 1929 Canada ranked third among the world's silver producing countries; fourth among those producing lead, and sixth in smelter output of zinc. Canada and Central Africa produce about equal amounts of cobalt.

(a) The Silver-Cobalt Mining Industry

The principal producers in this industry were the Nipissing mine, the Mining Corporation and the O'Brien at Cobalt; the Keeley, Frontier-Lorrain and Lorrain Trout Lake, at South Lorrain; and the Miller Lake O'Brien and Castle Pretheway in the Gowganda area. Several of the older properties were worked by leasers who were able to mine silver ore, at a profit, from veins which were passed over when the mine was on large scale production. A considerable amount was recovered from mill

cleanups and dumps.

The Nipissing Mining Company was the only company in this group producing silver bullion in 1929. Other mines in the district shipped ore to the mill of the Cobalt Reduction Company, to the Deloro smelter and to smelters in foreign countries.

During 1929 this group of mines produced 242,591 tons of ore and milled 235,546 tons to produce 3,996 tons of concentrates; ore cyanided amounted to 45,421 tons and silver bullion production reached 1,546,165 fine ounces.

Shipments of ores and concentrates to the Canadian smelter amounted to 2,932 tons and to European and United States smelters, 2,263 tons, making a total of 5,195 tons in 1929 as against 6,125 tons in 1928. The total value of all shipments, including bullion, was \$3,918,316 as against \$3,938,884 in 1928.

Capital employed in the silver-cobalt mining industry in 1929 amounted to \$15,820,435 of which \$10,537,310 was invested in lands, buildings, plant, machinery and tools; \$262,569 represented cost of supplies and stock on hand, and \$5,020,556 was in cash, trading and operating accounts and bills receivable.

Salaried officials numbered 96 in 1929 as against 94 in 1928. Wage-earners averaged 1,053 persons of whom 648 were employed underground, 297 on the surface and 108 in the mills. Salaries and wages totalled \$1,532,333. Fuel cost \$407,952 at the mines and included \$275,789 for electric power. Power equipment employed, exclusive of boilers, consisted of 171 units having a total rating of 7,137 h.p. Boilers numbered 15 with a total rating of 1,258 h.p.

PRINCIPAL STATISTICS OF THE SILVER-COBALT MINING INDUSTRY IN CANADA, 1925 - 1929.

	Number of active operators	Number of operating mines	Capital employed	Number of em- ployees	Salaries and wages	Cost of fuel and elec- tricity	Net value of bullion, ore, concentrates and residues sold
			\$			\$	\$
1925 ...	33	33	44,045,619	1,733	2,576,414	498,874	6,611,644
1926 ...	33	37	40,504,721	1,779	2,815,930	518,907	5,470,433
1927 ...	23	26	30,123,645	1,458	2,178,163	472,548	4,760,546
1928 ...	15	19	22,027,625	1,166	1,809,466	430,683	3,938,884
1929 ...	27	32	15,820,435	1,149	1,532,353	407,952	3,918,316

STATISTICS OF THE SILVER-COBALT MINES AND MILL OPERATIONS IN CANADA,
1928 and 1929.

	1928	1929
Number of mines in operation (x).....	19	32
Ore mined.....tons	260,644	242,591
Ores treated.....tons	252,670	235,546
Tailings treated.....tons
Concentrates produced.....tons	4,649	3,996
Quantity of material cyanided.....tons	63,592	45,421
Bullion recovered.....fine oz.	1,886,958	1,546,165
Silver recovered by direct smelting.....fine oz.
Bullion sold.....fine oz.	1,815,661	1,367,063
Net value of bullion.....\$	1,055,485	736,294

(x) All plants of this industry are located in Ontario.

SHIPMENTS OF ORES, CONCENTRATES AND RESIDUES FROM THE COBALT DISTRICT, ONTARIO,
1928 and 1929.

Kind	Quantity tons	Net(x) Value \$	Metallic content paid for		
			Silver fine oz.	Cobalt lb.	Copper lb.
<u>1928</u>					
To Canadian smelters -					
Ores.....	705	544,693	926,596	274,803	...
Concentrates.....	2,595	1,694,038	3,486,949	206,826	...
To Foreign smelters -					
Concentrates and residues	2,825	444,668	676,907	203,772	44,475
TOTAL.....	6,125	2,883,399	5,090,452	687,401	44,475
<u>1929</u>					
To Canadian smelters -					
Ores.....	576	624,786	1,381,029	280,043	...
Concentrates.....	2,356	2,185,493	4,405,742	196,441	...
To Foreign smelters -					
Concentrates and residues	2,263	371,743	635,602	164,542	26,731
TOTAL.....	5,195	3,182,022	6,422,373	641,026	26,731

(x) Net value means the actual amount received by the operator.

(b) The Silver-Lead-Zinc Mining Industry

Silver-lead-zinc ores are found in commercial quantities in the provinces of Quebec, Ontario, British Columbia and the Yukon Territory. In 1929 ores from the Tetreault mine in Quebec were concentrated and exported for treatment in Belgian and United States smelters. Galena ore from Galetta, Ontario, was concentrated and smelted at the mine and high-grade ores and concentrates were exported to the United States smelters from the Mayo district of the Yukon.

In British Columbia where the greater part of this industry is carried on, the Trail smelter handled all concentrates from the Sullivan mine as well as from other mines within reasonable shipping distance. In addition to the smelter a customs concentrator was also operated which was of much assistance to small producers.

Among the Canadian provinces, British Columbia was the leading producer of silver, lead and zinc. In this province, 44 per cent of Canada's silver, 94 per cent of the lead and 87 per cent of the zinc, were produced. The Sullivan mine, noted the world over for its output of lead and zinc, is the largest individual silver producing mine in Canada.

The silver-lead-zinc mining industry in Canada was represented by 163 mines operated by 149 firms in 1929. In Quebec 8 properties were in operation, one of which was producing. In Ontario, 5 mines were in operation, 2 of which were producing.

In British Columbia, 145 mines were worked, 89 of which were producing and in the Yukon 9 were reported in production.

During the year 2,208,270 tons of ore were mined and 2,352,439 tons were milled. Shipments of lead ores, lead concentrates, zinc ore, zinc concentrates, dry ores, and a small tonnage of copper concentrates produced in the treatment of the ores from one Ontario copper-lead-zinc mine, amounted to 569,591 tons valued at \$22,748,089. As determined by settlement assay the total metal content of these shipments included 7,983 ounces of gold, 11,225,477 ounces of silver, 347,662,223 pounds of lead, 309,787,247 pounds of zinc, and 1,143,842 pounds of copper.

Capital employed in this industry in 1929 amounted to \$50,573,661, and included over 45 million dollars invested in lands, buildings, plant machinery and tools, 2.5 million dollars in the value of supplies and stock on hand and 2.2 millions in cash, trading and operating accounts and bills receivable.

Salaries totalling \$770,457 were paid to 321 employees and wages amounting to \$5,711,935 were distributed among 3,782 wage-earners. Fuel used amounted to \$793,139 of which \$354,932 was spent for electric power. Primary power employed consisted of 604 units with a combined rating of 32,108 h.p. Secondary power included 136 motors rated at 3,146 h.p. There were 29 boilers in use rated at 4,511 h.p.

ORE MINED AND MILLED IN THE SILVER-LEAD-ZINC MINING INDUSTRY IN CANADA, 1928 and 1929.

DESTINATION OF SHIPMENTS FROM SILVER-LEAD-ZINC MINES OF CANADA, 1928 and 1929.

To Foreign smelters - copper in lead concentrates, 146,038 pounds; copper in copper concentrates, 996,781 pounds; a total of 1,142,819 pounds.

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