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DEPARTMENT OF TRADE AND COMMERCE
DOMINION BUREAU OF STATISTICS
MINING, METALLURGICAL AND CHEMICAL BRANCH
OTTAWA - CANADA

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THE SILVER MINING INDUSTRY IN CANADA, 1939

- (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 in as much as silver or silver-bearing minerals usually occur in association with other metals of economic value - with lead and zinc; with cobalt, nickel and arsenic; with lode and placer free gold; in copper-gold and nickel-copper ores, and at Great Bear Lake, N.W.T., with uranium and radium. Silver-lead-zinc mining is a very important industry in British Columbia and, to a lesser extent, in the Yukon Territory. In Eastern Canada, ores containing lead and zinc have been mined in Ontario, Quebec and Nova Scotia.

It is to be noted that, in addition to its recovery from silver-lead-ores, zinc is now produced in large quantities from the copper-gold-silver ores of the Flin Flon mine, a property located on the Manitoba-Saskatchewan boundary. Zinc concentrates have been produced in British Columbia from copper-gold-silver ores by the Britannia Mining and Smelting Co. Ltd.; the metal also occurs with copper-gold-silver ores in Quebec and commercial shipments of zinc concentrates made from these particular ores have been made yearly since 1937.

Statistical data contained in this report are essentially those pertaining to the mining of silver-cobalt and silver-lead-zinc ores and, to a lesser extent, silver-pitchblende ores.

PRICES

According to the Consolidated Mining and Smelting Company of Canada Ltd., prices per ton for lead and zinc on the London Metal Exchange during the first eight months of 1939 were steady and devoid of special interest as may be noted by the comparative table which follows:

	<u>Opening</u>	<u>Closing</u>	<u>Average</u>
Lead (12 months) 1938	£15-2-6	£15-8-9	£15-5-4 (Can. \$74.99)
Lead (8 months) 1939	£14-17-6	£16-10-0	£14-14-2 (Can. \$69.02)
Zinc (12 months) 1938	£14-10-0	£14-0-0	£13-19-10 (Can. \$68.72)
Zinc (8 months) 1939	£13-13-9	£15-1-3	£13-17-5 (Can. \$65.11)

"When the British Empire declared war in 1914 it was in a very unfavourable position regarding base metals supplies. The position was completely changed by 1939. In 1914 the Empire produced 646 short tons per day of lead and zinc, whereas in 1938 the corresponding output was 2,438 short tons. Failing an Empire supply in 1914 the British were forced to buy metal wherever it could be had. Full advantage was taken of the market and prices reached 27½ cents a pound for zinc against a normal price of 4 to 5 cents and 12½ cents per pound for lead against a normal of 3 to 4 cents.

"At the commencement of the present war in September 1939 the Consolidated Mining and Smelting Company of Canada Ltd. joined with other Empire producers in accepting what might be called a virtual conscription of their metal production, assuring the British Government of prices considerably below normal for the metal needed for the war. The terms of the contracts protect the companies from all shipping risks and as to prices are considered fair and reasonable under the circumstances. It is believed the Empire will be able to supply all of the lead, zinc, copper and nickel required.

"The average prices for lead and zinc for the last 10, 20, 30 and 40 years are as follows, per long ton of 2,240 pounds":

	<u>Lead</u>	<u>Zinc</u>
Past 10 years	£15-19-6	£16-6-0
Past 20 years	£22-5-6	£24-16-2
Past 30 years	£21-15-10	£29-5-5
Past 40 years	£19-18-4	£27-9-6

Table 1 - AVERAGE YEARLY PRICES FOR METALS, 1935, 1938 and 1939

Metal	Market	Unit	1935	1938	1939
			\$	\$	\$
Antimony (ordinaries)	New York	Pound	0.13616	0.12349	0.12359
Arsenic, white (nominal)	New York	Pound	0.035	0.03000	0.03
	(New York	Pound	0.08649	0.1000	0.10965
Copper	(Montreal	Pound	0.08488	0.1055	0.1077
	(London	Long ton	35.430	45.411	49.169
Gold (in Canadian funds) .....	...	Fine oz.	35.19	35.175	36.141
	(New York	Pound	0.04065	0.0474	0.0505
Lead	(Montreal	Pound	0.03925	0.04176	0.04235
	(London	Long ton	14.238	15.266	15.437
Nickel	New York	Pound	0.35	0.35	0.35
Platinum	London	Fine oz.	*7.325	*6.55	*7.631
Silver	New York	Fine oz.	0.64273	0.43225	0.39082
Tin	New York	Pound	0.50420	0.42301	0.50323
	(St. Louis	Pound	0.04328	0.0461	0.0511
Zinc	(Montreal	Pound	0.03992	0.039	0.0468
	(London	Long ton	14.082	13.990	14.950

NOTE - All prices in dollars per unit excepting London copper, lead and zinc prices which are quoted in pounds sterling per long ton.

* Prices for platinum are quoted in pounds sterling per fine ounce.

The average price of lead on the London market in 1939, transposed into Canadian funds, was 3.169 cents per pound; the corresponding price for zinc was 3.069 cents. The average price of silver, based on the New York market, transposed into Canadian funds, was 40.488 cents per fine ounce in 1939.

(a) THE SILVER-COBALT MINING INDUSTRY

The mining of silver-cobalt ores in Canada is confined to the district of Temiskaming in Northern Ontario. Veins containing these metals were discovered at or near the present town of Cobalt in 1903 and shipments of ores from this area have been continuous since 1904. Depletion and exhaustion of ore reserves during recent years have resulted in a relatively great decline in the production of metals from these deposits. During the past few years the greater part of the output of silver-cobalt ores in Northern Ontario has originated in the Miller-Lake O'Brien mine, Gowganda, and the O'Brien mine, Cobalt. In most instances, operations at other properties, some of which were prominent as producers in the past, were conducted by lessees and shipments ranged from one to several hundred tons. The increased demand for cobalt as an alloying metal has, for some years, stimulated operations of a salvage nature at several of the older mines.

The Ontario Department of Mines referred to the industry early in 1940 as follows:-

"Stimulated by the demands of the war, the silver-cobalt industry received a new lease on life in 1939, and cobalt, the alloy metal, was the most sought of the several minerals occurring in the complex ores of Cobalt, Gowganda, and South Lorrain. In 1938 production was reported from 35 properties only. In 1939, returns were received covering the output of ores from more than 50 properties.

"Shipments of ore and concentrates from Cobalt in 1939 over the T. and N.O. railway totalled 2,368.44 tons, as against 1,975.62 tons in 1938. The shipments were made up of 947.39 tons of silver ore and 1,421.05 tons of cobalt ore. The destinations of these shipments were: the Deloro Smelting and Refining Company at Deloro, Ontario; Consolidated Mining and Smelting Company at Tadanac, B.C.; the Noranda Mines at Noranda, Quebec, in Canada; and J. A. Samuels, New York; Shepherd Chemical Company, Norwood, Ohio; Philip Brothers, New York; Frankel Brothers, Ltd., Detroit; and Smith Brokerage, New York, in the United States.

"In the fall of the year the O'Brien interests stopped operations at their two mines, the O'Brien at Cobalt and the Miller Lake O'Brien at Gowganda. Operation of the O'Brien mine ceased officially on January 13, 1940, and on the 16th of the same month it was announced that four employees of the mine had

leased the Cross Lake workings and the old O'Brien mine from their former employers.

"In an effort to find additional cobalt-bearing deposits, the Minister of Mines, Honourable Paul Leduc, has directed the Provincial Geologist to have a re-examination made of the Cobalt and nearby areas. Geological investigations carried out in the past in these areas were concerned principally with the silver possibilities, cobalt being of little economic value. The situation is now different, and the widespread demand for this metal along with the diminishing known reserves are the reasons which prompted the Minister of Mines to take action. The survey will be carried out in the early summer."

Table 2 - PRINCIPAL STATISTICS OF THE SILVER-COBALT MINING INDUSTRY IN CANADA, 1929 - 1939

Year	Number of active operators	Number of operating mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Value of bullion, ore, concentrates or residues sold
	(/)	(a)	\$		\$	\$	\$
1929	27	32	15,820,435	1,149	1,532,333	407,952	3,918,316
1930	23	28	12,268,322	1,043	1,488,591	352,844	3,637,181
1931	22	26	9,352,520	786	1,149,689	227,467	1,925,593
1932	17	20	3,005,872	369	551,255	124,478	1,735,708
1933	12	14	3,365,755	242	322,281	83,565	1,071,602
1934	15	16	5,102,491	286	361,726	85,685	1,380,318
1935	27	28	6,380,731	402	494,791	114,439	1,070,716 (x)
1936	24	25	5,946,702	363	458,546	104,372	915,376 (x)
1937	23	25	2,655,060	300	394,386	90,134	540,762 (x)
1938	34	30	2,696,217	297	386,851	73,549	288,293 (x)
1939	36	43	2,461,556	323	412,728	63,486	653,032 (x)

(/) Includes leasers shipping from dumps.

(a) Includes properties on which operations were of a salvage nature only, and the number of mines as recorded is based partially on data of a conjectural nature.

(x) Net value.

NOTE - The cost of process supplies used - explosives, etc. - was recorded for the first time in 1935 and, beginning with 1935, this cost together with the cost of fuel and electricity purchased, freight and smelter charges were deducted from the gross value of sales.

Table 3 - NUMBER OF WAGE-EARNERS ON PAYROLL OR TIME RECORD IN THE SILVER-COBALT MINING INDUSTRY, 1935 - 1939

Month	1935	1936	1937	1938	1 9 3 9		
					MINE		MILL
					Surface	Underground	
January	299	303	259	233	89	159	48
February	297	280	256	238	83	151	47
March	288	270	250	235	80	152	49
April	284	272	257	227	94	152	47
May	319	310	271	252	107	147	58
June	375	316	264	264	141	150	58
July	428	335	260	278	135	132	58
August	441	353	274	284	141	122	45
September	448	365	281	289	111	115	42
October	414	372	283	295	102	91	40
November	408	357	272	282	73	89	28
December	360	311	252	272	64	89	27

Table 4 - STATISTICS OF THE SILVER-COBALT MINES AND MILL OPERATIONS IN CANADA, 1937 - 1939

		1 9 3 7	1 9 3 8	1 9 3 9
Number of mines in operation (x)		25	30	43
Ore mined	tons	56,878	59,408	60,431
Ore treated (milled) (a)	tons	61,290	55,719	79,164
Tailings treated	tons	...	...	145
Concentrates produced	tons	1,435	1,258	2,334
Gross value of bullion, ore, concentrates and residues sold	\$	853,386	734,363	890,128
Cost of freight	\$	29,202	41,391(b)	19,054
Smelter charges	\$	76,833	82,783(b)	49,056
Cost of fuel and purchased electricity used	\$	90,134	73,549(b)	63,486
Cost of process supplies used	\$	116,455	248,347	105,500
Net value of sales	\$	540,762	288,293	653,032

(x) All mines located in Northern Ontario and includes properties on which the operations consisted only in salvaging of ore from dumps, etc. (a) Does not include crude ore shipped. (b) Partly estimated, as data was unobtainable from several small shippers.

Table 5 - FUEL AND ELECTRICITY USED IN THE SILVER-COBALT MINING INDUSTRY, 1938 and 1939

Kind	Unit of measure	1 9 3 8		1 9 3 9	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Bituminous coal - Canadian	ton	417	7,748	356	8,488
Imported	ton	414	3,797	508	4,709
Anthracite coal - From United States	ton	75	1,190	97	1,568
Other	ton	192	3,077	217	3,241
Gasoline	gal.	12,408	2,861	7,426	2,352
Kerosene or coal oil	gal.	38	9	26	6
Fuel oil and diesel oil	gal.	5,836	757	8,704	1,111
Wood (cords of 128 cu. ft. of piled wood)	cord	636	4,159	422	2,441
Electricity purchased, including service charges	K.W.H.	6,033,150	49,951	4,921,586	39,570
TOTAL .....	\$	...	73,549	...	63,486
Value of explosives and other process supplies used .....	\$	...	248,347(✓)	...	105,500

(✓) Value estimated for operators from whom official reports were unobtainable.

ARSENIC - Production of arsenic in Canada during 1939 totalled 1,741,917 pounds valued at \$52,257 compared with 2,175,646 pounds at \$56,538 in the preceding year. During recent years arsenic has been produced only by the Deloro Smelting and Refining Company Limited in its plant located at Deloro, Ontario. It is recovered by this company entirely in the treatment of silver-cobalt ores mined in Northern Ontario. Production figures as published represent the element in the form of arsenious acid or white arsenic.

Commercial production of new arsenic in all forms from Canadian ores since 1885 to the end of 1939 amounted to 67,293 short tons valued at \$6,528,861. The largest annual output occurred in 1918 in which year 3,560 short tons worth \$563,639 were recorded. Arsenic is often a constituent of gold ores and has been commercially recovered from auriferous ores mined in Nova Scotia, Ontario and British Columbia. Arsenical gold ores are now being treated at mines located in Northwestern Quebec and in the Thunder Bay District of Ontario. During 1939 Beattie Gold Mines Ltd., Duparquet, Quebec produced 1,460 short tons of arsenic (As_2O_3) and the O'Brien Gold Mines Ltd., Cadillac township, Quebec, 243 short tons of crude arsenic. No commercial shipments of arsenic were reported by either company during the year under review.

The United States Bureau of Mines reported the distribution of sales of domestic arsenic in the United States during 1938 as follows: Insecticides, 47 per cent; weed killer, 30; wood preservative, 3; glass manufacture, 2; and miscellaneous, 1. Regulations in the United States to protect the consuming public require that foodstuffs not only be free from insects but of poisonous insecticidal residues. The latter requirement has stimulated some substitution of organic insecticides less toxic to man for poisonous arsenicals. Metallic arsenic is used as a metal hardener, as flux and in certain alloys; arsenical compounds are used rather extensively in medicinal preparations. In 1939 white arsenic quotations at New York remained at the low price of 3 cents per pound, carload lots.

Table 6 - PRODUCTION IN CANADA, IMPORTS AND EXPORTS OF ARSENIC, 1938 and 1939

	1 9 3 8		1 9 3 9	
	Quantity	Value	Quantity	Value
	Pounds	\$	Pounds	\$
PRODUCTION (x) -				
White arsenic and arsenic in other forms	2,175,646	56,538	1,741,917	52,257
TOTAL	2,175,646	56,538	1,741,917	52,257
IMPORTS -				
White arsenic (arsenious oxide)	201,009	3,854	516,236	7,976
Sulphide of arsenic	6,094	408	125	54
Soda, arseniate of, biarseniate and stannate of ...	11,200	2,843	32,054	6,739
Arsenate of lead	496,387	41,620	568,344	49,238
Arsenate of lime	37,068	3,507	389,557	23,643
TOTAL .....	...	52,232	...	87,650
EXPORTS - Arsenic - TOTAL	1,378,300	32,590	906,300	26,389

(x) Entirely from Ontario.

Table 7 - CONSUMPTION OF ARSENIUS OXIDE AND ARSENIC ACID IN THE MANUFACTURE OF CANADIAN INSECTICIDES,
1932 - 1938

Year	Pounds	\$	Year	Pounds	\$
1932	1,721,044	69,250	1936	3,368,956	106,132
1933	3,116,401	110,011	1937	3,296,559	102,651
1934	4,709,443	168,185	1938	3,029,145	95,875
1935	2,736,089	86,983			

Table 8 - WORLD'S PRODUCTION OF ARSENIC, 1936, 1937 and 1938 (Taken from the Imperial Institute's publication "The Mineral Industry of the British Empire and Foreign Countries")
(Long tons)

Producing Country and Description	1936	1937	1938
<u>BRITISH EMPIRE</u>			
United Kingdom -			
White arsenic and arsenic soot	153	95	65
Southern Rhodesia -			
White arsenic .....	...	...	19
Canada (sales) -			
White arsenic	610	620	971
Australia -			
White arsenic	3,691	3,387	3,999
<u>FOREIGN COUNTRIES</u>			
Belgium (exports) -			
White arsenic	2,688	2,991	2,664
Czechoslovakia -			
Antimony ore (As content)	53	30	(a)
France -			
Ore (As content)	9,490	3,909	(a)
White arsenic (As content)	7,104	(a)	(a)
Germany -			
Ore (As content)	1,843	(a)	(a)
Greece -			
White arsenic	84	230	(a)
Pyrites (As content)	770	750	(a)
Italy -			
Ore	148	15,826	17,976
White arsenic .....	...	...	797
Portugal -			
Pyrites (As content)	74	...	...
White arsenic	148	21	1
Roumania -			
Pyrites (As content)	30	32	33
Sweden -			
Ore (As content)	22,944	20,623	21,141
White arsenic	8,510	(a)	(a)
Mexico -			
White arsenic	8,392	10,592	8,754
United States -			
White arsenic	13,731	15,013	14,897
Brazil -			
White arsenic	720	705	512
Japan -			
White arsenic	2,587	(a)	(a)
Korea -			
White arsenic	226	(a)	(a)
Turkey -			
Ore	16	27	25

White arsenic is also produced in Germany, U.S.S.R., and China.

(a) Information not available.

COBALT - Production of cobalt in Canada during 1939 totalled 732,561 pounds valued at \$1,213,454 compared with 459,226 pounds worth \$790,913 in 1938. The Canadian output of cobalt comes entirely from the silver-cobalt deposits of northern Ontario and includes cobalt recovered and sold in the metallic state, the cobalt content of oxides and salts made and sold and the metal content of cobaltiferous ores exported.

There is at present only one smelter in Canada treating cobalt ores; this is the plant of the Deloro Smelting and Refining Company, Limited, located at Deloro, Ontario. This Company produced mixed nickel and cobalt oxides at Deloro for the first time in 1910. Continuous operations were conducted by the Company throughout 1939 and production included cobalt metal, cobalt salts, cobalt oxide, arsenic and silver bullion. Ores and concentrates treated at the Deloro smelter in 1939 came ^{almost} entirely from the silver-cobalt mines of Northern Ontario. It is also interesting to note that in 1939, for the first time, cobalt residues were received by the Deloro Smelting and Refining Company, Limited from Northern Rhodesia. These residues will be treated by the Company for the recovery of the cobalt content. Since 1904, the first year for which cobalt production was recorded in Canada, there were produced, to the end of 1939, in all forms, 33,063,655 pounds valued at \$31,921,836. The outbreak of war in Europe in 1939 was reflected in both an increased demand and price for cobalt.

The following information is from the 1939 Minerals Yearbook of the United States Bureau of Mines:- "Consumption of cobalt in the United States in 1939, as indicated by imports, increased substantially; as in the past, the demand was supplied by imports, as there was no domestic output. Probably as a result of shipping costs and war-risk insurance, domestic quotations for 97 to 99 percent metal in lots of 100 pounds or more were advanced during the latter part of October to \$1.50 a pound from \$1.36 and black oxide (70 to 71 percent grade) in lots of 350 pounds or more to \$1.84 a pound from \$1.67. World production may be roughly estimated at 6,000 metric tons in 1939 compared with 4,500 tons in 1938. Output in Northern Rhodesia was two and a half times that in 1938. In 1939 imports of ore into the United States gained 36 percent, metal 127 percent and oxide 82 percent.

"As a result of extensive research, the use of cobalt continues to expand, consequently world production has increased greatly. Cobalt oxide is used in the ceramic industry; cobalt salts in the preparation of driers for use in paints, varnishes, and linoleums and as a catalyst; and cobalt metal in various types of high-grade steels (especially metal cutting and magnet steels), as a catalyst, and in electroplating. Lack of statistics on the production of cobalt in the Belgian Congo, one of the chief producers, and in several smaller producing countries, precludes an accurate statement of total world output. The Rhokana Corporation Ltd., Northern Rhodesia, sold 1,124 short tons of cobalt in alloy and refined products during the year ended June 30, 1939; the cobalt plant during this period produced 4,511 short tons of alloy containing 1,761 tons of cobalt compared with 2,854 tons of alloy containing 1,183 tons of cobalt during the corresponding fiscal year 1938.

"In 1938 the output in Italy of ores containing nickel and cobalt increased to 13,421 tons of which 130 tons contained 14 to 16 percent nickel and 2 to 6 percent cobalt; cobalt is also said to be obtained through electrolysis of certain zinc ores that average 50 grams of cobalt per ton. Production of cobalt ore in French Morocco was 2,880 metric tons during the first six months of 1939 and exports were 3,833 metric tons; the producing mines are about 155 miles west of Agadir in the Atlas Mountains; cobalt occurs on the surface in the form of erythrite and at depth in the form of smaltite. Imports of cobalt metal into the United States from Finland declined to 219,716 pounds in 1939 from 240,575 pounds in 1938.

"The United States, a large consumer of cobalt, has thus far failed to develop substantial supplies, but recent developments raise the hope that the United States may yet produce cobalt in commercial quantities; experiments on recovery of cobalt from the iron ores mined at Cornwall, Pa., were carried on during 1939. Cobalt, which has been long known to occur as a minor constituent of these iron ores, has been found in increased amounts in the ore bodies now being mined."

"Metal and Mineral Markets" - New York, reported prices as follows: May, 1940 - Cobalt metal imported from Belgium, 97 to 99 per cent \$2.11 per pound for small lots, spot; on lots of 100 pounds or more \$1.50; corresponding prices, August, 1939 were \$1.92 and \$1.36. New York quotations for cobalt ore are based on the grade or cobalt content and prices are nominal.

Table 9 - PRODUCTION OF COBALT IN CANADA, 1913 - 1919 and 1929 - 1939

Year	Pounds	Year	Pounds
1913	1,642,000	1931	521,051
1914	702,000	1932	490,631
1915	412,000	1933	466,702
1916	800,000	1934	594,671
1917	674,000	1935	681,419
1918	760,000	1936	887,591
1919	596,000	1937	507,064
1929	929,415	1938	459,226
1930	694,163	1939	732,561

Table 10 - PRODUCTION IN CANADA, IMPORTS AND EXPORTS OF COBALT, 1938 and 1939

		1 9 3 8		1 9 3 9	
		Quantity	\$	Quantity	\$
<u>PRODUCTION</u> (In terms of metallic cobalt and cobalt in oxides and salts sold and in ores exported)					
	pounds	459,226	790,913	732,561	1,213,454
<u>IMPORTS</u> -					
Cobalt ore	pounds	...	9	541,500	148,410
Oxide of cobalt	pounds	736	1,094	525	301
<u>EXPORTS</u> -					
Cobalt, contained in ore	pounds	66,400	40,983	204,100	178,043
Cobalt, metallic	pounds	83,579	122,101	2,600	3,250
Cobalt, alloys	pounds	49,674	79,278	133,679	264,861
Cobalt oxides and cobalt salts	pounds	382,408	523,218	606,942	814,807

Table 11 - WORLD'S PRODUCTION OF COBALT, 1936, 1937 and 1938 (Taken from the Imperial Institute's publication "The Mineral Industry of the British Empire and Foreign Countries")
(Cwt.)

Producing Country	1936	1937	1938
<u>BRITISH EMPIRE</u>			
Northern Rhodesia	9,078	17,409	28,762
Canada (c)	7,925	4,527	4,100
Burma (b)	5,910	5,475	4,034
<u>FOREIGN COUNTRIES</u>			
Belgian Congo	13,480	(d) 30,000	(d) 26,000
French Morocco (estimated)	7,700	10,900	13,500
Mexico .....	...	...	17
Bolivia .....	...	6	(a)

Complex ores containing cobalt are produced in Finland, Germany, Greece, Japan and China, but figures of cobalt content are not available.

(a) Information not available.

(b) Estimated cobalt content of nickel-speiss exported to Hamburg.

(c) Metal recovered from smelter products plus cobalt contained in cobalt residues exported.

(d) Estimated.

Table 12 - COBALT SALTS USED IN THE MANUFACTURE OF CANADIAN PIGMENTS AND PAINTS, 1932 - 1938

Year	Pounds	\$	Year	Pounds	\$
1932	17,021	10,960	1935	110,419	33,392
1933	10,885	7,463	1936	170,932	43,230
1934	26,300	14,069	1937	37,258	17,062
			1938	43,703	17,993

OPERATORS IN CANADIAN SILVER-COBALT MINING INDUSTRY, 1939

Name of Operator	Head Office Address	Location
Adams, Wm. M.	Box 513, Cobalt	Coleman Tp.
Benner, Keith J.	Box 208, Cobalt	Coleman Tp.
Brocklebank, A.	Cobalt	Cobalt
Cain, P. E. Estate	Box 386, Cobalt	South Lorraine
Cobalt Mining Syndicate	Box 663, Cobalt	South Lorraine
Cobalt Products Ltd. (x)	67 Yonge St., Toronto	Coleman and Bucke Tps.
Cobalt Properties Ltd.	Cobalt	Cobalt
Cobalt Silver Queen	55 Gloucester St., Toronto	Coleman Tp.
Comet Leasing Co.	Room 4, 1 Government Road, Kirkland Lake	Coleman Tp.

OPERATORS IN CANADIAN SILVER-COBALT MINING INDUSTRY, 1939 - (Concluded)

<u>Name of Operator</u>	<u>Head Office Address</u>	<u>Location</u>
Cooke, G. H.	Haileybury	Whitton Tp.
Davis, Adam N.	Box 554, Cobalt	Cobalt
Dean, J. C.	Cobalt	Coleman Tp.
Jenkins, C. A. and Raeburn, R.	74 Cobalt St., Cobalt	Gillies Limit
Legrin, J. V.	Cobalt	Lorraine Tp.
Martin, George	Box 659, Cobalt	Giroux Lake and Gillies Limit
McCready & Brown Lease	Box 130, Cobalt	Gillies Limit
McCready, Russell and Giffin	Box 130, Cobalt	Coleman Tp.
Mercier, Raoul	Box 547, Cobalt	Coleman Tp.
Millwrights Mines Ltd.	Box 142, Cobalt	South Lorraine
Morgenthaler, A. G.	2108 S. Second St., Philadelphia, Penn., U.S.A.	Coleman Tp.
Morrison & Chisholm	98 Brewster St., Haileybury	Gillies Limit and Gowganda
Murphy, A. and Landry, A. P.	Box 111, Cobalt	Coleman Tp.
Nipissing Mining Co. Ltd.	1007 Excelsior Life Bldg., Toronto	Cobalt
O'Brien, M. J., Ltd.	900 Victoria Bldg., 140 Wallington St., Ottawa	Miller Lake and Coleman Tp.
O'Neill, P. J. and E. and Landro, H. M.	2 Pearl Ave., Timmins	Elk Lake
Page Exploration and Mining Syndicate Ltd.	11 King St. W., Toronto	Coleman Tp.
Petersen, P.	Cobalt	Cobalt
Peterson Cobalt Mines Ltd.	12 Queen St. E., Toronto	Coleman Tp.
Presse-Thornham Lease	Cobalt	Cobalt
Rowe, A., Stuckey, C. and Parsons, S.	Box 755, Cobalt	South Lorraine
Smith, F.	Gowganda	Nicol Tp.
Smith, W. H.	Box 221, Cobalt	Coleman Tp.
Taylor, W. D.	Box 632, Cobalt	Coleman Tp. and South Lorraine
Telfer Mining Co. Ltd.	Box 656, Cobalt	Bucke Tp.
Temiskaming Mining Co. Ltd.	15 King St. W., Toronto	Cobalt
Windsor Cobalt Silvers Ltd.	1 Toronto St., Toronto	Cobalt

(x) Operate custom mill.

(b) THE SILVER-LEAD-ZINC MINING INDUSTRY

In 1939 the silver-lead-zinc mining industry of Canada reported 82 operators or firms as being actively engaged in the mining, prospecting or development of silver-lead-zinc deposits and of these operators 68 reported commercial shipments during the year under review.

NOVA SCOTIA - Production of silver-lead-zinc ores in Nova Scotia in 1939 represented only shipments of copper-lead and zinc concentrates made from stock accumulated at the Stirling mine during previous mining operations. The Stirling mine is now inactive and milling ceased February 13th, 1938.

NEW BRUNSWICK - The New Brunswick Department of Lands and Mines reported that several lead and zinc bearing deposits were examined at Elmtree and Quispamsis. No further work was done on the largest known deposit which was drilled by the Tetagouche Exploration Company in 1938.

At Elmtree in Gloucester county, four diamond drill holes totalling 1,111 feet were sunk but the results of the drilling are not available. At Quispamsis mineralization appears to be of two types: ore consisting of galena, sphalerite and pyrite replacing limestone, the other made up of granite replaced by pyrite along joint planes. Sampling of these deposits was discouraging and no further work was undertaken. During 1939 some surveying was conducted at the Teahan mine located at New Ireland in Albert county; this deposit contains galena, sphalerite, chalcopryrite and pyrite.

QUEBEC - Some prospecting and trenching of lead-zinc deposits occurring in the Grand Cascapedia district of Gaspé and Bonaventure countries were reported in 1939. No shipments or underground work were recorded. Only pumping and ordinary maintenance operations were reported from the Tetreault mine, at

Montauban les Mines; no ore was mined, milled or shipped.

At Calumet Island in the Ottawa River, Calumet Mines Ltd. actively pursued the exploration of its property by intensive diamond drilling. It is reported that favourable results have attended the drilling and that closely spaced holes have indicated the presence of over one million tons of ore with average tenor; zinc, 8.9 per cent; lead, 2.8 per cent; gold, 0.043 ounces, and silver slightly more than 5.0 ounces per ton.

ONTARIO - Some development work was conducted at the Lennox mine located near Enterprise in the county of Lennox and Addington. Approximately fifty tons of ore was mined but no commercial shipments were reported.

In Deroche township, Algoma district, surface mining operations were reported by the Algoma Galena Co. A sample shipment consisting of sixty-two tons of crude silver-lead ore was made to a smelter in New Jersey, U.S.A.

BRITISH COLUMBIA - The quantity of silver-lead-zinc ores mined in British Columbia in 1939 totalled 2,108,340 short tons, or 96 per cent of the total tonnage of such ores mined in the entire Dominion. The gross value of shipments of these ores during 1939 amounted to \$15,614,015 and the net value of same was estimated at \$12,275,715. The industry in British Columbia provided employment to 1,356 persons and distributed \$2,103,892 in salaries and wages.

While silver-lead ores are rather widely distributed over certain districts of the province, the major production has originated for several years in the great Sullivan mine of the Consolidated Mining and Smelting Company of Canada Ltd. Many of the smaller properties are operated under lease by a relatively small number of miners or prospectors; ore shipments from such properties are usually consigned to the Trail smelter or to metallurgical plants located in the northwestern part of the United States.

The following information is from the 1939 annual report of the Consolidated Mining and Smelting Company of Canada Ltd.: - "Costs per ton of ore mined at the Sullivan were up slightly over 1938 due chiefly to the lower tonnage mined, holiday payments and a much higher silicosis assessment. The grade of ore mined was somewhat higher than in 1938. . . ore development has kept well ahead of production. Despite the 10 per cent curtailment in common with other large lead producers, the tonnage smelted was an all-time record due to smelting a charge of lower lead content. Operations in the zinc plant were very satisfactory and several new records were made. An antimony reduction plant was built to work up an accumulation of antimony-arsenic flue dust and the development of an improved process on a semi-commercial scale for the production of magnesium was successfully concluded.

"Compared to 1938, sales and deliveries of our various products showed large increases in both tonnage and dollar value - \$35,000,000 against \$28,000,000. . . . The production of the Consolidated Mining and Smelting Company of Canada Ltd. in lead and zinc alone is greater now than the entire tonnage of all base metals refined in the British Empire in 1914. All of this zinc and most of the lead not required for Canada is taken by the British Government. . . . There was little change from the previous year in Canadian sales of fertilizer products, the volume as usual being largely controlled by the purchasing power of the Prairie farmers. Sulphur sales also showed an improvement over past years and present conditions point to a continuation of the demand. As usual, our silver commanded a ready sale and was disposed of mostly in the United States. There was a stronger demand for bismuth during 1939 but cadmium and antimony were not so active."

YUKON - In the Mayo district, Wernecke mines were operated continuously throughout 1939 by the Treadwell Yukon Corporation Limited; ore treated in the 150 ton mill of the company totalled 54,294 short tons and 6,451 tons of lead concentrates were produced. Concentrates together with some crude lead ore were shipped to the Bunker Hill smelter, Bradley, Idaho, U.S.A.

NORTHWEST TERRITORIES - Eldorado Gold Mines Ltd. reported that in 1939 there were 33,373 tons of ore sent to the mill and 1,057 tons of concentrates produced having an estimated gross value of \$2,391,325. It was stated that ore reserves at the mine were maintained throughout the year and are now ample for the operation of the present mill for the next four years. Shipments received from the mine at the radium refinery located in Port Hope, Ontario amounted to 522 tons of pitchblende concentrates. Silver-copper concentrates were also shipped from the mine to a smelter in the United States.

Table 13 - PRINCIPAL STATISTICS OF THE SILVER-LEAD-ZINC MINING INDUSTRY(x) in CANADA, ALTERNATE YEARS, 1927-1933; and 1934-1939

Year	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and electricity	Value of ores and concen- trates sold(b)
	(a)	(a)	\$		\$	\$	\$
1927	157	173	28,036,330	3,106	4,807,817	588,520	17,520,130
1929	149	168	50,573,661	4,153	6,482,392	793,139	22,748,089
1931	39	40	31,152,078	1,299	2,149,921	485,106	6,351,975
1933	38	39	13,080,224	1,024	1,369,510	260,621	7,569,867
1934	58	60	12,923,827	1,292	1,935,284	389,276	8,885,081
1935	69	70	16,596,941	1,657	2,431,110	438,128	10,553,086
1936	88	89	19,372,600	1,870	2,917,832	680,677	13,814,645
1937	128	130	29,637,739	2,220	3,914,643	845,898	22,740,582
1938	107	108	30,386,714	1,640	3,027,915	702,571	18,483,945
1939 -							
British Columbia.	70	71	21,186,920	1,356	2,103,882	420,998	12,275,715
Yukon and North- west Territories	3	3	2,354,690	259	674,111	244,317	953,329
Quebec, Nova Scotia, New Brunswick and Ontario(c)	9	9	123,010	31	25,064	2,346	326,565
TOTAL	82	83	23,664,620	1,646	2,803,057	667,661	13,555,609

(x) Since 1931 includes data relating to mining of silver-pitchblende ores in the Northwest Territories.

(a) Since 1934 includes a number of small shippers from whom no particulars were received relating to capital, wages, etc.

(b) Commencing in 1935, the value of fuel, purchased electricity and process supplies have been deducted.

(c) Five firms in Quebec, 2 in Ontario, 1 in Yukon, 2 in Northwest Territories, 1 in Nova Scotia and 1 in New Brunswick.

NOTE - For value of process supplies used in 1933 and 1939, see Table 16, also the statistics shown in this report do not include those relating to smelting and refining.

Table 14 - NUMBER OF WAGE-EARNERS, BY MONTHS, IN THE SILVER-LEAD-ZINC MINING INDUSTRY, 1937 - 1939

			1 9 3 9		
Month	1937	1938	M I N E		MILL
			Surface	Underground	
January	1,679	1,459	365	721	302
February	1,691	1,422	347	710	297
March	1,814	1,403	353	699	297
April	1,934	1,372	389	692	304
May	1,999	1,361	404	695	313
June	1,993	1,411	409	668	304
July	2,029	1,426	408	661	304
August	2,040	1,399	419	655	309
September	2,019	1,393	379	681	297
October	2,031	1,377	363	678	289
November	1,953	1,357	319	723	287
December	1,800	1,366	356	677	287
AVERAGE	1,927	1,403	391	684	300

Table 15 - NUMBER OF WAGE-EARNERS WHO WORKED THE NUMBER OF HOURS SPECIFIED, DURING ONE WEEK IN MONTH OF NORMAL EMPLOYMENT

NOTES AND SUMMARY			
Hours	1 9 3 9	Hours	1 9 3 9
	No.		No.
30 hours or less .....	...	51 - 54 hours .....	...
31 - 43 hours	1	55 hours .....	...
44 hours .....	...	56 - 64 hours	269
45 - 47 hours .....	...	65 hours and over	12
48 hours	1,046	GRAND TOTAL	1,329
49 - 50 hours	1	Total wages paid in that week ...	\$45,914

Table 16 - FUEL AND ELECTRICITY USED IN THE SILVER-LEAD-ZINC MINING INDUSTRY, 1938 and 1939

	Unit of measure	1 9 3 8		1 9 3 9	
		Quantity	Value	Quantity	Value
Bituminous coal - Canadian	short ton	32,945	137,560	41,665	130,942
Imported	short ton	1	25	8	283
Anthracite coal	short ton	...	...	...	...
Lignite coal	short ton	473	2,910	40	247
Coke	short ton	31	226	1	30
Gasoline	Imp. gal.	94,140	43,390	74,341	34,157
Kerosene	Imp. gal.	4,420	1,401	18,356	2,776
Fuel oil and diesel oil	Imp. gal.	660,496	183,746	527,229	204,024
Wood (cords of 128 cu. ft.)	cord	1,699	23,120	1,703	20,740
Other fuel .....	\$	...	13	...	6
Electricity purchased, including service charges	K. W. H.	65,160,604	310,180	58,135,808	274,456
TOTAL .....	\$	...	702,571	...	667,661
Electricity generated for own use	K. W. H.	6,940,919	...	6,287,406	...
Process supplies used, explosives, etc.	\$	...	1,694,121	...	1,619,385

Table 17 - POWER EQUIPMENT INSTALLATION IN THE SILVER-LEAD-ZINC MINING INDUSTRY, 1939

Description	Ordinarily in use		In reserve or idle	
	Number of units	Total horse power (x)	Number of units	Total horse power (x)
Steam engines and steam turbines	7	6,342	1	35
Diesel engines	29	4,280	6	300
Gasoline, gas and oil engines, other than diesel engines	8	280	4	57
Hydraulic turbines or water wheels .....	...	...	2	250
Electric motors - (a) Operated by purchased power	739	21,080	98	4,845
TOTAL	783	31,982	111	5,487
(b) Operated by power generated by the establishment	92	914	79	952
Boilers	10	2,306	5	330

(x) According to manufacturers' rating.

Table 18 - ORE MINED AND MILLED IN THE SILVER-LEAD-ZINC MINING INDUSTRY(x) IN CANADA, 1937, 1938 and 1939

		Yukon and Northwest Territories	British Columbia, Quebec and Nova Scotia (c)	CANADA
1937 - Ore mined	tons	85,125	2,441,423	2,524,548
Ore milled	tons	81,375	2,433,628	2,515,003
Concentrates produced - Lead	tons	6,190	293,685	299,875
Zinc	tons	...	258,948	258,948
Pitchblende-silver..	tons	675	...	675
Silver	tons	(b)	...	(b)
1938 - Ore mined	tons	89,131	2,298,036	2,387,167
Ore milled	tons	88,123	2,275,900	2,364,023
Concentrates produced - Lead	tons	...	281,009	281,009
Zinc	tons	...	233,071	233,071
Pitchblende-silver..	tons	714	...	714
Silver and silver-copper	tons	94	...	94
1939 - Ore mined	tons	86,748	2,108,390	2,195,138
Ore milled	tons	94,278	2,091,964	2,186,242
Concentrates produced - Lead	tons	6,451	260,771	267,222
Zinc	tons	...	219,637	219,637
Pitchblende-silver..	tons	1,042	...	1,042
Silver and silver-copper	tons	16	...	16

(x) Includes silver-pitchblende ores mined in Northwest Territories.

(a) Includes data relating to 1 property in Ontario in 1937 and also in 1939.

(b) Not recorded.

(c) No ore mined or milled in Quebec and Nova Scotia in 1938 or 1939.

Table 19 - DESTINATION OF SHIPMENTS FROM SILVER-LEAD-ZINC MINES OF CANADA, 1938 and 1939

Table 15 - DESTINATION OF PRODUCTION FROM SILVER-LEAD-ZINC MINES OF CANADA, 1938 and 1939		Total metal content as determined by settlement assay:				
	Tons shipped	Value at shipping point	Gold fine oz.	Silver fine oz.	Lead pounds	Zinc pounds
1938						
To Canadian smelters -						
Lead ore	7,623	461,244	949	1,009,476	1,021,261	249,154
Lead concentrates (a)	286,434	14,274,927	7,736	7,977,803	396,263,652	20,240,107
Zinc concentrates (x)	248,914	6,629,894	10	564,126	18,063,258	249,609,553
Dry ore	2,339	53,253	68	115,987	80,257	...
Silver concentrates (b)	19	35,990	...	92,614	...	...
TOTAL	545,329	21,455,508	8,763	9,760,006	415,428,428	270,098,814
To Foreign smelters -						
Lead ore	2,703	277,286	171	758,979	2,478,084	...
Lead concentrates	5,410	756,899	894	2,113,846	2,887,602	...
Silver concentrates (b)	165	46,162	6	92,437	3,735	...
Zinc concentrates (x)	35,642	1,009,764	...	70,554	2,037,043	37,563,748
Dry ore	21	6,779	4	15,442	1,026	...
TOTAL	43,941	2,096,890	1,075	3,051,258	7,407,490	37,563,748
GRAND TOTAL (Gross) - 1938	589,270	23,552,198	9,838	12,811,264	422,835,918	307,662,562
Cost of freight .....	...	1,781,756	...	...	...	...
Cost of fuel and purchased electricity .....	...	702,571	...	...	...	...
Smelter charges .....	...	889,805	...	...	...	...
Cost of process supplies .....	...	1,694,121	...	...	...	...
NET VALUE - 1938 .....	...	18,483,945	...	...	...	...
1939						
To Canadian smelters -						
Lead ore	8,442	455,524	557	914,868	1,142,053	224,041
Lead concentrates (a)	253,922	11,785,446	802	7,060,903	354,645,593	19,151,082
Zinc concentrates (x)	254,988	3,962,225	1	560,863	16,653,058	256,944,312
Dry ore	4,853	179,864	1,735	294,889	52,985	53,769
TOTAL	522,205	16,383,059	3,095	8,831,523	372,493,689	276,373,204
To Foreign smelters -						
Lead ore	792	181,370	74	441,310	673,542	...
Lead concentrates	13,158	1,446,029	2,825	3,628,720	9,947,252	1,226,668
Silver concentrates (b)	99	30,349	...	66,610	...	...
Zinc concentrates (x)	15,905	214,044	...	11,035	298,466	16,405,808
Dry ore .....	...	...	...	...	...	...
TOTAL	29,954	1,871,792	2,899	4,147,675	10,919,260	17,632,476
GRAND TOTAL (Gross) - 1939	552,159	18,254,851	5,994	12,979,198	383,412,949	294,005,680
Cost of freight .....	...	1,417,437	...	...	...	...
Cost of fuel and purchased electricity .....	...	667,661	...	...	...	...
Smelter charges .....	...	994,759	...	...	...	...
Cost of process supplies .....	...	1,619,385	...	...	...	...
NET VALUE - 1939 .....	...	13,555,609	...	...	...	...

(x) Does not include any zinc concentrates produced from copper-gold-zinc ores in Quebec, Manitoba, Saskatchewan or British Columbia.

(a) Includes shipments of silver-pitchblende concentrates from Northwest Territories. Information relating to content of pitchblende is not available for publication.

(b) Recovered from pitchblende-silver ores; 1937 shipments in transit are credited to 1938. In 1938 these concentrates shipped to Foreign smelters contained 77,217 lb of copper and in 1939 they contained 43,372 lb.

NOTE - In addition to the metals contained in shipments listed in Table 19, there are important quantities of lead and silver contained in ores shipped from certain gold mines in British Columbia. Cadmium, bismuth, antimony and sulphur are also recovered from these ores (silver-lead-zinc).

SILVER - Production of newly mined silver in Canada in 1939 totalled 23,165,629 fine ounces valued at \$9,378,490 compared with 22,219,195 fine ounces at \$9,660,239 in 1938. The average price of the metal in Canadian funds was 40.488 cents per fine ounce in 1939 as against 43.47 cents in 1938. The greatest annual production of silver in Canada was in 1910 in which year an output of 52,869,264 fine ounces was recorded; the highest average yearly price per fine ounce for the metal in Canada was 111.122 cents in 1919. Production of silver in Canada since 1887, the first year for which data are available, to the close of 1939 totalled 783,664,989 fine ounces valued at \$454,691,137.

"Handy and Harman", New York, in their review of the silver market for 1939, state: "The story of silver for 1939 may be divided into three chapters. The first covers the period from the beginning of the year to June 26th during which prices for silver of foreign origin were stabilized by United States government purchases at 43 cents. The second chapter comprises the four-month period of world market fluctuations which commenced on June 27th with a reduction in the Treasury's buying rate, continued through the early weeks of the war, and ceased at the end of October when imports of silver were prohibited from entering England and India except under license. The third chapter extends from October 30th to the close of the year. During most of this final period two silver markets existed - the World market represented by the United States government price of 35 cents, and the Anglo-Indian market represented by sterling and rupee quotations. . . . We estimate that United States government purchases for 1939 at 341,400,000 ounces, of which amount 60,600,000 ounces were derived from domestic ores. The balance of 280,800,000 ounces consisted of foreign silver purchased under inter-government agreements and in open market, plus a negligible 500,000 ounces received in miscellaneous deposits at the mints and assay offices. The past year's acquisitions, added to the 2,588,600,000 ounces on hand at the beginning of the year, make a total of 2,930,000,000 ounces, which represents our estimate of United States Treasury silver holdings at December 31st, 1939, including coin in circulation. . . . Once again the year-end figures proclaim the futility of attempting to meet the requirements of the Silver Purchase Act that "one-fourth of the total monetary value of gold and silver stocks shall be in silver". After five and one-half years of operation and after more than 2,200,000,000 ounces of silver have been bought, the goal set by the Act is actually 291,000,000 ounces farther away than it was when the legislation was passed in June, 1934. . . . We estimate that 34,000,000 ounces of silver were used in 1939 by the arts and industries in the United States and Canada - increases were approximately as follows: sterling silverware, 20%; silver plated ware 30%; motion pictures, 10%; for jewelry the increase was only slight, but in dental trade it reached more than 50%. In the purely industrial field, as distinct from the arts, there was a market increase in consumption. . . . Reports covering silver coinage indicate a comparatively small world consumption for that purpose during 1939—a total of 8,900,000 ounces. . . .".

"Metal and Mineral Markets" - New York, in its issue of May 16th, 1940, stated: "The United States Senate, on May 9th, voted 45 to 36 to end the acquisition of foreign silver. The Townsend Bill, the measure presented to Congress to end such purchases, will now be sent to the House of Representatives. However, before the House acts upon the measure, it will go to the House Committee on Coinage, Weights and Measures. . . .".

Table 20 - PRODUCTION OF SILVER IN CANADA, BY PROVINCES AND BY SOURCES, 1938 and 1939

	1	9	3	8	1	9	3	9
	Quantity		Value		Quantity		Value	
	fine oz.		\$		fine oz.		\$	
NOVA SCOTIA -								
In gold bullion and in silver-lead-zinc ores exported (*) Total	988		430		173,877		70,399	
QUEBEC -								
In anode copper	971,417		422,343		943,403		381,965	
In gold ores and in copper ores exported. Total	218,078		94,814		224,041		90,710	
	1,189,495		517,157		1,167,444		472,675	
ONTARIO -								
In silver bullion made from cobalt ores..	1,087,703		472,901		1,465,920		593,522	
In gold bullion	521,459		226,715		527,352		213,514	
In blister copper	2,437,596		1,059,793		2,410,512		975,968	
In ores, concentrates, residues, matte, etc. exported or treated in smelters outside the province	272,079		118,232		285,638		115,649	
Total	4,318,837		1,877,701		4,689,422		1,898,653	

Table 20 - PRODUCTION OF SILVER IN CANADA, BY PROVINCES AND BY SOURCES, 1938 and 1939 - (concluded)

	1	3	1	3
	9	8	9	9
	Quantity	Value	Quantity	Value
	fine oz.	\$	fine oz.	\$
MANITOBA -				
In blister copper	1,147,216	498,775	984,932	398,804
In gold bullion (gold mines)	51,099	22,216	45,493	17,609
Total	1,198,315	520,991	1,028,425	416,413
SASKATCHEWAN -				
In blister copper (a)	898,405	390,600	1,139,348	461,299
In gold bullion or in crude alluvial gold	8	3	2,252	912
Total	898,413	390,603	1,141,600	462,211
ALBERTA -				
In alluvial gold				
Total	23	10	32	13
BRITISH COLUMBIA -				
In alluvial gold	10,397	4,520	9,000	3,644
In gold bullion	110,911	48,221	94,805	38,385
In base bullion and in ores, matte, etc. exported.	11,065,255	4,810,841	10,544,226	4,269,146
Total	11,186,563	4,863,582	10,648,031	4,311,175
YUKON -				
In alluvial gold	16,043	6,975	19,254	7,795
In silver-lead ores shipped to smelter	2,828,616	1,229,797	3,811,610(b)	1,543,245
Total	2,844,659	1,236,772	3,830,864	1,551,040
NORTHWEST TERRITORIES -				
In pitchblende-silver ores shipped to smelters(x).				
and in gold bullion				
Total	581,902	252,993	483,874	195,911
CANADA - TOTAL	22,219,195	9,660,239	23,163,629(c)	9,378,490

(x) Silver-lead ores exported in 1939 only.

(x) Comprises silver in silver sulphide, etc., made at the Eldorado refinery, Port Hope, Ont., plus silver in ores shipped to other metallurgical plants.

(a) Represents silver contained in blister copper made at the Flin Flon smelter from Saskatchewan ores.

(b) Includes 300 ounces from gold ores.

(c) Of this, 5,961,172 fine ounces represents silver in ores exported.

NOTE - For 1939 silver was valued at 40.488 cents per fine ounce, the average price of the metal on the New York market expressed in Canadian funds; for 1938 the corresponding price was 43.477 cents.

Table 21 - IMPORTS INTO CANADA and EXPORTS OF SILVER, 1938 and 1939

	1	3	1	3
	9	8	9	9
	Quantity	Value	Quantity	Value
	fine oz.	\$	fine oz.	\$
IMPORTS -				
Silver in bars, etc., unmanufactured	2,011,048	850,488	3,850,851	1,532,891
Silver, manufactures of, n.o.p., and articles consist- ing wholly or in part of sterling, and other silver- ware .....	...	293,193	...	278,521
Toilet articles of which the most important component, in value, is sterling silver .....	...	33,216	...	25,907
Total .....	...	1,176,897	...	1,837,319
EXPORTS -				
Silver contained in ore, concentrates, etc.(b)	5,868,827	2,540,860	6,828,031	2,801,206
Silver bullion (Canadian) (a)	22,682,687	9,838,462	14,202,549	5,723,967
Total	28,551,514	12,379,322	21,030,580	8,525,173
Silver bullion--Foreign (c)	1,244,096	550,893	1,008,612	427,046
Silver coin--Foreign (subsidiary) .....	...	1,500,837	...	1,200,392
Canadian .....	...	32,325	...	5,340

(a) Of these exports 21,713,359 ounces in 1938 and 13,862,258 ounces in 1939 went to the United States.

(b) In 1938, 5,573,016 ounces went to the United States and in 1939, 6,555,509 ounces.

(c) Of the quantity exported 1,062,078 ounces in 1938 and 1,008,612 ounces in 1939 went to the United States.

Table 22 - FINE GOLD AND FINE SILVER CONTENT OF SHIPMENTS TO THE ROYAL CANADIAN MINT, OTTAWA, CANADA, BY SOURCES, 1939

	Gold	Silver
	Fine ounces	Fine ounces
Northwest Territories	46,987.62	11,033.26
British Columbia	348,936.03	89,004.42
Alberta sundries	19.46	2.02
Saskatchewan sundries	6,264.04	1,699.34
Manitoba	108,443.32	48,061.85
Ontario	3,070,726.04	426,622.50
Quebec	1,060,663.56	130,365.09
Nova Scotia	28,071.40	961.06
Jewellery and scrap	12,251.21	3,083.92
Vancouver Assay Office	182,603.52	30,871.64
Yukon sundries .....	...	...
Other -		
Foreign Gold Coin	3,868.08	...
TOTAL	4,868,834.28	741,705.10

Table 23 - PRODUCTION OF SILVER IN CANADA FOR YEARS SPECIFIED, 1887 - 1939

Year	Ounces	Cents per ounce	Year	Ounces	Cents per ounce
1887	355,083	98.00	1928	21,936,407	58.18
1891	414,523	98.00	1929	23,143,261	52.99
1896	3,205,343	67.06	1930	26,443,823	38.15
1901	5,539,192	58.95	1931	20,562,247	29.87
1906	8,473,379	66.79	1932	18,347,907	31.67
1910 (x)	32,869,264	53.49	1933	15,187,950	37.83
1911	32,559,044	53.30	1934	16,415,282	47.46
1916	25,459,741	65.66	1935	16,618,558	64.79
1919	16,020,657	111.122(a)	1936	18,334,487	45.13
1920	13,330,357	100.90	1937	22,977,751	44.88
1925	20,228,988	69.06	1938	22,219,195	43.48
1927	22,736,698	56.37	1939	23,163,629	40.49

(x) Year of maximum output.

(a) Highest price per ounce recorded since 1887.

Table 24 - SOURCE OF CANADIAN SILVER PRODUCTION, BY PERCENTAGES, 1937 - 1939

Source	1937	1938	1939
In silver-cobalt ores	7.9	5.7	6.5
In base bullion (x)	41.7	45.7(x)	39.7(x)
In gold ores (bullion and placer)	7.8	3.8	4.6
In blister and anode copper	20.5	24.6	23.6
In matte, copper ores and silver-lead ores, etc., exported	22.1	20.2	25.6
	100.0	100.0	100.0

(x) Chiefly from silver-lead ores.

(*) Includes silver recovered in Canada from pitchblende-silver ores.

Table 25 - SILVER CONSUMED IN SPECIFIED CANADIAN INDUSTRIES, 1937 and 1938

	1937	1938	1937	1938
	Fine oz.	Value	Fine oz.	Value
		\$		\$
Scientific equipment				
Fountain pens and pencils	628,001	296,628	696,437	310,703
Jewellery and silverware (fine silver) .....	...	480,215	...	505,038
Jewellery and silverware (silver alloys) .....	...	414,474	...	361,555
Medicinal and pharmaceutical preparations (bullion)	45,296	20,699	45,283	20,241
Miscellaneous chemicals	17,010	7,654	13,089	5,759

(a) Consumed largely in the manufacture of photographic film.

Table 26 - AVERAGE COMMERCIAL RATIO OF SILVER TO GOLD FOR EACH SPECIFIED YEAR SINCE 1700
(Supplied by United States Mint)

Year		Year		Year	
1700	14.81	1900	33.33	1932	73.29
1750	14.55	1905	33.87	1933	59.06
1800	15.68	1910	38.22	1934	72.49
1850	15.70	1915	40.48	1935	54.19
1875	16.64	1920	20.28	1936	77.09
1880	18.05	1925	29.78	1937	77.44
1885	19.41	1930	53.74	1938	80.39
1890	19.75	1931	71.25	1939	89.25*
1895	31.60				

* Estimated on averages in Canadian funds.

Table 27 - SILVER PRODUCTION OF THE WORLD(a), 1933, 1938 and 1939 (Supplied by the American Bureau of Metal Statistics)
(in fine ounces)

Country	1933	1938	1939
NORTH AMERICA:			
United States	20,955,000	59,736,000	57,808,000
Canada	15,187,950	22,219,195	25,116,861
Mexico	68,101,062	81,016,939	75,869,000
Newfoundland	1,208,280	1,645,590	1,415,000
Total North America	105,452,292	165,617,724	159,208,861
CENTRAL AMERICA AND WEST INDIES	4,800,000	4,300,000	4,500,000
SOUTH AMERICA:			
Argentina	(c)	3,755,000	3,929,501
Bolivia	5,469,069	6,373,660	7,340,340
Chile	257,136	1,381,001	1,174,024
Colombia	107,992	192,872	215,000
Ecuador	113,200	89,111	115,000
Peru	7,316,828	20,552,177	18,200,000
Other South America	86,000	47,000	50,000
Total South America	15,350,225	32,390,821	30,923,865
EUROPE:			
Czechoslovakia	916,179	1,200,000	*1,000,000
France	300,602	*565,000	*565,000
Great Britain	37,553	107,985	*110,000
Germany	6,320,690	*7,000,000	*7,000,000
Greece	241,500	150,000	150,000
Italy	342,639	812,500	880,000
Norway	240,482	235,338	300,000
Poland	41,377	62,244	*60,000
Rumania	353,489	819,864	712,714
Russia	981,000	*7,000,000	*7,000,000
Spain and Portugal	2,929,508	*500,000	*500,000
Sweden	928,203	1,123,835	1,130,000
Yugoslavia	1,624,000	2,524,074	2,570,000
Other Europe	54,600	140,000	150,000
Total Europe	15,311,822	22,240,840	22,127,714
OCEANIA:			
New South Wales	8,221,271	9,553,550	*9,500,000
Queensland	2,248,804	3,533,430	3,885,963
Tasmania	489,330	1,219,550	1,278,116
Western Australia	67,036	271,346	280,000
New Guinea	(b)	104,000	*105,000
New Zealand	430,492	357,709	*375,000
Other Oceania	95,464	20,000	25,000
Total Oceania	11,552,397	15,064,645	15,449,779

Table 27 - SILVER PRODUCTION OF THE WORLD(a), 1933, 1938 and 1939 - (Concluded)

Country	1 9 3 3	1 9 3 8	1 9 3 9
ASIA:			
India	7,300,000	6,450,000	6,830,000
China	243,645	*150,000	*150,000
Chosen (Korea)	702,946	*3,000,000	*3,000,000
Netherland India	860,462	579,131	*550,000
Cyprus .....	...	106,522	103,970
Japan	5,967,362	*10,000,000	*11,000,000
Turkey	100,000	350,000	575,000
Other countries	30,000	140,000	135,000
Total Asia	15,204,415	20,775,653	22,343,970
AFRICA:			
Algeria	27,328	90,000	85,000
Nigeria	117,480	*50,000	...
Rhodesia	112,459	254,654	234,739
Transvaal, Cape Colony and Natal	1,065,011	1,135,374	1,132,516
Belgian Congo	2,646,652	3,122,215	2,950,000
French Morocco	(d)	280,000	*300,000
Southwest Africa .....	...	636,396	587,000
Tunis	(d)	61,149	60,000
Other Africa	40,000	60,000	65,000
Total Africa	4,008,930	5,689,788	5,364,255
TOTAL FOR WORLD	169,680,081	264,079,471	258,917,744

(a) In compiling this table free use has been made of the reports of the Director of the Mint, especially for early years. The 1939 compilation contains some preliminary data and conjectural figures (x) have been inserted where necessary. Production of the Philippine Islands is included with the United States in this table.

(b) Included in "Other Oceania".

(c) Included in "Other South America".

(d) Included in "Other Africa".

Table 28 - WORLD'S MONETARY STOCKS OF SILVER AT THE CLOSE OF 1938 (Supplied by the United States Mint and subject to revision)

(Stated in United States money, 000's omitted)

Country	Silver stock in banks and treasuries (*)	1 9 3 8
		Per capita
United States (including Hawaii, Alaska and Porto Rico)(10) ..	5,367,771	\$ 41.07
Canada (1)	30,483	2.72
Mexico (2)	54,409	2.79
Cuba (2)(3)	69,394	16.52
Chile (2)(4)	334	0.07
Colombia	11,379	1.32
Peru	4,646	0.65
Venezuela	38,139	10.80
Uruguay (4)	3,127	1.48
Belgium	5,791	0.69
France (3)	79,074	1.88
Germany	511,770	6.50
Bulgaria (2)	22,875	3.59
Czechoslovakia .....	...	...
Denmark .....	...	...
Hungary	2,696	0.27
Lithuania	6,500	2.52
Great Britain (3)	280,218	5.90
Greece (3)	2,610	0.37
Eire (3)	4,737	1.61
Latvia	7,958	4.02
Netherlands	90,677	10.39
Norway	1,642	0.56

Table 28 - WORLD'S MONETARY STOCKS OF SILVER AT THE CLOSE OF 1938 - (Concluded)

Country	Silver stock in banks and treasuries (x)	1 9 3 8
		Per capita
	\$	\$
Poland	72,803	2.07
Rumania (2)(3)	34,912	1.76
Spain .....	...	...
Switzerland (3)	45,274	10.75
Italy .....	...	...
Portugal .....	...	...
Sweden (4)	218	0.03
Yugoslavia (3)	22,143	1.42
British Malaya	15,305	2.54
Indo-China--French	5,951	0.26
Iran (Persia) (4)(5)	23,548	1.57
Palestine	5,184	3.61
Syria	1,185	0.33
Turkey .....	...	...
British West Africa	7,005	0.28
Nyasaland	5,345	3.26
Rhodesia, Southern (4)	801	0.61
New Zealand (6)	8,784	5.48
Ceylon	9,639	1.67
China .....	...	...
India--British (4)	254,063	0.71
Morocco	1,952	0.27
Japan (including Chosen, Taiwan, Kwantung and Karafuto) .....	...	...
Netherlands East Indies (10)	51,857	0.77
Philippine Islands (7)(10)	19,009	1.39
Thailand (Siam) (10)	30,492	2.08
Egypt	19,454	1.21
Kenya, Uganda, Tanganyika and Zanzibar (9)	16,591	1.33
Sudan--Anglo Egyptian	7,380	1.19
Union of South Africa	16,052	1.62
Australia (June 30, 1938)	38,862	5.61
Algeria and Tunis	3,156	0.31
Other countries	139,182	...
TOTAL	7,452,377	3.61

(*) Monetary silver stock in government treasuries, in banks, and when data available, in circulation.
United States equivalent of reported face value at exchange rates.

- (1) Net issues of silver coin.
- (2) Includes base metal coin.
- (3) Prior year's figures at new equivalents where equivalents other than the legal parity are applicable.
- (4) Silver in circulation not included.
- (5) The Statist, February 23, 1939.
- (6) Australian coins and notes are the circulating media.
- (7) Silver converted to United States equivalent at legal rate.
- (8) Exclusive of British coins and currency which still circulate in the Irish Free State.
- (9) On June 30, 1938.
- (10) Includes silver bullion.

LEAD - The quantity of new lead produced in Canada during 1939 and inclusive of the recoverable metal contained in ores exported totalled 388,569,550 pounds valued at \$12,313,768 compared with 418,927,660 pounds worth \$14,008,941 in 1938.

Of the total Canadian production of lead in 1939, the mines of British Columbia accounted for 378,440,666 pounds or 97 per cent, and of this quantity the Sullivan mine, of the Consolidated Mining and Smelting Company of Canada Limited contributed by far the larger part. The production of refined primary lead by the Company in its Trail plants during 1939 totalled 381,137,424 pounds compared with 400,763,914 pounds in 1938.

The Mining Journal, London, reported as follows: "In Germany the drive for expansion of domestic production continued and the exploitation of low-grade properties in the Tyrol and Nassereith was begun. Since the outbreak of the war the British contraband control must have had a telling effect on Germany's lead supplies. Greater Germany normally requires about 250,000 tons of lead annually, but domestic

production of recoverable lead probably does not normally exceed 100,000 tons. The remainder of Germany's lead supplies are obtained from imported concentrates and imported metal. The bulk of these imports are obtained from overseas and the only really large tonnage of lead concentrates available in neighbouring countries is the Trepea output in Yugoslavia".

Table 29 - PRODUCTION(b) OF NEW LEAD IN CANADA, 1925 - 1939

Year	Pounds	\$	Price per pound (Canadian funds)
			\$
1925 (x)	253,590,578	23,127,460	9.120
1926	283,801,265	19,240,661	6.751
1927	311,423,161	16,477,139	5.256
1928	337,946,688	15,553,231	4.576
1929	326,522,566	16,544,248	5.054
1930	332,894,163	13,102,635	3.927
1931	267,342,482	7,260,183	2.710
1932	255,947,378	5,409,704	2.114
1933	266,475,191	6,372,998	2.392
1934	346,275,576	8,436,658	2.436
1935	339,105,079	10,624,772	3.133
1936	383,180,909	14,993,869	3.913
1937	411,999,484	21,053,173	5.110
1938 (a)	418,927,660	14,008,941	3.344
1939	388,569,550	12,313,768	3.169

(x) Year of maximum value of Canadian lead production.

(a) Year of maximum output of Canadian lead.

(b) Primary lead in base bullion produced plus lead in ores exported.

Table 30 - PRODUCTION IN CANADA, IMPORTS AND EXPORTS OF LEAD, 1938 and 1939

	1 9 3 8		1 9 3 9	
	Pounds	Value \$	Pounds	Value \$
PRODUCTION -				
Nova Scotia .....	...	...	2,545,122	80,655
Ontario	22,363	748	39,130	1,240
British Columbia	413,706,307	13,834,339	378,440,666	11,992,784
Yukon	5,198,990	173,854	7,544,632	239,089
TOTAL	418,927,660	14,008,941	388,569,550	12,313,768
IMPORTS -				
Old and scrap, pig and block	56,416	3,235	16,846	1,822
Bars and sheets	54,507	2,948	88,092	5,442
Litharge	2,125,900	143,597	2,253,300	154,898
Acetate of lead	245,949	14,493	164,717	10,469
Nitrate of lead	285,303	16,250	286,801	20,860
Other manufactures .....	...	67,228	...	80,338
Pipe lead	28,333	1,671	69,525	3,798
Shots and bullets	9,023	634	11,726	974
Tea lead .....	...	...	...	...
Lead arsenate	496,387	41,620	568,344	49,238
Lead tetraethyl, compounds of	5,486,418	2,485,032	6,373,494	2,927,449
Lead capsules for bottles .....	...	65,029	...	78,652
Lead pigments -				
Dry white lead	91,025	5,592	8,324	701
White lead, ground in oil	9,928	916	14,769	1,562
Dry red lead and orange mineral ...	453,721	31,593	450,885	31,619
TOTAL .....	...	2,879,838	...	3,367,822
EXPORTS -				
Lead, contained in ore	7,162,300	345,394	8,204,200	399,811
Pig lead	309,864,100	8,637,797	361,471,700	9,450,265
White lead	70,400	5,712	256,700	20,931
TOTAL	317,096,800	8,988,903	369,932,600	9,871,007

Production of lead from all types of Canadian ores from 1887 to 1939 inclusive, totalled 6,374,120,797 pounds valued at \$289,504,432.

Table 31 - PRODUCTION OF REFINED LEAD(x) IN CANADA, 1931 - 1939

Year	Pounds	Year	Pounds
1931	278,448,457	1935	327,515,277
1932	253,136,522	1936	363,449,490
1933	254,565,861	1937	399,394,939
1934	314,457,735	1938	400,763,914
		1939	381,137,424

(x) Primary lead only from 1934 to 1939, inclusive.

Table 32 - AVAILABLE STATISTICS ON THE CONSUMPTION OF LEAD IN SPECIFIED CANADIAN MANUFACTURING INDUSTRIES, 1937 and 1938

Industries	Items Used	1937 Pounds	1938 Pounds
Brass and copper products	Pig lead	804,379	712,315
	Scrap and other lead	306,379	468,372
Paints and pigments	Pig lead (*)	14,442,025	13,720,025
White metal alloys	Pig lead	10,818,139	11,875,116
	Scrap lead	12,082,034	12,230,944
Electrical apparatus	Pig lead	21,054,881	21,467,082
	Scrap lead	129,400	154,125
	Other	808,603	874,760
Iron and steel	Lead	1,810,495	1,416,378
GRAND TOTAL		62,256,335	62,919,117

(*) Some products such as lead oxides made from pig lead by the paints and pigments industry are sold to other industries for the manufacture of such products as storage batteries.

NOTE - Corresponding data for 1939 not yet complete.

Table 33 - USE OF LEAD IN THE UNITED STATES, BY PERCENTAGE, 1929, and 1937 - 1939

NOTE - The following data supplied by the American Bureau of Metal Statistics are included as indicative of current trends in lead consumption.

Purpose	1929	1937	1938	1939
Ammunition	4.23	5.82	5.71	6.34
White lead	12.31	12.67	13.00	11.24
Red lead and litharge	3.09	8.40	7.87	8.58
Storage batteries	21.60	28.29	30.59	29.69
Cable covering	22.63	13.26	10.99	11.15
Building	9.87	6.63	6.59	7.50
Automobiles	1.85	1.77	1.10	1.33
Foil	4.09	3.20	4.03	3.27
Bearing metal	3.39	2.21	1.65	1.92
Solder	3.81	3.24	2.75	3.00
Typemetal	1.85	2.50	2.20	2.10
Caulking	3.24	2.21	2.20	2.40
Other uses	8.04	9.80	11.32	11.48
TOTAL	100.00	100.00	100.00	100.00

Table 34 - WORLD'S PRODUCTION OF LEAD(a), 1933 - 1938 and 1939 (Supplied by the American Bureau of Metal Statistics)
(in short tons - 2,000 lb.)

Country	1933	1938	1939
United States (c)	292,543	379,636	420,427
Canada (b)	129,932	204,646	196,059
Mexico	139,738	267,530	237,742
Other North America (d) .....	...	1,992	2,950
Total North America	562,213	853,804	857,178
Argentina	11,017)		
Peru (b)	750)	50,500	50,600
Other South America (b)	850)		
Total South America	12,617	50,500	50,600

Table 34 - WORLD'S PRODUCTION OF LEAD(a). 1933 - 1938 and 1939 - (Concluded)

Country	1933	1938	1939
Austria	5,098	10,229	(f)
Belgium	70,543	99,758	105,821
Czechoslovakia	4,096	*5,512	*5,510
France	8,598	46,024	46,297
Germany	128,528	189,285	200,000
Great Britain	7,000	12,125	*12,125
Greece	8,929	4,387	4,223
Italy	27,289	47,741	42,000
Yugoslavia	6,645	9,610	11,711
Poland	13,316	24,011	*27,560
Rumania	(e)	6,234	5,622
Russia	15,070	*76,059	*82,700
Spain	102,473	*39,683	29,800
Other Europe	6,614	*331	*330
Total Europe	404,199	570,969	573,699
Turkey .....	...	1,109	403
India (Burma)	80,694	89,712	86,666
Japan	7,522	*13,228	*13,200
Chosen	864	*11,023	*11,000
China	4,237	*2,205	*2,205
Total Asia	93,317	117,277	113,474
Australia	233,532	259,771	278,200
Africa	16,395	26,208	25,817
TOTALS, ex U.S.A.	1,029,730	1,498,893	1,478,541
GRAND TOTALS	1,322,273	1,878,529	1,898,968

- (a) In this accounting production is reported in terms of lead content of base bullion and refined lead according to the countries where the smelting is done, except that in respect of the U.S.A., in view of its special tariff conditions, lead derived from foreign ore is deducted from domestic smelting production and credited to the respective countries of origin.
- (b) Does not include lead in ore exported to European countries.
- (c) Lead is smelters' original production from domestic ore, inclusive of some secondary.
- (d) Production of Newfoundland for 1933 included in Belgium and Germany. Beginning 1931, part was treated in United States and reported separately.
- (e) Included in "Other Europe".
- (f) Included in Germany.

ZINC - Production of zinc from Canadian ores during 1939 totalled 394,533,860 pounds valued at \$12,108,244 compared with 381,506,588 pounds worth \$11,723,698 in 1938. The quantity produced in 1939 was an all-time high record; however, the value of output was surpassed by that of the 1937 production owing to the decline from a price per pound of 4.90 cents in 1937 to 3.07 cents in 1939. Of the total production in 1939, the mines of British Columbia, chiefly the Sullivan, contributed 279,041,497 pounds, or 71 per cent. The production in British Columbia represents the recovery of the metal almost entirely in the refined state from silver-lead-zinc ores, whereas the recorded output of zinc in 1939 for Manitoba, Saskatchewan and Quebec represents the recovery of zinc chiefly in the refined state from copper-gold-silver ores. Zinc production credited to Nova Scotia in 1939 represented the recoverable metal contained in silver-lead-copper-zinc concentrates exported from old stock accumulated at the Stirling mine.

According to the Mining Journal, London, the outbreak of war dislocated the world zinc industry far more than the lead industry owing to the custom smelter problems which arose. Belgium, Holland and Norway all relied on imported zinc concentrates obtained chiefly from overseas. In Germany, domestic production continued to expand and the capture of the Polish zinc smelters (in good working order) made the third Reich easily the first European producer of metallic zinc.

Table 35 - PRODUCTION(x) OF ZINC FROM CANADIAN ORES, 1929 - 1939

Year	Pounds	\$	Price per pound (Canadian funds) ¢
1929	197,267,087	10,626,778	5.39
1930	267,643,505	9,635,166	3.60
1931	237,245,451	6,059,249	2.55
1932	172,283,558	4,144,454	2.41
1933	199,131,984	6,393,132	3.21
1934	299,579,683	9,087,571	3.04
1935	320,649,859	9,936,908	3.10
1936	333,182,736	11,045,007	3.31
1937 (b)	370,337,589	18,153,949	4.90
1938	381,506,588	11,723,698	3.07
1939 (a)	394,533,860	12,108,244	3.07

(a) Year of maximum Canadian zinc production.

(b) Year of highest annual value.

(x) Includes refined zinc and zinc in ores, etc., exported.

The total value of Canadian zinc production since the first recording of Canadian zinc statistics in 1898, and inclusive of 1939, totalled \$180,684,662.

Table 36 - PRODUCTION IN CANADA, IMPORTS AND EXPORTS OF ZINC, 1938 and 1939

	1 9 3 8 Pounds	Value \$	1 9 3 9 Pounds	Value \$
PRODUCTION -				
Nova Scotia .....	...	...	9,152,856	280,901
Quebec	5,315,852	163,356	28,758,759	882,606
Ontario .....	...	...	...	...
Manitoba	46,864,575	1,440,148	40,302,747	1,236,891
Saskatchewan	29,962,597	920,751	37,278,001	1,144,062
British Columbia	299,363,564	9,199,443	279,041,497	8,563,784
TOTAL	381,506,588	11,723,698	394,533,860	12,108,244
IMPORTS -				
Zinc dust	1,373,900	70,294	1,301,900	80,571
Zinc in blocks, pigs, bars and rods, and zinc plates, n.o.p.	5,900	643	38,500	3,347
Zinc in sheets and strips, and zinc plates for marine boilers	6,771,600	467,114	7,004,300	547,514
Zinc spelter	2,700	201	1,200	96
Zinc white (zinc oxide)	12,492,235	489,850	10,539,650	450,954
Zinc sulphate	585,362	8,977	566,118	14,037
Zinc, chloride of	1,252,081	48,720	2,128,454	84,290
Zinc, manufactures of, n.o.p. ....	...	206,948	...	283,127
Lithopone	17,731,708	632,273	21,252,814	765,522
TOTAL-IMPORTS .....	...	1,925,020	...	2,229,458
EXPORTS -				
Zinc, contained in ore	45,841,000	1,154,812	41,260,600	526,905
Zinc, scrap, dross and ashes	2,364,100	34,235	3,918,500	51,741
Zinc, spelter	264,424,100	8,626,961	311,989,100	9,343,586
TOTAL-EXPORTS	312,629,200	9,816,008	357,168,200	9,922,232

Table 37 - REFINED NEW ZINC PRODUCED IN CANADA, 1931 - 1939

Year	Short tons	Year	Short tons
1931	118,622	1936	151,103
1932	86,141	1937	158,542
1933	91,946	1938	171,932
1934	134,917	1939	175,641
1935	149,523		

Table 38 - AVAILABLE STATISTICS ON THE CONSUMPTION OF ZINC IN SPECIFIED CANADIAN MANUFACTURING INDUSTRIES, 1937 and 1938

Industry	Items Used	1937	1938
		Pounds	Pounds
Brass and copper products	(Other zinc	271,312	286,395
	(Zinc ingots and slabs	5,938,523	4,540,598
	(Zinc scrap	71,137	47,632
White metal alloys	(Zinc spelter	2,422,336	2,256,403
	(Zinc scrap	951,995	627,551
Electrical apparatus	(Zinc ingots and bars	880,619	1,117,940
	(Zinc sheets	2,712,989	2,319,830
Acids, Alkalies and salts	Zinc metal	3,584,568	2,717,080
Iron and steel	Zinc	32,800,000(x)	26,988,313
Miscellaneous chemicals	Zinc sheet	68,947	81,922
GRAND TOTAL		43,815,479	40,983,684

(x) Partly estimated.

NOTE - Data for 1939 not yet complete.

Table 39 - MANUFACTURE OF ZINC IN THE UNITED STATES, BY PERCENTAGE, 1926, 1929, 1938 and 1939

NOTE - The following data are supplied by the American Bureau of Metal Statistics and are included as indicative of the recent trend in zinc consumption.

Purpose	1926	1929	1938	1939
Galvanizing	46.60	45.71	47.03	43.93
Brass making	33.32	29.17	24.23	27.96
Rolled zinc	13.87	10.77	10.93	9.90
Die castings	2.17	5.68	11.40	13.42
Other purposes	8.44	8.67	6.41	4.79
TOTALS	100.00	100.00	100.00	100.00

Table 40 - WORLD'S PRODUCTION OF ZINC (SPELTER) (a), 1932, 1938 and 1939 (Supplied by the American Bureau of Metal Statistics)

Country	1932	1938	1939
United States	213,531	456,990	538,198
U.S.A. from foreign ore (b) .....	...	8,547	7,260
Mexico	33,454	41,338	50,989
Canada	86,152	171,656	178,301
Total North America	333,137	678,531	774,748
Belgium	106,185	231,924	204,697
Czechoslovakia	7,350	9,784	(c)
France	54,376	68,532	66,427
Germany	46,276	212,173	234,000
Great Britain	30,101	61,938	55,600
Italy	19,345	37,550	37,000
Netherlands	17,222	27,888	22,635
Norway	43,401	51,257	49,604
Poland	93,640	122,119	130,000
Russia	15,053	*88,184	*99,200
Spain	10,475	8,435	12,500
Yugoslavia	2,378	4,361	4,610
Total Europe	445,802	924,145	916,273
Australia	59,144	79,198	78,000
Japan	29,809	*55,115	*60,600
French Indo-China	2,866	4,900	5,873
Rhodesia .....	...	11,441	14,218
TOTALS, ex U.S.A.	657,227	1,295,340	1,311,514
GRAND TOTALS	870,758	1,752,330	1,849,712

(a) The statistics in this table are the summaries of production as made by the metallurgical works of the world whose principal business is the reduction of ore. Insofar as they produce slab zinc from secondary material such is included. The production of zinc dust is excluded.

(b) Excluding production from Mexican ore.

(c) Included with Germany.

* Conjectural.

Table 41 - CADMIUM PRODUCTION(x) IN CANADA, 1928 - 1939

Year	Pounds	\$	Year	Pounds	\$
1928	491,894	341,374	1934	293,611	95,665
1929	773,976	675,294	1935	580,530	441,203
1930	456,582	337,871	1936	785,916	699,465
1931	323,139	180,958	1937	745,207	1,222,140
1932	65,425	26,824	1938	699,138	561,799
1933	246,041	78,733	1939	939,691	662,209

(x) Until 1936 cadmium was produced only in British Columbia; since 1936 the metal has been produced both at Flin Flon, Manitoba, and at Trail, British Columbia.

In 1939 the Consolidated Mining and Smelting Company produced antimony metal at the Trail smelter; the total production of the metal from British Columbia ores in 1939 totalled 1,224,385 pounds valued at \$151,321. This was the first commercial output of primary antimony metal in Canada in several years. Bismuth metal is also recovered at the Trail smelter from silver-lead-zinc ores, the production in 1939 amounting to 409,449 pounds valued at \$466,362. In addition to metals, there has been an increasing quantity of sulphur salvaged yearly in the smelting of silver-lead-zinc ores in the Trail plants of the Consolidated Mining and Smelting Company. This has been recovered in both the gaseous and elemental forms and is utilized in the manufacture of sulphuric acid and fertilizers.

OPERATORS IN THE CANADIAN SILVER-LEAD-ZINC MINING INDUSTRY, 1939

<u>Name of Operator</u>	<u>Head Office Address</u>	<u>Location of Mine</u>
<u>NOVA SCOTIA -</u>		
British Metal Corporation (Canada) Ltd.	706 Dominion Square Bldg., Montreal, P.Q.	Stirling
<u>NEW BRUNSWICK -</u>		
* Tetagouche Exploration Co. Ltd.	23 Royal Securities Bldg., Market Square, Saint John	Restigouche Co.
<u>QUEBEC -</u>		
* Calumet Mines Ltd.	355 St. James St. W., Montreal	Calumet Island
* Estate Pierre Tetrault	70 Holyrood Ave., Outremont, Montreal	Montauban les Mines
* Federal Zinc & Lead Co. Ltd.	708 Drummond Bldg., Montreal	Lemieux Tp.
* Lyall and Beidelman	708 Drummond Bldg., Montreal	Lemieux Tp.
* MacLean, G. A.	Campbells Bay	Calumet Island
<u>ONTARIO -</u>		
Algoma Galena Co.	3534 Hurber St., Montreal, Que.	Deroche Tp.
* Lennox Mines Co. Ltd.	John St., Napanee	Sheffield Tp.
<u>BRITISH COLUMBIA -</u>		
Allen, George	New Denver	Slocan M.D.
* Base Metals Mining Corporation Ltd.	Suite 602 .. 350 Bay St., Toronto, Ont.	Field
Beaverdell Wellington Syndicate Ltd.	Greenwood	Beaverdell
Boug, George S.	Greenwood	Greenwood
Bryant, McLeod and Guthrie	Canal Flat	Windermere M.D.
* Buckeye Mines Ltd.	1100 Beaver Hall Hill, Montreal, P.Q.	Ainsworth
Byrne, M. J.	Sandon	Carpenter Creek
Campbell, Colin J.	New Denver	Slocan M.D.
Consolidated Mining and Smelting Company of Canada Ltd.	Trail	Salmo and Kimberley
Dentonia Leasing Syndicate	Greenwood	Greenwood M.D.
Dewis, Johnson and Anderson	Silverton	Slocan City
Doney, Ernest and Son	Box 17, Sandor	Slocan M.D.
Falconer, T. W.	Alice Arm	Portland Canal Dist.

OPERATORS IN THE CANADIAN SILVER-LEAD-ZINC MINING INDUSTRY, 1939 - (Concluded)

<u>Name of Operator</u>	<u>Head Office Address</u>	<u>Location of Mine</u>
<u>BRITISH COLUMBIA (Concluded) -</u>		
Funchin, Joe	Sandon	Sandon
(a) Galena Farm Consolidated Mines Ltd.	475 Howe St., Vancouver	Silverton
Gormley, Frank T. and Geo. P.	Nelson	Imir
Harbour, F. P. and H. L.	Slocan City	Slocan M.D.
Helme, F.	Kaslo	Ainsworth M.D.
Hicks, William and Associates	Slocan	Slocan City
Highland Bell Ltd.	Box 640, Penticton	Beaverdell
Highland Chief Mine Ltd.	Box 782, Kelowna	Beaverdell
* Iron Mountain Ltd.	6 Royal Bank Bldg., Nelson	Salmo
Keystone Charleston Mines Ltd.	Kaslo	Ainsworth M.D.
Krao Mines Ltd.	Kaslo	Ainsworth M.D.
Larson, Ole	Retallack	Ainsworth M.D.
Laib, R. M. and K. K.	Bayonne	Nelson M.D.
McAskill, D. J.	New Denver	Slocan M.D.
McCready, G. E.	Kaslo	Ainsworth M.D.
* Menhinick, Cory	Camborne	Camborne
Orm, H. and Griffin, F.	Smithers	Smithers
Petersen, H. A.	Box 182, Sandon	Slocan
Penney and Heidler	Box 98, Vernon	Vernon M.D.
Providence Syndicate	Box 629, Greenwood	Greenwood
R. S. K. Mining Syndicate	Beaverdell	Beaverdell
* Reeves MacDonald Mines, Ltd.	475 Howe St., Vancouver	Salmo
Ruth-Hope Mining Co. Ltd.	475 Howe St., Vancouver	Sandon
* St. Paul Mines Ltd.	c/o Dr. O. Van Etter, 713 Columbia St., New Westminster	Vernon
Sally Mines Ltd.	Box 1122, Penticton	Beaverdell
Silver Crest Mining Syndicate	Revelstoke	Gerrard
* Silver Ridge Mining Co. Ltd.	Sandon	Sandon
Singel, H. C. and Associates	Kaslo	Ainsworth M.D.
Slocan Idaho Mines Corp.	215 Hatton Bldg., Spokane, Wash., U.S.A.	New Denver
Stedill, Chas.	New Denver	Slocan M.D.
Tiger Mine	Beaverdell	Beaverdell
Trinkers, J. R.	Kaslo	Ainsworth M.D.
Tipping, C. W.	Slocan	Slocan City
Wanke, Edward A.	Box 611, Greenwood	Greenwood
Washington Mine, Ltd.	Kaslo	Rambler
Western Exploration Co. Ltd.	Silverton	Silverton
<u>YUKON -</u>		
Treadwell Yukon Corporation Ltd.	920 Crocker Bldg., San Francisco, Cal., U.S.A.	Mayo M.D.

NOTE - In addition to the operators shown for British Columbia, there were numerous properties worked under lease from which official reports were unobtainable.

(a) Operated under lease.

* Active but not producing.

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