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

Dominion Statistician:	R. H. Coats, LL.D., F.R.S.C., F.S.S.(Hon.)
Chief - Mining, Metallurgical and Chemical Branch:	W. H. Losee, B.Sc.
Mining Statistician:	R. J. McDowall, B.Sc.

THE SILVER MINING INDUSTRY IN CANADA, 1938

(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 are also 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 were reported in both 1937 and 1938.

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.

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PRICE REVIEW, 1938

(Internal Trade Branch, Dominion Bureau of Statistics)

The decline in non-ferrous metal prices which began in the second quarter of 1937, was carried through the first half of 1938. World stocks of most basic metals increased during this period but subsequently, as consumption was accelerated, markets strengthened. The extent of this movement may be gauged from index numbers of the prices of non-ferrous metals and their products which fell from 72.7 in January to 67.8 in June, recovered to the year's high of 73.0 in October, and then closed easier at 71.5.

Major recessions during the first six months occurred in zinc, lead, copper, tin and smaller losses were shown by silver and aluminium. Domestic zinc, f.o.b. Montreal dropped from $4.10 to $3.71 per cwt. between January and June, recovered to $4.07 in October and closed at $3.78 per cwt. Domestic lead on the same basis declined 42 cents per cwt. during the first half of the year to $3.93 but regained about half of this loss in the following six months. Electrolytic domestic copper fell to $9.42 per cwt. in June netting a loss of $1.36 from January. Prices then moved forward to $11.58 per cwt. in October but dropped back 73 cents in the last two months. Due chiefly to the continuance of the United States Treasury's buying policy, silver prices held comparatively steady in 1938, although weakness in world markets accompanied recurrent periods of uncertainty concerning the position of the United States Government. On March 28, the Treasury lowered the basic price 1 cent to 44 cents per ounce. The following day this was further reduced to 43 cents at which level it held till the close of the year. An average price for fine silver at New York moved down from 44.8 cents per ounce (Canadian funds) in January to 43.0 cents in April and remained close to that level for the balance of the year.

(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 reported in July, 1939 that an active search was being maintained in the Cobalt district for cobalt and that many individual operators were steadily producing cobalt ore from their own mines, or under lease, or on a royalty basis. The new Customs Plant of Cobalt Products Limited which commenced milling in 1938 continued operations throughout the first half of 1939 treating ores and hand-picked material from old ore dumps.

The estimated net value of shipments made by operators comprising the silver-cobalt mining industry amounted to $288,293 in 1938. The number of shippers totalled 34, employees numbered 297 and salaries and wages paid aggregated $386,851. Ore mined during the year totalled 59,408 short tons of which 55,719 tons were milled for the production of 1,258 short tons of concentrates. The gross value of ore, concentrates, etc., sold before deducting costs for smelting, fuel and electricity, process supplies and freight, was estimated at $734,363 compared with a corresponding value of $853,386 in 1937.

Table 1 - PRINCIPAL STATISTICS OF THE SILVER-COBALT MINING INDUSTRY IN CANADA, 1929 - 1938.

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)

(+) 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 2 - NUMBER OF WAGE-EARNERS ON PAYROLL OR TIME RECORD ON THE 15th OF EACH MONTH, OR NEAREST REPRESENTATIVE DATE, IN THE SILVER-COBALT MINING INDUSTRY, 1935 - 1938.

Month	1935	1936	1937	1938		
				MINE		MILL
				Surface	Underground	
January	299	303	259	70	127	36
February	297	280	256	75	128	35
March	288	270	250	73	127	35
April	284	272	257	64	123	40
May	319	310	271	79	128	45
June	375	316	264	90	129	45
July	428	335	260	108	126	44
August	441	353	274	111	127	46
September	448	365	281	105	134	50
October	414	372	283	93	144	58
November	408	357	272	94	143	45
December	360	311	252	87	136	49

Table 3 - STATISTICS OF THE SILVER-COBALT MINES AND MILL OPERATIONS IN CANADA, 1936, 1937 and 1938.

		1936	1937	1938
Number of mines in operation (x)		25	25	30
Ore mined	tons	59,592	56,878	59,408
Ore treated (milled) (a)	tons	62,087	61,290	55,719
Tailings treated	tons	421	...	...
Concentrates produced	tons	1,556	1,435	1,258
Gross value of bullion, ore, concentrates and residues sold	$	1,096,968 (c)	853,386	734,363
Cost of freight	$	(b)	29,202	41,391 (d)
Smelter charges	$	(b)	76,833	82,783 (d)
Cost of fuel and purchased electricity used	$	104,372	90,134	73,549 (d)
Cost of process supplies used	$	77,220	116,455	248,347 (d)
Net value of sales	$	915,376	540,762	288,293

(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) Information not available.
(c) Less freight and treatment.
(d) Partly estimated as data was unobtainable from several small shippers.

Table 4 - FUEL AND ELECTRICITY USED IN THE SILVER-COBALT MINING INDUSTRY, 1937 and 1938.

Kind	Unit of Measure	1937		1938	
		Quantity	Cost at works	Quantity	Cost at works
Bituminous coal - Canadian	ton	1	13	417	7,748
Imported	ton	1,101	14,509	414	3,797
Anthracite coal - From United States	ton	102	1,494	75	1,190
Other	ton	172	2,568	192	3,077
Gasoline	gal.	9,628	3,075	12,408	2,861
Kerosene or coal oil	gal.	90	22	38	9
Fuel oil and diesel oil	gal.	9,563	1,293	5,836	757
Wood (cords of 128 cu. ft. of piled wood)	cord	641	4,377	636	4,159
Electricity purchased, including service charges	K.W.H.	6,704,645	62,783	6,033,150	49,951
TOTAL	$	...	90,134	...	73,549
Value of explosives and other process supplies used.	$	...	116,455	...	248,347(+)

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

ARSENIC - Production of arsenic in Canada during 1938 totalled 2,175,646 pounds valued at $56,538 compared with 1,389,426 pounds at $41,032 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 1938 amounted to 66,422 short tons valued at $6,476,604. The largest annual output occurred in 1918 in which year 3,560 short tons worth $563,639 was 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.

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 a flux and in certain alloys; arsenical compounds are used rather extensively in medicinal preparations. In 1938 white arsenic quotations at New York remained at the low price of 3 cents per pound, carload lots.

Table 5 - PRODUCTION IN CANADA, IMPORTS AND EXPORTS OF ARSENIC, 1937 and 1938.

	1937		1938	
	Quantity	Value	Quantity	Value
	Pounds	$	Pounds	$
PRODUCTION (x) -				
White arsenic and arsenic in other forms	1,389,426	41,032	2,175,646	56,538
TOTAL	1,389,426	41,032	2,175,646	56,538
IMPORTS -				
White arsenic (arsenious oxide)	7,604	462	201,009	3,854
Sulphide of arsenic	24,647	3,377	6,094	408
Soda, arseniate of, biarseniate and stannate of .	18,510	5,908	11,200	2,843
Arsenate of lead	237,992	19,565	496,387	41,620
Arsenate of lime	71,168	4,305	37,068	3,507
TOTAL	...	33,617	...	52,232
EXPORTS - Arsenic - TOTAL	735,000	26,938	1,378,300	32,590

(x) Entirely from Ontario.

Table 6 - CONSUMPTION OF ARSENIOUS 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	2,829,145	88,372
1935	2,736,089	86,983			

Table 7 - WORLD'S PRODUCTION OF ARSENIC, 1935, 1936 and 1937. (Taken from the Imperial Institute's publication "The Mineral Industry of the British Empire and Foreign Countries").
(Long tons)

Producing Country and Description	1935	1936	1937
BRITISH EMPIRE			
United Kingdom - White arsenic and arsenic soot	172	153	95
Canada (sales) - White arsenic	1,142	610	620
Australia - White arsenic	4,098	3,691	3,368
FOREIGN COUNTRIES			
Belgium (exports) - White arsenic	3,049	2,688	2,991
Czechoslovakia - Ore (As content)	68	53	30
France - Ore (as content)	3,538	9,490	3,909
White arsenic (As content)	5,794	7,104	(a)

Table 7 - WORLD'S PRODUCTION OF ARSENIC, 1935, 1936 and 1937. (concluded)

(Long tons)

Producing Country and Description	1935	1936	1937
FOREIGN COUNTRIES (concluded)			
Germany - Ore (As content)	1,294	1,843	(a)
Greece - White arsenic	164	84	230
Pyrites (As content)	300	770	(a)
Portugal - Pyrites (As content)	...	74	...
White arsenic	74	148	21
Roumania - Pyrites (As content)	29	30	32
Sweden - Ore (As content)	24,032	22,944	20,623
White arsenic	6,250	8,510	(a)
Mexico - White arsenic	9,793	8,392	10,592
United States - White arsenic	12,712	13,731	15,013
Brazil - White arsenic	681	720	705
China - Ore (b)	1,200	(a)	(a)
Japan - White arsenic	3,111	2,587	(a)
Korea - White arsenic	367	226	(a)
Turkey - Ore (As content)	27	16	27

NOTE - White arsenic is also produced in Germany and U.S.S.R.
(a) Information not available.
(b) Content varies from 20 to 60 per cent. arsenic.

COBALT - Production of cobalt in Canada during 1938 totalled 459,226 pounds valued at $790,913 compared with 507,064 pounds worth $848,145 in 1937. 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 1938 and production included cobalt metal, cobalt salts, cobalt oxide, arsenic and silver bullion. Ores and concentrates treated at the Deloro smelter in 1938 came entirely from the silver-cobalt mines of Northern Ontario.

Since 1904, the first year for which cobalt production was recorded in Canada, there was produced in the Dominion, to the end of 1938, in all forms, 32,331,094 pounds of cobalt valued at $30,708,382. In 1938 the exports of cobalt and cobalt products from Canada were as follows: cobalt in ore, 33 tons valued at $40,983; metallic cobalt 83,579 pounds valued at $122,101; 49,674 pounds of cobalt alloys worth $79,278 and 382,408 pounds of cobalt oxides and salts valued at $523,218. Imports into Canada in 1938 of cobalt oxide amounted to 736 pounds appraised at $1,094.

The following information is from the 1938 Minerals Yearbook of the United States Bureau of Mines: "Increasing world production, assurance of adequate supplies, and extensive research investigations have been important factors in expanding the use of cobalt. Cobalt oxide is used in the ceramic industries and as a catalyst; cobalt salts in the preparation of driers for use in paints, varnishes and linoleums; and cobalt metal in various types of high-grade steels (especially metal-cutting and magnet steels), as a catalyst, and in electroplating processes.

"The Belgian Congo is one of the largest sources of cobalt, but accurate details of production are not available. The copper ores that contain cobalt are divided into two classes. One type, containing about 4 per cent cobalt and 18 per cent copper and iron, is treated in a water-jacketed furnace and an electric furnace to give a ternary alloy containing 30 percent cobalt and 40 per cent iron, and 26 per cent copper. The other class of ore is rich in cobalt and is sent directly to the electric furnace to obtain the same type of product. Production of cobalt by the Union Miniere du Haut Katanga was 1,500 metric tons in 1937; the cobalt-producing capacity of Union Miniere du Haut Katanga has been increased considerably by the discovery of further reserves of rich cobalt minerals.

"Cobalt production of Burma is derived largely as a by-product of lead-zinc mining at the Bawdurin Mines of the Burma Corporation Limited. A nickel speiss obtained at the lead smelter contains about 7 per cent cobalt; it is shipped to Hamburg for treatment. A small production of cobalt was reported in Chile in 1938.

Finland became a producer of cobalt recently, but figures on output are lacking; in the Outokumpu Copper mine in eastern Finland, approximately 0.2 per cent cobalt, o.l per cent nickel, and 26 per cent iron are associated with a 4 per cent copper ore. Output of Cobalt in Germany will be increased by the resumption of operations at an old mine at Schneeberg, Saxony, as well as by exploitation of cobalt deposits in Wittichen and in the Southern Black Forest. In recent years Germany's production of cobalt, amounting to about 17 metric tons annually was obtained as a by-product of the Mansfeld copper shale deposits in Central Germany, but with the now developing exploitation of these cobalt deposits, output will suffice to supply the great bulk of Germany's requirements of around 100 metric tons a year. ... Since 1932 cobalt production in French Morocco has advanced steadily and reached a peak at 719 metric tons in 1938. The Rhokana Corporation Limited of Northern Rhodesia sold 831 short tons of cobalt in alloys and refined products during the year ended June 30, 1938; production increased to 1,461 metric tons in the Calendar Year 1938 compared with 884 tons in 1937; the company installed a third electric furnace in the cobalt plant and a plant for the differential flotation of copper and cobalt to obtain a rich cobalt concentrate was also installed.

"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 1938; 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.

"Despite the decreased demand in the United States, domestic quotations were unchanged - 97 to 99 percent metal from Belgium in lots of 100 pounds or more was $1.36 a pound and block oxide (70 to 71 per cent grade) in lots of 350 pounds or more, $1.67 a pound."

Table 8 - PRODUCTION OF COBALT IN CANADA, 1929 - 1938.

Year	Pounds	Year	Pounds
1929	929,415	1934	594,671
1930	694,163	1935	681,419
1931	521,051	1936	887,591
1932	490,631	1937	507,064
1933	466,702	1938	459,226

Table 9 - PRODUCTION IN CANADA, IMPORTS AND EXPORTS OF COBALT, 1937 and 1938.

		1937		1938	
		Quantity	$	Quantity	$
PRODUCTION (In terms of metallic cobalt and cobalt in oxides and salts sold and in ores and residues exported)	pounds	507,064	848,145	459,226	790,913
IMPORTS -					
Cobalt ore	pounds	300	5	...	9
Oxide of cobalt	pounds	617	871	736	1,094
EXPORTS -					
Cobalt, contained in ore	pounds	92,400	58,712	66,400	40,983
Cobalt, metallic	pounds	7,576	10,834	83,579	122,101
Cobalt, alloys	pounds	51,939	84,629	49,674	79,278
Cobalt oxides and cobalt salts	pounds	597,869	754,965	382,408	523,218

Production of cobalt in Canada during the first six months of 1939 totalled 307,542 pounds valued at $550,125 compared with 219,515 pounds worth $288,662 in the corresponding period of 1938.

Table 10 - WORLD'S PRODUCTION OF COBALT, 1935, 1936 and 1937. (Taken from the Imperial Institute's publication "The Mineral Industry of the British Empire and Foreign Countries")

(Cwt.)

Producing Country	1935	1936	1937
BRITISH EMPIRE			
Northern Rhodesia	8,203	9,078	17,409
Canada (c)	6,084	7,925	4,527
Burma (b)	4,452	5,910	5,475

Table 10 - WORLD'S PRODUCTION OF COBALT, 1935, 1936 and 1937. (concluded)
(Cwt.)

Producing Country	1935	1936	1937
FOREIGN COUNTRIES			
Belgian Congo	(a)	13,480	30,000
French Morocco	8,759	7,700	10,900
Japan (ore)	188	(a)	(a)

NOTE - Complex ores containing cobalt are produced in 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.

Table 11 - COBALT SALTS USED IN THE MANUFACTURE OF CANADIAN PIGMENTS AND PAINTS, 1932 - 1937.

Year	Pounds	$	Year	Pounds	$
1932	17,021	10,960	1935	110,419	33,292
1933	10,885	7,463	1936	170,932	43,230
1934	26,300	14,069	1937	37,258	17,062

DIRECTORY OF OPERATORS IN THE CANADIAN SILVER-COBALT MINING INDUSTRY, 1938.

Name	Head Office Address	Mine Location
Firms reporting direct to Dominion Bureau of Statistics, Ottawa -		
Cobalt Products Ltd. (+)	67 Yonge Street, Toronto, Ont.	Cobalt
Cobalt Properties Ltd.	Cobalt, Ont.	Cobalt
Comet Leasing Co.	Box 274, Cobalt, Ont.	Kerr Lake
Legris, J. V.	Cobalt, Ont.	Lorraine Tp.
Martin, Geo.	Box 659, Cobalt, Ont.	Gillies Limit, Giroux Lake
Mercier, Raoul	Box 547, Cobalt, Ont.	Coleman Tp.
Murphy & Landry	Box 111, Cobalt, Ont.	Coleman Tp.
Nipissing Mining Co. Ltd.	1007 Excelsior Life Building, Toronto, Ont.	Cobalt
M. J. O'Brien Ltd.	140 Wellington Street, Ottawa, Ont.	Cobalt and Miller Lake
Presse and Thornham	Box 385, Cobalt, Ont.	Cobalt
Ringsdorf, R. H.	20 Nickel Street, Cobalt, Ont.	Cobalt
Rowe, A. & Stuckey, C.	Box 755, Cobalt, Ont.	South Lorraine
Temiskaming Mining Co. Ltd.	15 King Street West, Toronto, Ont.	Cobalt
Shippers reported to Dominion Bureau of Statistics by smelters and buyers (b)		
Adanac Mine	(a)	(a)
Agaunico Cobalt Mines Ltd.	c/o J.L. Ross, 80 King St. W., Toronto, Ont.	Bucke Tp.
Cain, P. E. Estate	Cobalt, Ont.	Cobalt area
Caverley Blake	(a)	(a)
Silver Cliff Mining Co. Ltd.	c/o A. Fasken, 36 Toronto St., Toronto, Ont.	Cobalt area
Currie Mine	(a)	(a)
Silver Bar Mine	(a)	Cobalt area
Imperial Cobalt Mine	(a)	(a)
La Rose-Rouyn Mine	(a)	Cobalt area
Lorraine Consolidated Mine	(a)	South Lorraine
Canadian Lorraine Mine	(a)	South Lorraine
Mosher, J.	Cobalt, Ont.	Cobalt area
Prontkowski, J.	(a)	(a)
Red Jacket Mine	(a)	(a)
Rochester Mine	(a)	Cobalt area
Silver Queen Mine	(a)	Cobalt area
Silver Valley Mine	(a)	(a)
Fred Smith Mine	(a)	(a)
Lorraine Trout Lake Mine	(a)	(a)
University Mine	(a)	Cobalt area
Yorke-Bousquet Gold Mines Ltd.	Suite 702 - 276 St. James St. W., Montreal,	Cobalt area
Dotsee Cobalt Mines Ltd.	67 Yonge Street, Toronto, Ont. (P.Q.	Cobalt area

(+) Operate custom mill (a) Data not recorded.
(b) Properties owned by some firms operated under lease.

(b) THE SILVER-LEAD-ZINC MINING INDUSTRY

In 1938 the silver-lead-zinc mining industry of Canada reported 107 operators or firms as being actively engaged in the mining, prospecting or development of silver-lead-zinc deposits and of these operators 95 reported commercial shipments during the year under review.

In the province of Quebec considerable prospecting was conducted by two companies operating in Lemieux township, county of Gaspé; at Montauban les Mines work of an exploratory nature was carried on at the Tetreault mine while in the township of Grand Calumet, Pontiac county, the Calumet Mines Limited were actively engaged in an extensive diamond drilling programme.

Only one firm, Lennox Mines Company Ltd., reported work on lead-bearing deposits in Ontario during 1938; operations by this company were conducted at the Lennox mine located in the township of Sheffield, county of Lennox and Addington and no shipments of ores were made.

The tonnage of silver-lead-zinc ores mined in British Columbia in 1938 totalled 2,298,036 short tons or 96 per cent of the total quantity of such ores mined in the entire Dominion. The gross value of shipments of these ores in the province amounted to $21,675,526 in 1938 and the net value of same was estimated at $18,031,275. In the South-eastern district the producers of base metals were generally inactive owing to the depressed market; the only notable exception being the Sullivan mine, which maintained production at its established rate. In the Slocan, leasers have found it possible to mine small segments of ore which may be cheaply developed or which have been developed by previous operators, but the only programme of new development has been on the Sunshine Group at Sandon, by the Silver Ridge Mining Company. In the South-central district development by the Sally Mines Ltd. in the Beaverdell Camp was reported disappointing by the British Columbia Department of Mines, however, Highland Bell Ltd., has shown that its ore is not limited by depth; Beaverdell-Wellington syndicate investigated ore possibilities on the Bounty, Duncan and other claims. A bulk test-sample of cobbed ore was shipped in 1938 from the Blue Ribbon claim in the Stewart area of the North-western district; this assayed in part, gold 0.02 oz. per ton; silver 87 oz. per ton; copper 0.4 per cent; lead 6.8 per cent; zinc 19.5 per cent; arsenic 1 per cent and antimony 0,1 per cent and the British Columbia Department of Mines reports that the occurrence of high-grade silver-lead-zinc ores on this property exemplifies the requirements for profitable selective mining and shipping to smelters of different types of ores from outlying properties confronted with high transportation costs. The annual report of the Consolidated Mining and Smelting Company of Canada Ltd., states: "The tonnage mined at the Sullivan Mine in 1938 was 2,277,915 against 2,218,364 tons in 1937; in spite of the increased filling operations, mining costs in 1938 were 3.8 per cent lower than in the preceding year. The tonnage concentrated in 1938 was 6,227 tons per calendar day against 6,081 in 1937; the ore milled contained 15.83 per cent of combined lead and zinc, and 4.02 oz. of silver; in the near future mining operations will be started in the block of ore below the 3,900 level, this large block of ore can be considered as a mine in itself. During 1938 the company produced in its metallurgical plants at Trail, B.C., lead 201,574 tons; zinc 149,071 tons; copper 850 tons; gold 56,951 ounces; silver 9,815,434 ounces; cadmium 255 tons; sulphuric acid 134,469 tons and sulphur and fertilizer 170,108 tons."

Silver-lead-zinc ores were mined and milled in Yukon Territories during 1938 by the Treadwell Yukon Corporation Ltd. The Wernecke mines of this company are located at Galena Hill and Keno Hill in the Mayo Mining district and the ores and concentrates produced are shipped to the Bunker Hill smelter, Bradley, Idaho, U.S.A. In addition to shipments made from Wernecke mines there was a relatively small tonnage of silver-lead ores shipped from the same area by small operators.

Eldorado Gold Mines Ltd., reported that 22,770.2 tons of pitchblende-silver ore was treated during 1938 in its mill located at Port Radium at Great Bear Lake, Northwest Territories. From this was sorted 1,754.8 tons of waste and 40.2 tons of high grade pitchblende, silver and cobalt. The mill operated constantly with the exception of minor delays; concentrate production was as follows: Pitchblende-silver 643.0 tons; silver-copper 74.7 tons; cobbed pitchblende-silver 26.0 tons and cobbed cobalt 14.0 tons. The company stated that these various concentrates were valued at $1,546,005 in radium, uranium and silver content; in 1938 the company shipped 689 tons of pitchblende and silver concentrates valued at $1,560,824 to its refinery located at Port Hope, Ontario and 104 tons of copper-silver concentrates valued at $32,649 to the Tacoma smelter, Washington, U.S.A. In addition to shipments made by the Eldorado Company there was a relatively smaller tonnage of silver bearing ore mined and shipped from the same district by Bear Exploration and Radium Ltd., Shipments made by this company were consigned to Port Hope, Ontario and Trail British Columbia.

Table 12 - PRINCIPAL STATISTICS OF THE SILVER-LEAD-ZINC MINING INDUSTRY (x) In CANADA, ALTERNATE YEARS, 1927-1933; and 1934-1938.

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 concentrates 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	438,126	10,553,086
1936	88(c)	89	19,372,600	1,870	2,917,832	680,677	13,814,645
1937(d).....	128	130	29,637,739	2,220	3,914,643	845,898	22,740,582
1938 -							
British Columbia	97	99	26,060,963	1,302	2,244,388	481,915	18,031,275
Yukon and North-west Territories							
Quebec and Ontario ..(e)	10	9	4,325,751	338	783,527	220,656	452,670
TOTAL	107	108	30,386,714	1,640	3,027,915	702,571	18,483,945

(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) Includes 1 active property in Nova Scotia, 5 in Quebec, 7 in the Yukon, and 3 in the Northwest Territories.
(d) Includes 1 active firm in Nova Scotia; 3 in Quebec, 4 in Ontario, 5 in Yukon and 1 in Northwest Territories.
(e) Four firms in Quebec, 1 in Ontario, 3 in Yukon and 2 in Northwest Territories.

NOTE -
For value of process supplies used in 1937 and 1938, see Table 15, also the statistics shown in this report do not include those relating to smelting and refining.

Table 13 - NUMBER OF WAGE-EARNERS, BY MONTHS, IN THE SILVER-LEAD-ZINC MINING INDUSTRY, 1935 - 1938.

Month	1935	1936	1937	1938		
				MINE		MILL
				Surface	Underground	
January	1,309	1,633	1,679	384	784	291
February	1,285	1,600	1,691	356	778	288
March	1,196	1,630	1,814	354	763	286
April	1,187	1,508	1,934	335	755	282
May	1,333	1,592	1,999	355	731	275
June	1,476	1,639	1,993	379	754	278
July	1,516	1,630	2,029	404	767	255
August	1,670	1,608	2,040	398	741	260
September	1,672	1,617	2,019	379	755	259
October	1,738	1,654	2,031	362	765	250
November	1,712	1,643	1,953	327	777	253
December	1,670	1,587	1,800	323	788	255
AVERAGE	1,482	1,615	1,927	369	764	270

Table 14 - NUMBER OF WAGE-EARNERS WHO WORKED THE NUMBER OF HOURS SPECIFIED, DURING ONE WEEK IN MONTH OF NORMAL EMPLOYMENT

Hours	1938	Hours	1938
	No.		No.
30 hours or less	12	51 - 54 hours	9
31 - 43 hours	3	55 hours	2
44 hours	...	56 - 64 hours	358
45 - 47 hours	...	65 hours and over	...
48 hours	1,147	GRAND TOTAL	1,531
49 - 50 hours	...	Total wages paid in that week .	$ 50,124

Table 15 - FUEL AND ELECTRICITY USED IN THE SILVER-LEAD-ZINC MINING INDUSTRY, 1937 and 1938.

	Unit of measure	1937 Quantity	1937 Value	1938 Quantity	1938 Value
			$		$
Bituminous coal - Canadian	short ton	43,794	183,902	32,945	137,560
Imported	short ton	5	150	1	25
Anthracite coal	short ton	2	42	...	...
Lignite coal	short ton	196	1,152	473	2,910
Coke	short ton	4	34	31	226
Gasoline	Imp. gal.	95,087	33,717	94,140	43,390
Kerosene	Imp. gal.	20,236	4,176	4,420	1,401
Fuel oil and diesel oil	Imp. gal.	1,112,108	287,633	660,496	183,746
Wood (cords of 128 cu. ft.)	cord	1,910	26,632	1,699	23,120
Other fuel	$	...	11	...	13
Electricity purchased, including service charges	K. W. H.	60,545,034	308,449	65,160,604	310,180
TOTAL	$	...	845,898	...	702,571
Electricity generated for own use	K. W. H.	15,300,969	...	6,940,919	...
Process supplies used, explosives, etc.	$	...	1,940,177	...	1,694,121

Table 16 - POWER EQUIPMENT INSTALLATION IN THE SILVER-LEAD-ZINC MINING INDUSTRY, 1938.

Description	Ordinarily in use: Number of Units	Ordinarily in use: Total horse power (x)	In reserve or idle: Number of units	In reserve or idle: Total horse power (x)
Steam engines and steam turbines	4	6,025	...	...
Diesel engines	38	4,061	7	970
Gasoline, gas and oil engines, other than diesel engines	14	265	3	80
Hydraulic turbines or water wheels	2	412	7	600
Electric motors - (a) Operated by purchased power	735	21,051	100	4,915
TOTAL	793	31,814	117	6,565
(b) Operated by power generated by the establishment	91	1,077	81	1,077
Boilers	10	2,306	6	430

(x) According to manufacturers' rating.

Table 17 - ORE MINED AND MILLED IN THE SILVER-LEAD-ZINC MINING INDUSTRY (x) IN CANADA, 1936, 1937 and 1938.

		Yukon and Northwest Territories	British Columbia, Quebec and Nova Scotia (c)	CANADA
1936 - Ore mined	tons	51,963	2,144,519	2,196,482
Ore milled	tons	50,384	2,124,231	2,174,615
Concentrates produced - Lead	tons	4,239	261,185	265,424
Zinc	tons	...	235,544	235,544
Pitchblende-silver	tons	393	...	393
Silver	tons	88	...	88
1937 - Ore mined	tons	83,125	2,441,423 (a)	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

(x) Includes silver-pitchblende ores mined in Northwest Territories.
(a) Includes data relating to 1 property in Ontario in 1937.
(b) Not recorded.
(c) No ore mined or milled in Quebec and Nova Scotia in 1938.

Table 18 - DESTINATION OF SHIPMENTS FROM SILVER-LEAD-ZINC MINES OF CANADA, 1937 and 1938.

	Tons Shipped	Value at shipping point	Total metal content as determined by settlement assay: Gold fine oz.	Silver fine oz.	Lead pounds	Zinc pounds
		$				
1937						
To Canadian smelters -						
Lead ore	7,124	434,668	356	858,013	1,381,069	289,739
Lead concentrates (a)	287,963	18,184,247	571	8,261,829	398,167,648	22,123,807
Zinc concentrates (x)	226,882	6,570,716	37	529,583	15,818,184	229,395,304
Dry ore	1,882	45,011	672	66,898	93,845	31,449
Silver concentrates (b)	...	...	...	...	...	...
TOTAL	523,851	25,234,642	1,636	9,716,323	415,460,746	251,840,299
To Foreign smelters -						
Lead ore	5,456	262,116	80	506,825	2,644,976	34,470
Lead concentrates	9,919	1,767,727	2,460	3,806,914	8,166,593	...
Silver concentrates (b)	...	...	...	...	...	...
Zinc concentrates (x)	54,680	1,250,208	253	139,827	2,548,185	56,666,208
Dry ore	231	14,274	75	21,834	29,484	52,860
TOTAL	70,286	3,294,325	2,868	4,475,400	13,389,238	56,753,538
GRAND TOTAL (Gross) - 1937	...	28,528,967	...	...	...	...
Cost of freight	...	1,860,860	...	...	...	...
Cost of fuel and purchased electricity	...	845,898	...	...	...	...
Smelter charges	...	1,141,450	...	...	...	...
Cost of process supplies	...	1,940,177	...	...	...	...
NET VALUE - 1937	...	22,740,582	...	...	...	...
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	21,455,308	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	...	...	...	...

(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 radium 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 lbs. copper.

NOTE - In addition to the metals contained in shipments listed in Table 18, 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 1938 totalled 22,219,195 fine ounces valued at $9,660,239 compared with 22,977,751 fine ounces at $10,312,644 in 1937. The average price of the metal in Canadian funds was 43.47 cents per fine ounce in 1938 as against 44.88 cents in 1937 and 45.13 cents in 1936. The greatest annual production of silver in Canada was in 1910 in which year an output of 32,869,264 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 1938 totalled 760,501,360 fine ounces valued at $445,312,647.

Of the total silver produced in Canada in 1938 British Columbia contributed 50.35 per cent; Ontario 19.44 per cent; Yukon 12.80 per cent; Manitoba 5.39 per cent; Quebec 5.35 per cent, and the balance originated in order of quantity in Saskatchewan, Northwest Territories, Nova Scotia and Alberta. According to nature of source 45.7 per cent of Canadian silver output in 1938 represented silver in base silver-lead bullion made chiefly from silver-lead zinc ores; 24.6 per cent in blister and anode copper; 20.2 per cent in copper and silver-lead ores, matte, etc. exported; 5.7 per cent in silver-cobalt ores and 3.8 per cent in bullion produced at gold mines.

World production of silver in 1938 was estimated by the American Bureau of Metal Statistics at 262,932,684 fine ounces compared with 275,148,523 ounces in 1937. Canada in 1938 ranked third as a world producer of the metal being surpassed in order of output by only Mexico and the United States. The Bank of Canada's weekly statement for March 23, 1938, as for December 31, 1937, showed silver bullion valued at $2,992,623.24. This figure was reduced in subsequent weeks and as from May 18th 1938 has stood at nil.

Handy and Harman, New York, in a review of the silver market for 1938 stated: "The year 1938 indicates clearly the silver market's complete dependence upon the support of the United States Government. In prior years, subsequent to the passage of the Silver Purchase Act of 1934, there developed from time to time sufficient demand from other quarters to carry the price in New York above the Treasury's buying rate; in fact, during 1935, Bullish speculation reached such proportions that an excessive advance occurred. But there was no repetition of this situation during 1938; to the contrary, silver showed extreme weakness whenever uncertainty arose as to the continuance of Government purchases, and when the Treasury lowered its buying rate 2 cents at the end of March, the world price dropped accordingly.

Table 19 - PRODUCTION OF SILVER IN CANADA, BY PROVINCES AND BY SOURCES, 1937 and 1938.

	1937		1938	
	Quantity	Value	Quantity	Value
	fine oz.	$	fine oz.	$
NOVA SCOTIA -				
In gold bullion and in silver-lead-zinc ores exported (+) ..... Total	26,990	12,113	988	430
QUEBEC -				
In anode copper	674,971	302,934	971,417	422,343
In gold ores and in copper and silver-lead-zinc ores exported (+)	233,619	104,850	218,078	94,814
Total	908,590	407,784	1,189,495	517,157
ONTARIO -				
In silver bullion made from cobalt ores	1,527,149	685,400	1,087,703	472,901
In gold bullion	497,850	223,440	521,459	226,715
In blister copper	2,316,433	1,039,638	2,437,596	1,059,793
In ores, concentrates, residues, matte, etc. exported or treated in smelters outside the province	351,615	157,808	272,079	118,292
Total	4,693,047	2,106,286	4,318,837	1,877,701
MANITOBA -				
In blister copper	889,750	399,329	1,147,216	498,775
In gold bullion and in ores, slag, etc. exported	15,429	6,924	51,099	22,216
Total	905,179	406,253	1,198,315	520,991
SASKATCHEWAN -				
In blister copper (a)	821,637	368,759	898,405	390,600
In gold bullion or in crude alluvial gold	181	81	8	3
Total	821,818	368,840	898,413	390,603
ALBERTA -				
In alluvial gold ..... Total	4	2	23	10

Table 19 - PRODUCTION OF SILVER IN CANADA, BY PROVINCES AND BY SOURCES, 1937 and 1938 (concluded)

	1937 Quantity fine oz.	1937 Value $	1938 Quantity fine oz.	1938 Value $
BRITISH COLUMBIA -				
In alluvial gold	9,748	4,375	10,397	4,520
In gold bullion	95,443	42,836	110,911	48,221
In base bullion and in ores, matte, etc.exported	11,424,986	5,127,648	11,065,255	4,810,841
Total	11,530,177	5,174,859	11,186,563	4,863,582
YUKON -				
In alluvial gold	10,503	4,714	16,043	6,975
In silver-lead ores shipped to smelter	3,946,001	1,771,005	2,828,616	1,229,797
Total	3,956,504	1,775,719	2,844,659	1,236,772
NORTHWEST TERRITORIES -				
In pitchblende-silver ores shipped to smelters(x) and in gold bullion - Total	135,442	60,788	581,902	252,993
CANADA - TOTAL	22,977,751	10,312,644	22,219,195	9,660,239

(+) Silver-lead ores exported in 1937 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; in addition to quantity recorded for 1937 there were silver concentrates in transit, the silver content of which is included with output for 1938.
(a) Represents silver contained in blister copper made at the Flin Flon smelter from Saskatchewan ores.

NOTE - For 1937 silver was valued at 44.881 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 20 - IMPORTS INTO CANADA and EXPORTS OF SILVER, 1937 and 1938.

	1937 Quantity fine oz.	1937 Value $	1938 Quantity fine oz.	1938 Value $
IMPORTS -				
Silver in bars, etc., unmanufactured	1,987,082	870,388	2,011,048	850,488
Silver, manufactures of, n.o.p., and articles consisting wholly or in part of sterling or other silverware	...	362,439	...	293,193
Toilet articles of which the most important component, in value, is sterling silver	...	60,452	...	33,216
TOTAL	...	1,293,279	...	1,176,897
EXPORTS -				
Silver contained in ore, concentrates, etc. (c)	5,769,332	2,567,412	5,868,827	2,540,860
Silver bullion - Domestic (a)	14,620,025	6,556,357	22,682,687	9,838,462
TOTAL	20,389,357	9,123,769	28,551,514	12,379,322
Silver bullion - Foreign (b)	670,550	303,753	1,244,096	550,893
Silver coin - Foreign (subsidiary)	...	1,353,988	...	1,500,837
Silver coin - Canadian	...	58,288	...	32,325

(a) Of the quantity exported, 11,239,967 ounces in 1937 and 21,713,359 ounces in 1938 went to the United States.
(b) Of these exports, 426,617 ounces went to the United States in 1937 and 1,062,078 ounces in 1938.
(c) In 1937, 5,324,684 ounces went to the United States and in 1938, 5,573,016 ounces.

Table 21 - FINE GOLD AND FINE SILVER CONTENT OF SHIPMENTS TO THE ROYAL CANADIAN MINT, OTTAWA, CANADA, BY SOURCES, 1938.

	GOLD fine oz.	SILVER fine oz.
Northwest Territories	4,455.32	776.10
British Columbia	309,947.11	71,670.67
Alberta sundries	32.05	3.30
Saskatchewan sundries	...	...
Manitoba	99,715.19	47,503.37
Ontario	2,840,980.67	398,898.01
Quebec	944,161.06	124,512.04
Nova Scotia	26,399.29	974.10
Jewellery and scrap	14,489.84	4,011.35
Vancouver Assay Office	157,663.06	23,382.72
Yukon sundries	...	...
Other - Foreign Gold Coin	11.11	...
TOTAL	4,397,854.70	671,731.66

Table 22 - PRODUCTION OF SILVER IN CANADA FOR YEARS SPECIFIED, 1887 - 1938.

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			

(x) Year of maximum output.
(a) Highest price per ounce recorded since 1887.

Silver production in Canada during the first six months of 1939 totalled 10,586,950 fine ounces valued at $4,531,426, compared with 10,532,011 fine ounces at $4,622,605 in the corresponding period of 1938.

Table 23 - SOURCE OF CANADIAN SILVER PRODUCTION, BY PERCENTAGES, 1933 - 1938.

Source	1933	1934	1935	1936	1937	1938
In silver-cobalt ores	20.4	18.7	15.0	12.2	7.9	5.7
In base bullion (x)	34.6	45.1	47.9	46.3	41.7	45.7(+)
In gold ores (bullion and placer)	3.0	7.2	7.4	9.7	7.8	3.8
In blister and anode copper	19.5	23.4	26.1	23.8	20.5	24.6
In matte, copper ores and silver-lead ores, etc. exported	22.5	5.6	3.6	8.0	22.1	20.2
	100.0	100.0	100.0	100.0	100.0	100.0

(x) Chiefly from silver-lead ores.
(+) Includes silver recovered in Canada from pitchblende-silver ores.

Table 24 - SILVER CONSUMED IN SPECIFIED CANADIAN INDUSTRIES, 1936 and 1937.

	1936		1937	
	Fine oz.	Value	Fine oz.	Value
		$		$
Scientific equipment .....) Fountain pens and pencils .....) (a)	657,042	320,467	628,001	296,628
Jewellery and silverware (fine silver)	...	296,222	...	480,215
Jewellery and silverware (silver alloys)	...	47,175	...	414,474
Medicinal and pharmaceutical preparations (bullion)	46,426	21,285	45,296	20,699
Miscellaneous chemicals	19,000	8,740	17,010	7,654

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

Table 25 - AVERAGE COMMERCIAL RATIO OF SILVER TO GOLD FOR EACH SPECIFIED YEAR SINCE 1700.
(Supplied by United States Mint)

Year		Year		Year	
1700	14.81	1895	31.60	1931	71.25
1750	14.55	1900	33.33	1932	73.29
1800	15.68	1905	33.87	1933	59.06
1850	15.70	1910	38.22	1934	72.49
1875	16.64	1915	40.48	1935	54.19
1880	18.05	1920	20.28	1936	77.09
1885	19.41	1925	29.78	1937	77.44
1890	19.75	1930	53.74	1938	80.91 (x)

(x) Estimated on averages in Canadian funds.

Table 26 - WORLD'S SILVER CONSUMPTION, PRODUCTION and OTHER SUPPLIES (x), 1937 and 1938.

Consumption	1938	1937	Production and Supplies	1938	1937
			(in millions of fine ounces)		
U.S. Government Acquisitions:			Production:		
Domestic production	60.3	70.6	United States	61.4	69.3
Open market purchases	342.9	241.6	Mexico	85.0	85.7
	403.2	312.2	Canada	23.3	24.5
			South America	32.4	32.7
Other Government Purchases under the Eight Nation Silver Pact:			All other Countries	62.7	62.5
			Total Production ...	264.8	274.7
Mexico	...	7.2			
Canada	...	1.7	Other Supplies from:		
Peru	...	1.1	China	234.3	174.3
Australia	...	0.6	Hong Kong	...	3.6
			Mexican Government	35.0	...
Coinage:			Indian Government	2.3	0.9
Mexico	10.5	...	Spain	40.0	...
Cuba	7.7	7.6	Siamese Government	22.0	...
Hungary	3.0	...	Dominican Republic	0.3	...
Red Sea district	1.5	10.0	German Government	0.1	0.1
Dominican Republic	0.3	...	Soviet Union	...	0.1
China	...	3.0	French Indo-China	...	4.5
Honduras	...	1.7	Rumania	...	6.0
Great Britain	...	6.0			
Indian Consumption	14.0	65.0			
Arts and Industries:					
United States and Canada	27.5	31.5			
England	12.0	15.0			
Germany	14.3	15.9			
Total	494.0	478.5	Total	598.8	464.2

(x) Handy and Harman - New York.

Table 27 - SILVER PRODUCTION OF THE WORLD (a), 1932, 1937 and 1938. (Supplied by the American Bureau of Metal Statistics)

(in fine ounces)

Country	1 9 3 2	1 9 3 7	1 9 3 8
NORTH AMERICA:			
United States	24,762,000	69,315,000	58,736,000
Canada	18,347,907	22,977,751	22,157,154
Mexico	69,303,054	84,678,921	81,016,939
Newfoundland	1,333,998	1,447,637	1,660,000
Total North America	113,746,959	178,419,309	163,570,093
CENTRAL AMERICA and WEST INDIES:	4,300,000	3,700,000	3,750,000
SOUTH AMERICA:			
Argentina	(c)	3,900,000	3,755,000
Bolivia	4,115,232	9,454,022	6,386,340
Chile	100,195	1,790,369	1,414,086
Colombia	84,000	167,974	190,000
Ecuador	114,167	98,500	100,000
Peru	6,773,523	17,175,334	20,500,000
Other South America	86,000	62,000	65,000
Total South America	11,273,117	32,648,199	32,410,426
EUROPE:			
Czechoslovakia	947,139	1,108,918	1,200,000
France	409,913	563,847	565,000 (x)
Great Britain	16,043	71,488	75,000 (x)
Germany	5,992,760	6,774,000	7,000,000 (x)
Greece	170,000	370,000	150,000
Italy	394,304	715,000	780,000
Norway	292,565	277,133	255,303
Poland	69,283	64,237	80,000
Roumania	186,727	670,199	819,864

Table 27 - SILVER PRODUCTION OF THE WORLD (a), 1932, 1937 and 1938 (Concluded)

Country	1932	1937	1938
EUROPE: (concluded)			
Russia	920,000	5,000,000 (x)	6,000,000 (x)
Spain and Portugal	3,374,335	600,000 (x)	500,000 (x)
Sweden	668,849	946,239	1,040,000
Yugoslavia	1,500,000	2,242,500	2,524,074
Other Europe	40,789	130,000	140,000
Total Europe	14,982,707	19,533,561	21,129,241
OCEANIA:			
New South Wales	6,074,227	9,780,499	9,500,000 (x)
Queensland	2,301,782	3,264,994	3,533,490
Tasmania	463,488	1,060,785	1,219,550
Western Australia	58,285	180,562	210,000
New Guinea	(b)	95,000	100,000 (x)
New Zealand	562,792	443,981	365,000
Other Oceania	62,152	10,000	11,000
Total Oceania	9,522,726	14,835,821	14,939,040
ASIA:			
India	6,947,000	6,880,000	6,450,000
China	100,000	150,000 (x)	150,000 (x)
Chosen (Korea)	589,994	2,672,978	3,000,000 (x)
Netherland India	842,365	500,084	500,000 (x)
Cyprus	...	132,968	106,522
Japan	5,260,576	10,000,000	11,000,000 (x)
Turkey	200,000	380,000	305,000
Other countries	20,830	17,500	25,000
Total Asia	13,960,765	20,733,530	21,536,522
AFRICA:			
Algeria	58,899	72,200	90,000
Nigeria	85,368	102,120	50,000 (x)
Rhodesia	114,900	235,899	224,654
Transvaal, Cape Colony and Natal	1,120,668	1,100,641	1,131,708
Belgian Congo	1,864,700	2,962,362	3,000,000
French Morocco	(d)	241,543	280,000
Southwest Africa	(d)	344,700	675,000
Tunis	(d)	174,638	86,000
Other Africa	200,632	44,000	60,000
Total Africa	3,445,167	5,278,103	5,597,362
TOTAL FOR WORLD	171,231,441	275,148,523	262,932,684

(a) In compiling this table free use has been made of the reports of the Director of the Mint, especially for early years. The 1938 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 1937. (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 (a)	1937 Per capita
	$	$
United States (including Hawaii, Alaska and Puerto Rico)(14).	2,286,689	17.75
Canada (1) (14)	32,364	2.91
Mexico (2)	60,495	2.15
Cuba (2) (Sept. 30, 1937)	69,394	15.87
Chile	...	...
Colombia (4)	5,138	0.57
Peru	5,627	0.92
Venezuela	38,813	11.32
Uruguay (4)	4,066	1.94
Austria (4)	1,492	0.22

Table 28 - WORLD'S MONETARY STOCKS OF SILVER AT THE CLOSE OF 1937. (concluded)

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

COUNTRY	Silver stock in banks and treasuries (a)	1936 Per capita
	$	$
Belgium . (4) (5)	5,634	0.68
France	101,980	2.43
Germany	473,602	6.96
Bulgaria (7)	21,137	3.34
Czechoslovakia (2) (3)	19,994	1.31
Denmark	...	..
Hungary	2,127	0.24
Lithuania	4,789	1.88
Great Britain (6) (15)	299,784	6.34
Greece	2,793	0.40
Eire (8)	4,694	1.59
Latvia	8,512	4.32
Netherlands	90,131	10.42
Norway	...	..
Poland	72,002	2.08
Roumania (2)	34,912	1.78
Spain (3)(4)	42,637	1.72
Switzerland	46,295	11.07
Italy	...	..
Portugal (2) (3)	7,576	1.04
Sweden (10)	18,700	2.98
Yugoslavia	23,128	1.50
British Malaya	16,514	3.29
Indo-China - French (3)	4,973	0.21
Iran (Persia) (4)	21,752	1.45
Palestine	5,546	4.01
Syria	1,826	0.52
Turkey (3)	11,068	0.67
British West Africa (13) (9)	6,303	0.25
Nyasaland	5,969	3.68
Rhodesia, Northern (3)	344	0.25
Rhodesia, Southern (4)	697	0.54
New Zealand (2)	9,326	5.88
Ceylon	10,378	1.83
China (10)	450,000	1.00
India - British (4)	242,772	0.66
Morocco	2,517	0.41
Japan (including Chosen, Taiwan, Kwantung) (3)	96,910	0.95
Netherlands East Indies (4) (14) (Jan. 1, 1938)	9,905	0.15
Philippine Islands (7)	18,972	1.41
Siam (14)	32,263	2.24
Egypt	22,475	1.40
Ethiopia (3) (12)	19,141	3.48
Kenya, Uganda and Tanganyika (13)	17,910	1.45
Sudan - Anglo Egyptian	7,997	1.34
Union of South Africa	14,698	1.48
Australia (14) (June 30, 1938)	41,582	6.06
Algeria and Tunis (4)	4,074	0.40
Other countries	62,740	..
Total	4,923,157	2.38

(a) 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 since 1858 and silver bullion at the Bank of Canada.
(2) Includes base metal coin.
(3) Prior year's figures at new equivalents, when equivalents other than the legal parity are applicable.
(4) Silver in circulation not included.
(5) On December 25th, 1937.
(6) On December 24th, 1937.
(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) Net issues of silver coin.
(10) Estimated.
(12) Silver valued at United States equivalent of the price of silver in London on December 31, 1937 ($0.47148 per fine ounce).
(13) On June 30, 1937.
(14) Includes silver bullion.
(15) Includes British coin circulating in Eire.

Table 29 - SILVER CONTENT OF THE PRINCIPAL COINS. (Supplied by the American Bureau of Metal Statistics) (x)

Country	Coin	Fine Silver Content, Grains per Unit	Country	Coin	Fine Silver Content, Grains per Unit
United States	Dollar	371.250	Indo-China	Piaster	277.700
	Half-dollar	173.610	Iran	Rial	63.900
	Quarter	86.805	Italy	5-lira	64.430
	Dime	34.722	Japan	Yen	110.000
Australia	Shilling	80.730	Mexico	Toston	51.679
Austria	Schilling	59.260	Nicaragua	Cordoba	347.230
Bolivia	Boliviano	185.190	Peru	Sol	192.905
Brazil	Milreis	30.860	Philippine Islands	Peso	246.920
Canada	Dollar	288.000	Poland	2-zloty	50.927
Chile	Peso	69.400	Portugal	10-escudo	16.110
China	Yuan	362.559		5-escudo	13.890
Colombia	Peso	347.230	Russia	Rouble	277.782
Costa Rica	Colon	138.300	Salvador	Colon	347.230
Ecuador	Sucre	55.560	Siam	Baht	208.340
France	10-franc	104.940	Spain	5-peseta	69.440
Germany	Mark	38.581		2-peseta	64.430
Great Britain	Shilling	43.636	Sweden	2-krona	92.590
Greece	20-drachma	4.370		5-krona	69.440
India	Rupee	165.000	Uruguay	Peso	347.230

(x) Revised to May, 1938 by H. N. Lowrie, Washington, D.C.

LEAD - The quantity of new lead produced in Canada during 1938 and inclusive of the recoverable metal contained in ores exported totalled 418,927,660 pounds valued at $14,008,941 compared with 411,999,484 pounds worth $21,053,173 in 1937. The quantity produced in 1938 was the largest ever recorded in Canadian mining history, however, the total value was considerably less than those realized in several previous years owing to the pronounced decrease in the price of lead from 5.110 cents per pound in 1937 to 3.344 cents for the year under review.

Of the total Canadian lead output in 1938 the mines of British Columbia accounted for 413,706,307 pounds or 98.8 per cent; Yukon Territory 5,198,990 pounds or 1.2 per cent while the balance of 22,363 pounds all from Ontario, represented the recovery of the metal, as a by-product, in the treatment of silver-cobalt ores.

World production in 1938 of lead and comprising the lead content of base bullion and refined lead was estimated by the American Bureau of Metal Statistics at 1,879,460 short tons, compared with 1,895,491 short tons in 1937. According to production as thus defined Canada ranked fourth as a world producer of lead in 1938 being surpassed in order of output by the United States, Mexico and Australia.

Canadian production of lead from 1887, the first year for which statistical data are available, to the close of 1938 totalled 5,985,551,247 pounds valued at $277,190,664.

The following information pertaining to lead and zinc is from the 1938 Annual Report of the Consolidated Mining and Smelting Co. of Canada Ltd., - "1938 was a difficult year in the handling of our principal products, lead and zinc. In comparison with the previous year world production, consumption and prices were lower. Ordinary commercial activity which is the basis of real progress and prosperity, was seriously interfered with by wars, actual and threatened, in Europe and Asia. There was some increase in the demand for our metals in armaments, but not sufficient to offset the loss through the decrease in building activity, and the general decline in world trade caused by the spirit of fear and uncertainty which prevailed.

"In September a large number of the large lead producers of the World, outside the U.S.A., formed the Lead Producers' Association for the purpose of maintaining production more closely in line with consumption, with a view not only to price improvement, but also to prevent, if possible, what is commonly called a "run-away market" in times of metal shortage, such as was experienced in the first half of 1937. On November 1st a reduction in output was agreed upon, and since then the larger producers have been operating at 90 per cent. An association along somewhat similar lines has been widely discussed among zinc producers, but nothing workable has yet been developed."

Table 30 - PRODUCTION (b) OF NEW LEAD IN CANADA, 1925 - 1938.

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

(x) Year of maximum value of Canadian lead production.
(a) Year of maximum output of Canadian lead.
(b) Refined lead plus lead in ores exported.

Production of lead in Canada during the first six months of 1939 totalled 185,755,363 pounds valued at $5,619,100 compared with 204,961,121 pounds at $6,956,380 in the corresponding period of 1938.

Table 31 - LEAD PRODUCTION (+) IN CANADA, also IMPORTS and EXPORTS OF LEAD, 1937 and 1938.

	1937		1938	
	Pounds	Value	Pounds	Value
		$		$
PRODUCTION -				
Nova Scotia	418,086	21,364	...	...
Quebec	1,521,182	77,732	...	...
Ontario	29,849	1,525	22,363	748
British Columbia	403,589,913	20,623,445	413,706,307	13,834,339
Yukon	6,440,454	329,107	5,198,990	173,854
TOTAL	411,999,484	21,053,173	418,927,660	14,008,941
IMPORTS -				
Old and scrap, pig and block	79,327	6,148	56,416(a)	3,235
Bars and sheets	45,694	3,391	54,507	2,948
Litharge	2,560,500	194,421	2,125,900	143,597
Acetate of lead	177,352	13,552	245,949	14,493
Nitrate of lead	312,776	23,739	285,303	16,250
Other manufactures	...	88,183	...	67,228
Pipe lead	9,061	1,488	28,333	1,671
Shots and bullets	3,327	350	9,023	634
Tea lead	1,000	85	...	...
Lead arsenate	237,992	19,565	496,387	41,620
Lead tetraethyl, compounds of	4,518,567	2,032,333	5,486,418	2,485,032
Lead capsules for bottles	...	90,644	...	65,029
Lead pigments -				
Dry white lead	42,818	3,360	91,025	5,592
White lead, ground in oil	15,116	1,499	9,928	916
Dry red lead and orange mineral	679,276	53,805	453,721	31,593
TOTAL	...	2,532,563	...	2,879,838
EXPORTS -				
Lead, contained in ore, etc. -				
To - United States	10,437,500	598,847	6,636,300	322,714
Belgium	5,777,800	252,346	520,600	22,455
Total Lead in Ore	16,529,600	862,850	7,162,300	345,394
Pig lead, refined lead, etc. -				
To - United Kingdom	230,665,800	10,886,174	239,161,900	6,656,476
United States	1,000	71	41,500	1,469
Japan	86,385,300	4,297,536	34,762,700	957,149
France	14,495,400	721,399	5,970,400	177,751
China	6,216,000	316,109	7,469,600	213,628
Brazil	7,887,900	404,024	7,400,200	205,096
Germany	929,500	45,031	10,000	300
Other countries	6,558,700	307,803	15,047,800	425,928
Total Pig Lead	353,139,600	16,978,147	309,864,100	8,637,797
TOTAL LEAD EXPORTS	369,669,200	17,840,997	317,026,400	8,983,191

(+) Including lead in ores exported and lead contained in base bullion made in Canada.
(a) Pig and block only.

Production of lead from all types of Canadian ores from 1887 to 1938 inclusive, totalled 5,985,551,247 pounds valued at $277,190,664.

Table 32 - PRODUCTION OF REFINED LEAD (x) IN CANADA, 1931 - 1938.

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

(x) Primary lead only from 1934 to 1938, inclusive.

Table 33 - AVAILABLE STATISTICS ON THE CONSUMPTION OF LEAD IN SPECIFIED CANADIAN MANUFACTURING INDUSTRIES, 1936 and 1937.

Industries	Items Used	1936	1937
		Pounds	Pounds
Brass and copper products	Pig lead	611,911	804,379
	Scrap and other lead	141,644	306,379
Paints and pigments	Pig lead (+)	15,648,292	14,442,025
White metal alloys	Pig lead	9,624,097	10,818,139
	Scrap lead	11,654,207	12,082,034
Electrical apparatus	Pig lead	18,753,513	21,054,881
	Scrap lead	160,456	129,400
	Lead sheets, etc.	821,732	798,603
Iron and steel	Lead	1,150,749	1,810,495
GRAND TOTAL		58,566,601	62,246,335

(+) 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 1938 not yet complete.

Table 34 - USE OF LEAD IN THE UNITED STATES, BY PERCENTAGE, 1929, and 1936 - 1938.

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

Purpose	1929	1936	1937	1938
Ammunition	4.23	5.13	5.82	5.71
White lead	12.31	13.50	12.67	13.00
Red lead and litharge	3.09	8.52	8.40	7.87
Storage batteries	21.60	30.15	28.29	30.59
Cable covering	22.63	9.69	13.26	10.99
Building	9.87	6.31	6.63	6.59
Automobiles	1.85	1.75	1.77	1.10
Foil	4.09	4.50	3.20	4.03
Bearing metal	3.39	2.61	2.21	1.65
Solder	3.81	3.47	3.24	2.75
Typemetal	1.85	2.68	2.50	2.20
Caulking	3.24	2.13	2.21	2.20
Other uses	8.04	9.56	9.80	11.32
TOTAL	100.00	100.00	100.00	100.00

Table 35 - WORLD'S PRODUCTION OF LEAD (a), 1931 - 1937 and 1938. (Supplied by the American Bureau of Metal Statistics)

(in short tons - 2,000 lb.)

Country	1931	1937	1938
United States (c)	411,336	469,892	379,636
Canada (b)	142,605	205,479	204,646
Mexico	233,020	254,810	267,530
Other North America (d)	9,241	2,285	1,992
Total North America	796,202	932,466	853,804
Argentina	8,392		
Peru (b)	4,700	44,200	50,500
Other South America (b)	1,900		
Total South America	14,992	44,200	50,500

Table 35 - WORLD'S PRODUCTION OF LEAD (a), 1931, 1937 and 1938. (concluded)
(in short tons - 2,000 lb.)

Country	1931	1937	1938
Austria	6,743	11,946	10,229
Belgium	68,490	97,002	99,758
Czechoslovakia	3,934	5,541	5,512(x)
France	21,881	40,970	46,024
Germany	111,663	179,014	189,265
Great Britain	11,820	13,338	12,125
Greece	7,245	5,830	4,387
Italy	27,412	43,520	47,741
Yugoslavia	8,740	4,449	9,610
Poland	34,509	19,386	24,011
Roumania	(e)	7,413	6,614(x)
Russia	17,791	60,627(x)	76,059(x)
Spain	120,943	33,069(x)	39,683(x)
Other Europe	1,543	260	331(x)
Total Europe	442,795	522,365	571,349
Turkey	680	720	1,109
India (Burma)	83,705	87,024	89,712
Japan	4,486	11,243	13,228(x)
Chosen	...	6,448	11,023(x)
China	4,189	2,205	2,756(x)
Total Asia	93,060	107,640	117,828
Australia	171,607	258,415	259,771
Africa	21,067	30,405	26,208
Totals, ex U.S.A.	1,128,387	1,425,599	1,499,824
GRAND TOTALS	1,539,723	1,895,491	1,879,460

(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 in 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".
(x) Conjectural.

ZINC - Production of new zinc in Canada during 1938 totalled 381,506,588 pounds valued at $11,723,698 compared with 370,337,589 pounds at $18,153,949 in 1937. The quantity produced in 1938 was an all time high record but the value was surpassed by that for the preceding year owing to the pronounced decline from an average annual price of 4.90 cents per pound in 1937 to 3.07 cents for the year under review. The production of 299,363,564 pounds of zinc in British Columbia in 1938 represents the recovery of the metal almost entirely in the refined state from silver-lead-zinc ores, chiefly from the Sullivan mine of the Consolidated Mining and Smelting Co. of Canada Ltd., whereas the recorded output of zinc in 1938 for Manitoba, Saskatchewan and Quebec represents the recovery of zinc chiefly in the refined state from copper-gold-silver ores.

World production of zinc (spelter) in 1938, including slab zinc from secondary material, was estimated by the American Bureau of Metal Statistics at 1,751,870 short tons and as thus defined Canada ranked fourth as a World producer being surpassed in order of output by United States, Germany and Belgium; as a world producer of zinc ores, Canada usually ranks second or third.

Table 36 - PRODUCTION (x) OF ZINC FROM CANADIAN ORES, 1929 - 1938.

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	298,579,683	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 (a)	381,506,588	11,723,698	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 1938 totalled $168,576,418.

During the first six months of 1939 Canadian zinc output totalled 178,752,177 pounds valued at $5,110,525 compared with 197,951,223 pounds worth $6,154,303 during the first six months of 1938. The average price of zinc on the London market, transposed to Canadian funds, dropped from an average of 3.109 cents per pound for the 1938 period to 2.859 cents in the corresponding months of 1939. Exports of zinc in the form of spelter, ore and scrap totalled 165,117,000 pounds during the first six months of 1939 compared with 164,472,700 pounds in the first half of 1938.

Table 37 - PRODUCTION IN CANADA, IMPORTS and EXPORTS OF ZINC, 1937 and 1938.

	1937		1938	
	Pounds	Value	Pounds	Value
		$		$
PRODUCTION -				
Nova Scotia	5,485,550	268,902	...	...
Quebec	8,566,927	419,951	5,315,852	163,356
Ontario	120,011	5,883	...	...
Manitoba	36,221,314	1,775,569	46,864,575	1,440,148
Saskatchewan	32,750,910	1,605,449	29,962,597	920,751
British Columbia	287,192,877	14,078,195	299,363,564	9,199,443
TOTAL	370,337,589	18,153,949	381,506,588	11,723,698
IMPORTS -				
Zinc dust	1,499,500	78,508	1,373,900	70,294
Zinc in blocks, pigs, bars and rods and zinc plates, n.o.p.	19,400	2,805	5,900	643
Zinc in sheets and strips, and zinc plates for marine boilers	7,040,600	574,545	6,771,600	467,114
Zinc spelter	2,000	199	2,700	201
Zinc slugs or discs for batteries	...	...	...	20,582
Zinc white (zinc oxide)	14,481,533	742,500	12,492,235	489,850
Zinc sulphate	976,592	19,064	585,362	8,977
Zinc, chloride of	1,284,296	44,703	1,252,081	48,720
Zinc, manufactures of, n.o.p.	...	244,349	...	206,948
Lithopone	22,162,600	777,752	17,731,708	632,273
TOTAL	...	2,484,425	...	1,945,602
EXPORTS -				
Zinc, contained in ore -				
To - Belgium	65,290,500	2,612,139	37,116,200	963,944
Japan	234,800	2,629	3,950,100	76,217
United Kingdom	...	...	...	...
France	...	...	3,442,200	104,987
United States	170,500	3,873	...	...
Total	65,695,800	2,618,641	45,841,000	1,154,812
Zinc, scrap, dross and ashes -				
To - United Kingdom	818,300	22,330	554,200	8,567
United States	415,400	14,356	494,700	14,341
Japan	2,581,900	41,628	56,400	575
Belgium	1,315,500	25,729	1,056,500	8,977
France	1,262,700	29,260	50,000	200
Total	6,393,800	133,303	2,364,100	34,235
Zinc, spelter -				
To - United Kingdom	178,056,700	8,388,962	198,778,900	6,563,273
United States	14,496,700	813,510	4,783,500	161,147
British India	7,031,400	334,704	1,272,900	47,564
Chile	236,900	9,079	112,000	4,251
Belgium	17,589,500	814,839	10,586,200	315,717
Brazil	392,100	19,482	532,800	15,000
China	5,704,700	303,274	2,575,700	76,106
France	4,070,800	156,664	5,678,500	181,084
Germany	12,962,200	648,411	3,605,400	146,768
Japan	25,398,600	1,125,542	30,194,500	920,758
Mexico	389,100	22,684	197,100	6,170
British South Africa	145,700	5,947	145,300	4,156
Netherlands	1,120,100	63,489	44,800	1,362
Siam	88,200	4,805	...	...
Sweden	672,200	26,640	2,016,500	56,629
Spain	...	...	2,240,000	76,384
Denmark	...	...	448,100	12,759
Hong Kong	...	...	807,900	24,562
Total	268,378,000	12,739,242	264,424,100	8,626,961
GRAND TOTAL - EXPORTS	340,467,600	15,491,186	312,629,200	9,816,008

Table 38 - REFINED NEW ZINC PRODUCED IN CANADA, 1931 - 1938.

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

Table 39 - AVAILABLE STATISTICS ON THE CONSUMPTION OF ZINC IN SPECIFIED CANADIAN MANUFACTURING INDUSTRIES, 1936 and 1937.

Industry	Items Used	1936	1937
		Pounds	Pounds
Brass and copper products	(Other zinc	345,537	271,312
	(Zinc ingots and slabs	4,922,432	5,938,523
	(Zinc scrap	158,239	71,137
White metal alloys	(Zinc spelter	2,091,999	2,422,336
	(Zinc scrap	590,639	951,995
Electrical apparatus	(Zinc ingots and bars	723,050	880,619
	(Zinc sheets	2,452,853	2,712,989
Acids, Alkalies and salts	Zinc and zinc ore	2,999,227	4,198,278
Iron and steel	Zinc	26,600,000(x)	32,800,000(x)
Miscellaneous chemicals	Zinc sheet	70,587	68,947
GRAND TOTAL		36,560,068	44,429,189

(x) Partly estimated.
NOTE - Data for 1938 not yet complete.

Table 40 - MANUFACTURE OF ZINC IN THE UNITED STATES, BY PERCENTAGE, 1926, 1929, 1937 and 1938.
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	1937	1938
Galvanizing	46.60	45.71	41.58	47.03
Brass making	28.92	29.17	27.89	24.23
Rolled zinc	13.87	10.77	9.57	10.93
Die castings	2.17	5.68	14.52	11.40
Other purposes	8.44	8.67	6.44	6.41
Totals	100.00	100.00	100.00	100.00

Table 41 - WORLD'S PRODUCTION OF ZINC (SPELTER) (a), 1931, 1937 and 1938. (Supplied by the American Bureau of Metal Statistics)
(in short tons - 2,000 lb.)

Country	1931	1937	1938
United States	300,738	589,619	456,990
U.S.A. from foreign ore (b)	...	5,700	8,547
Mexico	38,854	40,364	41,338
Canada	118,564	158,643	171,656
Total North America	458,156	794,326	678,531
Belgium	148,502	248,656	231,464
Czechoslovakia	10,129	7,956	9,784
France	69,353	66,611	68,532
Germany	49,934	180,006	212,173
Great Britain	23,790	69,597	61,938
Italy	18,643	41,868	37,550
Netherlands	21,290	27,166	27,888
Norway	43,510	45,492	51,257
Poland	143,960	120,512	122,119
Russia	10,137	77,161	88,184
Spain	11,114	5,819	8,435
Yugoslavia	4,040	4,695	4,361
Total Europe	554,402	895,539	923,685

Table 41 - WORLD'S PRODUCTION OF ZINC (SPELTER)(a), 1931, 1937 and 1938. (concluded)
(in short tons - 2,000 lb.)

Country	1931	1937	1938
Australia	59,996	78,120	78,198
Japan	28,006	50,155	55,115
French Indo-China	3,194	4,633	4,900
Rhodesia	7,696	15,714	11,441
Total, ex U.S.A.	810,712	1,243,168	1,286,333
GRAND TOTALS	1,111,450	1,838,487	1,751,870

(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. Spelter produced in the United States from Mexican ore has been deducted from the American production and credited to Mexican, but during 1937 very little Mexican ore was smelted in the United States.
(b) Excluding production from Mexican ore.

Table 42 - CADMIUM PRODUCTION (x) IN CANADA, 1928 - 1938.

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			

(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.

SECONDARY NON-FERROUS METALS

(United States Bureau of Mines)

The quantity of metals contained in numerous alloys made in the United States partly or wholly from secondary material cannot be ascertained definitely.

Mints and refineries reported the recovery of 870,881 fine ounces of gold and 18,438,847 fine ounces of silver from waste or discarded material in 1938 compared with 1,040,227 ounces of gold and 23,564,986 ounces of silver in 1937. Jewellery and dental waste furnish the largest quantity of secondary gold and silverware and photographic waste the largest quantity of secondary silver. Considerable gold and silver are recovered from plating solutions.

No statistics collected by the United States Bureau of Mines show the quantity and value of old rails, pipe, machinery, and other equipment renovated for original use. Data issued by newspapers and trade publications indicate that an enormous quantity of such material is salvaged and reused. Scrap-metal collectors and dealers dispose of much of their stock to others than smelters and refineries. Foundries buy considerable quantities of good-grade copper, aluminium clippings, and tin clippings. Other customers purchase pipe, rails, stoves, radiators, boilers, and similar materials too valuable and salable to go to the melting pot.

In 1938 the price of heavy copper scrap ranged from 6.125 to 9.25 cents a pound, No. 1 composition scrap from 4.625 to 7.875 cents a pound, old zinc scrap from 1.88 to 3 cents a pound, cast-aluminium scrap from 4.625 to 9.375 cents a pound, and heavy lead scrap from 2.875 to 4.25 cents a pound. This range of scrap-metal prices in 1938 was generally below that in 1937, and the quantities collected and sold were very much less, so that profits to dealers and smelters decreased.

From the standpoint of the scrap metal dealer or refiner, it makes little difference whether the material he trades or uses is old or new scrap, but from the standpoint of conservation there is a significant difference. New scrap is merely refined metal in one stage of manufacture and the volume available at any given time depends on the rate of industrial production. It may be described as metal on the way to an ultimate use, and its flow occurs more or less automatically as an integral part of the manufacturing process. Old scrap, on the other hand, has reached the stage of ultimate use and, having served its purpose for whatever application it was designed, is now being reclaimed for another cycle of manufacture and use. As such, it relieves the necessity of extracting an equivalent amount of metal from the mines and

thus prolongs the life of our limited metalliferous ore reserves. The services performed by the waste material dealers industry in collecting objects discarded by the population and returning them to use is perhaps the most real contribution to conservation actually being accomplished today.

From the viewpoint of the consumer, scrap may be classified further according to origin or ownership. "Plant scrap" or "home scrap" refers to material that originates in the same plant in which it is reworked. This type consists largely of new scrap resulting from current manufacturing operations, but occasionally some old scrap obtained from dismantlingobsolete plant and equipment may be included. "Purchased scrap", as its name implies, is material that the consumer obtains from other sources. All scrap supplied by waste-material dealers would be designated as purchased scrap by the consumer. It contains both old and new scrap. It will be observed that plant scrap passes through the cycle from production to recovery without change of ownership whereas in the case of purchased scrap one or more changes in title may be involved.

The limits of scrap supply at any given time are determined by the cost of delivery to the consumer and by prices. When prices are down, the flow diminishes, and if prices are low enough, the movement ceases almost entirely because the material is not worth transporting to markets. The trade in scrap is greatly influenced by freight rates, the volume of industrial activity, the rate at which obsolescence and abandonment takes place, and stocks on hand at dealers yards and consumers plants. Some of these factors are amenable to precise evaluation but others, including some of great significance to the scrap metal trade, are little understood primarily because of a lack of basic statistical data.

The effect of scrap on metal prices appears to be a field requiring more study. When business is good, price levels for scrap appear to be determined by the supply and demand for virgin metals. But when prices reach unreasonably high levels unexpected supplies of scrap deluge the market and break prices. This has happened on more than one occasion. Likewise, when consumption is at a low level, scrap exerts a depressing effect, as was demonstrated in copper during the depression. Within the last few months we have witnessed the paradoxical situation of electrolytic copper selling on the open market at a considerable discount from the so-called official producers price, an event attributed largely to the influence of scrap.

The classification and sorting of scrap metal are tremendously important factors and ones in which there is room for improvement. Owing to the marked advance in the use of alloys the modern junk pile is a very complex affair. Proper classification of scrap not only pays dividends to the collector but from the national point of view permits better recovery of many valuable alloying elements now going to waste. Developments of more simple and inexpensive methods of classification would be a distinct benefit to all concerned.

Copper produced in the United States in 1938 by smelters that handle scrap metals and drosses exclusively included 99,858 tons of pig copper (part of which was electrolytically refined), 107,100 tons of copper in remelted brass, and 60,300 tons in alloys other than brass.

The output of secondary lead in 1938 equalled 58.6 per cent of the total production of refined primary lead from domestic and foreign sources in the United States compared with 59 percent in 1937. Much recovered lead is derived from discarded batteries, pipe, sheet, and lead-covered cable; other sources are Type metal, solder, babbitt, and shot.

Secondary zinc recovered as pig metal and in alloys (including brass) decreased 40,220 short tons. The zinc content of brass remelted was 13,200 tons less in 1938 than in 1937. The total recovery of secondary zinc (including that in braes) equalled 20 per cent of the total output of primary slab zinc in the United States (446,341 tons) in 1938. In addition, large quantities of the zinc dust, zinc chloride and other compounds were made from zinc drosses and residues.

Secondary tin recovered amounted to 23,610 tons valued at $19,284,648 in 1938 compared with 30,300 tons valued at $32,124,100 in 1937. The total value assigned is based on the yearly average price (40.84 cents in 1938 and 53.01 cents in 1937) given by the American Metal Market for 99-per cent metal, prompt delivery at New York.

The recovery of secondary aluminum, including that in alloys, totalled 38,800 short tons valued at $15,326,000 compared with 62,560 tons valued at $23,773,000 in 1937. The value in 1937 was computed at 19 cents a pound and in 1938 at 19.75 cents a pound.

The value of primary aluminum produced in the United States increased from $55,609,000 in 1937 to $56,659,000 in 1938.

The principal materials refined or remelted that contained antimony as an alloy were hard-lead drosses, babbitt, bearing metal, battery plates, pewter, and type metal. The antimony used in the pigment, paint, and ceramic industries is so dissipated that no secondary recoveries can be made, but a large proportion of the production of metal containing antimony returns in a few months or years for refining and reuse. Antimony in type metal and in bearings returns very rapidly for refining. This large return of

scrap in type and bearing metals normally goes to the makers of type and bearing alloys, which restricts the market for antimonial lead. It may take several years for antimony in battery plates to return as scrap, but probably 80 to 85 per cent is certain to come back for reuse in less than 3 years.

The nickel reported as recovered from secondary sources includes nickel in Monel metal (the natural alloy) but not that in ferrous alloys. The practice of using small quantities of nickel in iron and steel as well as in brasses and bronzes expanded greatly in both 1937 and 1938. Activity was much less at foundries in 1938. A large part of their products contained some nickel.

Nickel often was substituted for tin to reduce costs in certain alloys requiring tensile strength and ductility.

Most of the secondary nickel recovered in 1938 came from scrap - nickel anodes, nickel-silver, copper-nickel alloys, and Monel metal. Exports of nickel scrap and scrap alloys containing nickel decreased. It is impossible to give the nickel content of all the exports of such nickel-bearing scrap, but the total nickel content reported by exporters who submitted data to the Bureau of Mines was 991 tons in 1937 and 870 in 1938.

Probably more secondary nickel is recovered from ferrous than from non-ferrous alloys, but no figures are available. Certain alloys give uninformed dealers trouble.

Scrap iron and steel dealers frequently are careless in handling alloy ferrous scrap, and certain discarded equipment and automobile scrap that contain nickel are thrown in with the regular steel scrap instead of being kept separate and advantage taken of their greater value.

CANADIAN COMMODITY EXCHANGE INC. - SILVER MARKET, 1938.

(Contributed by Canadian Commodity Exchange Inc., Montreal, P. Q.)

Prices moved in a narrow range on the Silver market of the Canadian Commodity Exchange during 1938 and the volume of trading suffered a sharp contraction. The main price trend was downward, moving from a high of 45.15 cents an ounce for the spot month in January to a low of 40.50 cents bid for the spot month in December. The market enjoyed fair activity in the early months of the year, but interest dwindled in the autumn months. The silver policy of the United States Government continued throughout the year to be the basic influence on the market.

The spread between the high and low prices at which transactions were executed on the Canadian Commodity Exchange was four cents. The high was established in January with a price of 45.15 cents an ounce and the low was reached in March at 41.15 cents an ounce. During May, June, July, August and September prices ranged from 42 cents to somewhat over 43 cents. In the last three months of the year quotations declined.

In London the daily fixed price for spot metal touched a high of 20 9/16 pence an ounce in March. As in Montreal the low of the year was established in the same month when spot was quoted at 18 3/8 pence an ounce. The New York official price, established by Handy & Harman, ranged between a high of 44 3/4 cents an ounce and a low of 43 3/4 cents an ounce. The former prevailed throughout January, February and most of March. On March 28th the price was lowered by one cent and the following day by another cent to 42 3/4 cents. The latter price remained for the balance of the year. The New York official is 1/4 of a cent under the U.S. Treasury's buying rate for foreign silver.

The relatively sudden decline in March resulted from the decision by the United States Treasury to discontinue monthly purchases of silver from Mexico (this action followed the oil expropriation decree of President Cardenas on March 18th). The world market dropped at once, as it appeared that Mexico would have to sell its silver elsewhere than in the United States, and later in the month the U.S. Treasury reduced its foreign buying rate from 45 cents to 43 cents. Later on, however, the United States agreed to purchase Mexican silver from private sources.

Temporary weakness occurred in April when the United States revoked the nationalization of silver, and again prior to the Munich agreement in September.

Of importance to the market was President Roosevelt's proclamation on December 31st, 1938, extending the purchase by the United States Government of newly-mined domestic silver to June 30th, 1939. The price remained unchanged at 64.64 cents an ounce.

OPERATORS IN THE CANADIAN SILVER-LEAD-ZINC MINING INDUSTRY, 1938.

(x - Active but not producing)

Name of Operator	Head Office Address	Location of Mine
NOVA SCOTIA -		
(a) British Metal Corp. (Canada)Ltd.	706 Dominion Square Bldg., Montreal, P.Q.	Stirling
QUEBEC -		
(x) Calumet Mines Ltd.	Box 667 Place d'Armes, Montreal, P.Q.	Calumet Island
(x) Estate Pierre Tetreault	70 Holyrood Ave., Outremont, Montreal, P.Q.	Montauban les Mines
(x) Federal Zinc and Lead Co. Ltd.	Room 708 Drummond Bldg., Montreal, P.Q.	Lemieux Tp. Gaspé
(x) Lyall and Beidelman	Room 708 Drummond Bldg., Montreal, P.Q.	Lemieux Tp. Gaspé
ONTARIO -		
(x) Lennox Mines Company Ltd.	John Street, Napanee, Ont.	Sheffield Tp.
BRITISH COLUMBIA -		
Allen, Geo.	New Denver	Slocan Div.
(b) Ayrton Cohen & Co. Ltd.	Box 9, Nelson, B.C.	Taghum
(x) Base Metals Corp. Ltd.	Room 602 , 350 Bay Street, Toronto, Ont.	Field
Beaverdell-Wellington Syndicate Ltd.	Greenwood, B. C.	Beaverdell
Beaver Silver Leasers	Beaverdell B. C.	Wallace Mountain
Cheyne, Robert - Trust	Box 883, Kelowna, B. C.	Greenwood
Commodore Mining Co.	206 Seil Bldg., Walla Walla, Wash. U.S.A.	Kaslo
Consolidated Mining & Smelting Co. of Canada Ltd.	Trail, B. C.	Kimberley
(x) Consolidated Nicola Goldfields Ltd.	800 Hall Bldg., Vancouver, B. C.	Kamloops Dist.
Currie & Hawes	c/o J. H. Greenwood, Nelson, B. C.	Salmo
Consolidated Queen Bess Mines Ltd.	Alamo, B. C.	Slocan Div.
Cunningham Mines Ltd.	Alamo, B. C.	Sandon
Doney, Ernest & Son	Box 17, Sandon, B. C.	Slocan Div.
Elmsted, A.	Smithers B. C.	Omineca Dist.
Erickson, E. A.	Silverton, B. C.	Slocan Dist.
(x) Excelsior Prospecting Syndicate Ltd.	548 Bastion Street, Victoria, B. C.	Portland Canal Dist.
Falconer, T. W.	Alice Arm, B. C.	Portland Canal Dist.
(c) Galena Farm Consolidated Mines Ltd.	616 Stock Exchange Bldg., Vancouver, B. C.	Silverton
Greenwood, Larsen and Walburg	Slocan City , B. C.	Slocan City
Harris, J. M. and Kelly, F. T.	Sandon, B. C.	Slocan Div.
Heidler, S. A. and Penney, C. J.	Vernon, B. C.	Vernon Dist.
Highland-Bell Ltd.	Box 640, Penticton, B. C.	Beaverdell
Highland Chief Mines Ltd.	Box 782, Kelowna, B. C.	Beaverdell
(x) Iron Mountain Ltd.	6 Royal Bank Bldg., Nelson, B. C.	Salmo
Klinosky and McGillivray	Greenwood, B. C.	Greenwood
Lander, Lander and Melville	Penticton, B. C.	Osoyoos Div.
Leask, T. M.	Moyie, B. C.	Fort Steele Div.
Lucky Jim Lead and Zinc Co. Ltd.	616 Stock Exchange Bldg., Vancouver, B.C.	Slocan Div.
Lyon-Advance Syndicate	Box 99, Penticton, B. C.	Beaverdell
(x) MacCulloch, A. S.	555 Howe Street, Vancouver, B. C.	Revelstoke
McCready, G. E.	Retallack	Ainsworth Div.
New True Fissure Mining & Milling Co. Ltd.	804 Guaranty Trust Bldg., Windsor, Ont.	Lardeau Div.
Noble Fine Mines Ltd.	490 Baker Street, Nelson, B. C.	Sandon
Nordman, J. L.	Beaverdell, B. C.	Beaverdell
O'Neil, D. B.	Slocan City, B. C.	Slocan City Div.
(x) Reeves MacDonald Mines Ltd.	616 Stock Exchange Bldg., Vancouver, B. C.	Salmo
Ritchie, Chas.	Slocan City, B. C.	Trail Creek Div.
Ross, S. M.	Box 166 Nelson	Ainsworth Div.
Ruth-Hope Mining Co. Ltd.	616 Stock Exchange Bldg., Vancouver, B. C.	Sandon
(x) St. Eugene Extension Mines Ltd.	502 Pacific Bldg., Vancouver, B. C.	Kootenay Dist.
Sally Mines Ltd.	Penticton, B. C.	Beaverdell
Scovil, H. E.	Slocan City, B. C.	Slocan City
Sheffield Gold and Silver Mines Ltd.	Room 7, 821 W. Pender St., Vancouver, B.C.	Nicola Div.
Sibileau, S.	Sandon, B. C.	Slocan Div.
Silver Ridge Mining Co. Ltd.	Sandon, B. C.	Sandon
Singel, H. E.	Kaslo, B. C.	Ainsworth Div.
Slocan Idaho Mines Corp.	204 S. Howard Street, Spokane, Wash. U.S.A.	New Denver

OPERATORS IN THE CANADIAN SILVER-LEAD-ZINC MINING INDUSTRY, 1938 (concluded)

((x) - Active but not producing)

Name of Operator	Head Office Address	Location of Mine
BRITISH COLUMBIA - (concluded)		
Slocan Monitor Mines Ltd.	6 Royal Bank Bldg., Nelson, B. C.	Three Forks
Stedill, Chas.	New Denver , B. C.	Slocan Div.
Superior Mine	Grand Forks, B. C.	Grand Forks
Twilight Extension	415 Hall Street, Nelson, B. C.	Nelson Div.
(x) Utica Mines Ltd.	551 Howe Street, Vancouver, B. C.	Ainsworth Div.
(c) Western Exploration Co. Ltd.	Silverton, B. C.	Slocan Div.
Ymir Mill Leasing Syndicate	Nelson, B. C.	Ymir
YUKON -		
Settlemier and Bermingham	c/o C. H. Bermingham,Hotel Devonshire, Vancouver, B. C.	Mayo Dist.
(x) Sugiyama, James	Keno Hill,	Galena Hill
Treadwell Yukon Corp. Ltd.	920 Crocker Bldg., San Francisco Calif., U. S. A.	Mayo Dist.
NORTHWEST TERRITORIES -		
(d) Bear Exploration and Radium Ltd.	26 Adelaide Street West, Toronto, Ont.	Contact Lake
(d) Eldorado Gold Mine Ltd.	80 King Street West, Toronto, Ont.	Great Bear Lake

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

(a) Inactive, 1938.
(b) Operate Customs mill.
(c) Operated under lease.
(d) Mine pitchblende-silver ores.

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