

553.42071

C 16

1936

D

26-216

1-2 Silver Canada

Published by Authority of the HON. W.D. EULER, M.P.
Minister of Trade and Commerce.

CANADA

W.B.S.

DEPARTMENT OF TRADE AND COMMERCE

DOMINION BUREAU OF STATISTICS

CENSUS OF INDUSTRY

MINING, METALLURGICAL & CHEMICAL BRANCH



SUMMARY REVIEW
OF
THE SILVER MINING INDUSTRY
IN
CANADA
1936

(includes data on production of lead, zinc, arsenic and cobalt)



OTTAWA

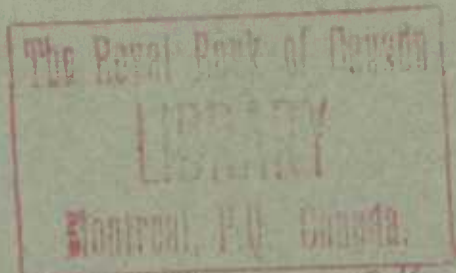
1937

553.42071

C 16

1936

D



553.42071

C16

1936

D

Feb 15/39 - Sub.

DEPARTMENT OF TRADE AND COMMERCE
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, 1936.

- (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. Some years ago the mining of silver-lead-zinc ores in Eastern Canada attained a position of considerable importance in the provinces of Ontario, Quebec and Nova Scotia and it is gratifying to record a renewal during 1935 and 1936 in the mining of these ores in the two provinces last referred to. It is to be noted that in addition to its recovery from silver-lead-zinc 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 in commercial quantities with copper-gold-silver ores in Quebec.

PRODUCTION OF SILVER, LEAD, ZINC, CADMIUM, COBALT AND ARSENIC.

The increase during 1936 in metal production by the mines comprising the silver-cobalt and silver-lead-zinc mining industries was pronounced. The quantity of cobalt produced was the largest since 1929 and silver production at 18,334,487 fine ounces represents an increase of 10.3 per cent over 1935, however, the sharp fall in the average annual price for this precious metal resulted in a 23.2 per cent decrease in the total value of output. Lead production totalled 383,180,909 pounds, an all time high record, but the value at \$14,993,869 was exceeded annually from 1925 to 1929, inclusive. The output of zinc in 1936 amounted to 333,182,736 pounds and as with lead was the greatest ever recorded in the Dominion; the value of this production was estimated at \$11,045,007, being surpassed only by that of 1926 when production was evaluated at \$11,110,413. Cadmium is recovered in Canada from both silver-lead-zinc and copper-gold-silver-zinc ores and its production during 1936 totalled 785,916 pounds valued at \$699,465, the largest in both quantity and value ever attained for Canadian plants. Production of arsenic in Canada during 1936 was derived entirely from cobalt-silver ores and totalled 1,365,606 pounds as compared with 2,558,789 pounds in the preceding year.

A survey of world production of silver, lead and zinc, based on preliminary data, reveals a distinct expansion in the output of each during 1936. World production of these metals as compared with 1935 shows approximate increases of 17 per cent for silver, 5 per cent for lead, and 12 per cent for zinc. During the last calendar year, Canada, as a mine producer of these metals, ranked third in production of zinc and fourth in production of lead and silver.

PRICES (x)

With world output of lead unofficially restricted both prices and the statistical position improved during 1936. Demand increased and world consumption approximated 1,555,000 long tons or 155,000 long tons more than in 1935. Domestic lead rose from an average of \$3.93 in 1935 to \$4.64 per 100 pounds, carlots, f.o.b. Montreal, in 1936.

Early indications pointed to considerable excess in world production of zinc over consumptive needs and the London market receded irregularly from £14. 5s. per ton in January to £13. 5³/₄s. in July. Discussions on the revival of the zinc cartel continued till about mid year, but were finally abandoned. As speculative interest became more active in the latter part of the year, prices advanced. Domestic zinc, prime, western, or g.o.b. grades averaged higher at \$4.15 as compared with \$3.99 per 100 pounds, carlots, f.o.b. Montreal in 1935.

New York quotations for silver displayed unusual stability throughout 1936 and prices ranged between a high of 49³/₄¢ on January 2 and a low of 44³/₄¢ first reached on January 20 and prevailing in all other months except April, May, November and December. Fluctuations in the London market were broader but were seldom of sufficient proportions to affect New York prices which fluctuated less as it became evident that no change would be made in the United States treasury buying policy. Fine silver at New York fell from 64.3¢ in 1935 to 45.0¢ (Canadian funds) per ounce in 1936.

After June 30, 1937, the practice of the London Metal Exchange of issuing two official quotations on both lead and zinc (spelter) was discontinued and instead four quotations for each metal are now being issued on each trading day, as follows:-

1. For shipment in the current month: buyers.
2. For shipment in the current month: sellers.
3. For shipment in the third following month: buyers.
4. For shipment in the third following month: sellers.

It is laid down by the London Metal Exchange that the equivalent of any one price quoted at present shall be the average of the new buyers' and sellers' prices, and, accordingly, the monthly average of the mean daily quotations will be calculated on the four daily quotations instead of two as previously.

(a) THE SILVER-COBALT MINING INDUSTRY.

Silver-cobalt ores were discovered in Northern Ontario in 1903 during the construction of the Temiskaming and Northern Ontario Railway. The first property came into production the following year and shipments of these ores have been continuous since that time. Silver production from this source reached a peak in 1911 when 31,507,791 fine ounces were recorded as being contained in shipments. Depletion and exhaustion of ore reserves during the past two decades have resulted in an almost steady decline in the production of metals from these ores. Shipments of cobalt, silver and arsenic from the Cobalt, Gowganda, South Lorrain and other silver-cobalt camps from 1904 to 1936, inclusive, as compiled by the Ontario Department of Mines, were as follows - cobalt, 16,074 tons; silver, 429,009,350 fine ounces, and arsenic, 71,494 tons. Relatively lesser quantities of bismuth, copper, lead and nickel were also recovered as by-products.

Returns reporting shipments of cobalt-silver or cobalt ores during 1936 were received from the following mines - La Rose Rouyn, Temiskaming, Coniagas, McKinley-Darragh, Foster, O'Brien, Kerr Lake, Bailey, Rochester, Silver Bar, Crown Reserve, Beaver, Cobalt, Comet, Colonial, Nipissing, Agaunico, Cobnor, Yorkshire, Cobalt, and Hudson Bay, all located in the Cobalt area. Other properties reporting shipments included the Miller Lake O'Brien at Gowganda, Oliver and Cameron at Elk Lake, and the Frontier and Bellorain in South Lorrain.

In most instances operations were conducted by lessees and shipments ranged from one to several thousand tons. An increased demand for cobalt and nickel-bearing ores has encouraged a renewal of interest in these older camps during recent months.

In 1936 the silver-cobalt mining industry provided employment for 363 persons and distributed \$458,546 in salaries and wages. Fuel and purchased electricity consumed totalled \$104,372 and the value of explosives, drill steel, etc., consumed amounted to \$77,220. The net value of all products was estimated at \$915,376 as compared with \$2,070,716 in 1935, a decrease in value which strongly reflected the fall in silver prices experienced in 1936.

The decline in the mining of silver-cobalt ores in Canada is particularly reflected in the employment figures recorded during the past fifteen years. In 1921 wage-earners and salaried employees reported by the industry totalled 1,224 and salaries and wages disbursed amounted to \$1,739,706 whereas the corresponding totals for 1936 were 363 employees and \$458,546 for salaries and wages, a percentage decrease of 70.3 and 73.7, respectively.

Table 1 - PRINCIPAL STATISTICS OF THE SILVER-COBALT MINING INDUSTRY IN CANADA,
1928 - 1936.

Years	Number of active opera- tors	Number of opera- ting mines	Capital employed \$	Number of em- ployees	Salaries and wages \$	Cost of fuel and elec- tricity \$	Value of bullion, ore, concentrates and residues sold \$
1928 ...	15	19	22,027,683	1,166	1,809,466	430,683	3,938,884
1929 ...	27	32	15,820,435	1,149	1,532,333	407,952	3,913,316
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)

(x) Net value.

NOTE - The cost of process supplies used - explosives, etc., - was recorded for the first time in 1935 and beginning in 1935 this cost, together with the cost of fuel and electricity purchased, 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,
1933 - 1936.

Month	1933	1934	1935	1936		MILL
				M I N E		
				Surface	Underground	
January	208	234	299	89	168	46
February	203	233	297	85	161	34
March	201	230	288	74	160	36
April	204	219	284	88	146	38
May	204	235	319	122	143	45
June	206	257	375	124	139	53
July	205	262	428	132	150	53
August	228	269	441	137	161	55
September	236	270	448	142	171	52
October	236	308	414	141	181	50
November	233	281	408	124	198	35
December	225	277	360	100	177	34

Table 3 - STATISTICS OF THE SILVER-COBALT MINES AND MILL OPERATIONS IN CANADA, 1934, 1935 and 1936.

	1934	1935	1936
Number of mines in operation (x)	16	28	25
Ore mined tons	54,498	57,287	59,592
Ore treated (b) tons	52,337	42,934	62,087
Tailings treated tons	...	...	421
Concentrates produced tons	795	952	1,556
Bullion recovered fine oz.	8,525(a)	29,563(a)	12,647(a)
Bullion sold or shipped (exported) fine oz.	202,535	1,158,986	...
Gross value of bullion, ore, concentrates and residues sold \$	1,380,318	2,316,934	1,096,968
Cost of fuel and purchased electricity used \$	85,685	114,439	104,372
Cost of process supplies used \$	(c)	131,779	77,220
Net Value of Sales \$	(c)	2,070,716	915,376

(x) All mines located in Northern Ontario.

(a) From direct smelting of nuggets, etc.

(b) Does not include crude ores shipped direct to smelters.

(c) Information not available.

Table 4 - FUEL AND ELECTRICITY USED IN THE SILVER-COBALT MINING INDUSTRY, 1935 and 1936.

Kind	Unit of measure	1935		1936	
		Quantity	Cost at works	Quantity	Cost at works
			\$		\$
Bituminous coal - Canadian	ton	448	4,177	67	768
Imported	ton	704	11,066	871	11,564
Anthracite coal - From United States	ton	139	1,917	64	900
Other	ton	322	4,338	261	3,609
Coke (for fuel only)	ton	8	60	...	...
Gasoline (exclusive of that used in motor cars or trucks)	gal.	2,017	620	1,809	497
Kerosene or coal oil	gal.	25	6	...	...
Fuel oil and diesel oil	gal.	7,818	1,657	12,630	1,641
Wood (cords of 128 cu.ft. of piled wood)	cord	1,159	4,886	1,291	5,801
Other fuel .....	\$	...	27,772	...	20,507
Electricity purchased, including service charges	K.W.H.	5,489,117	57,940	5,181,196	59,085
TOTAL .....	\$	...	114,439	...	104,372
Value of explosives and other process supplies used .....	\$	...	131,779	...	77,220

ARSENIC - The commercial production of primary arsenic in Canada during 1936 totalled 1,365,606 pounds valued at \$42,491; this came entirely from cobalt-silver-arsenic ores treated by the Deloro Smelting and Refining Company, Limited, Deloro, Ontario. The element was recovered and marketed by this company in the form of arsenious oxide or white arsenic. The maximum annual output of white arsenic in Canada occurred in 1919 when a production of 2,859 short tons was recorded. In 1886 the Deloro mine in the county of Hastings, Ontario, was believed to have been the only mine in Canada producing arsenic; in that year 120 tons of refined arsenious oxide was obtained as a by-product in the roasting of the auriferous quartz and mispickel of that mine.

Between 1907 and 1910 shipments of cyanided concentrates containing arsenopyrite were made from a gold mine in Nova Scotia while for a number of years arsenopyrite-gold concentrates were produced for export at the Hedley gold mine in British Columbia. During recent years considerable research work has been conducted on arsenical gold ores mined in Northwestern Quebec.

The greater part of the arsenic recovered throughout the world is obtained as a by-product of general smelting operations. In 1935 the principal arsenic producing countries were the United States, Mexico, Sweden, Belgium, and Australia.

Arsenic is consumed chiefly in the manufacture of insecticides, weed killers, glass, wood preservatives, and certain medicines. A recent patent describes the use of arsenic for the manufacture of a hydraulic cement that is reported to be highly resistant to disintegration; another patent describes the preparation of an arsenic cement by the utilization of arsenic trioxide.

Imports of arsenious oxide into Canada during 1936 totalled only 529 pounds valued at \$90 while exports of the material in the same year amounted to 688,400 pounds worth \$25,004. Arsenic was quoted in the United Kingdom at the close of the year as follows: London, £13. 10s. per ton, c.i.f. main U.K. ports for imported material; Cornish nominal, £22. 10s., f.o.b. mines. Scotland: white powdered, £17. 10s. ex. store. United States - arsenious oxide, per pound, 3½ cents delivered, carload lots.

Table 5 - PRODUCTION IN CANADA, IMPORTS AND EXPORTS OF ARSENIC, 1935 and 1936.

Table 3 - PRODUCTION IN CANADA, IMPORTS AND EXPORTS OF ARSENIC, 1935 and 1936.										
	1	9	3	5		1	9	3	6	
	Quantity				Value	Quantity				Value
	pounds				\$	pounds				\$
<u>PRODUCTION (x) -</u>										
White arsenic and arsenic in other forms	2,558,789				75,326	1,365,606			42,491	
TOTAL	2,558,789				75,326	1,365,606			42,491	
<u>IMPORTS -</u>										
White arsenic (arsenious oxide)	11,759				546		529		90	
Sulphide of arsenic	27,777				3,496	17,949			2,307	
Soda, arseniate of, biarseniate and stannate of	2,128				666	6,520			1,863	
Arsenate of lead	324,328				26,388	223,300			20,096	
Arsenate of lime	144,023				7,786	276,552			16,372	
TOTAL .....	...				38,882	...			40,728
EXPORTS - Arsenic - TOTAL	2,250,600				69,866	688,400			25,004	

(x) Entirely from Ontario.

Table 6 - CONSUMPTION OF ARSENIOS OXIDE AND ARSENIC ACID IN THE MANUFACTURE OF CANADIAN INSECTICIDES, 1932 - 1936.

Year	Pounds	\$	Year	Pounds	\$
1932	1,721,044	69,250	1935	2,736,089	86,983
1933	3,116,401	110,011	1936	3,368,956	106,132
1934	4,709,443	168,185			

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

Producing country and description	1933	1934	1935
<u>BRITISH EMPIRE</u>			
United Kingdom - White arsenic and arsenic soot	121	185	172
Canada (sales) - White arsenic	655	736	1,142
Australia - White arsenic	1,776	2,230	2,840
<u>FOREIGN COUNTRIES</u>			
Belgium (exports) - White arsenic	2,538	3,498	3,044
Czechoslovakia - Ore (As content)	55	44	68
France - Ore (As content)	5,792	6,899	(a)
White arsenic (As content)	8,473	8,463	(a)
Germany - Ore (As content)	(a)	1,930	1,294
Greece - White arsenic	331	147	164
Pyrites (As content)	443	305	300
Portugal - White arsenic	2	40	74
Roumania - Pyrites (As content)	61	12	29
Sweden - Ore (As content)	37,839	28,166	24,032
White arsenic	847	7,288	6,250
Mexico - White arsenic	4,623	7,736	9,793
United States - White arsenic	9,509	11,693	12,712
Brazil - White arsenic	317	689	681
China - Ore (b)	1,141	1,187	1,200
Japan - White arsenic	2,338	2,691	3,111
Korea - White arsenic	150	327	367
Turkey - Ore (As content)	20	13	27

White arsenic is also produced in Germany and U.S.S.R. (Russia).

(a) Information not available.

(b) Content varies from 20 to 60 per cent. arsenic.

COBALT - Canadian production of cobalt in 1936 at 887,591 pounds was the largest since 1929 in which year the output was computed at 929,415 pounds. Cobalt production in Canada comes entirely from the cobalt-silver deposits of Northern Ontario and attained its highest in 1909 when production reached 3,066,000 pounds. Production of the metal in the Dominion represents the cobalt content of ores exported together with the metal content of salts or oxides and metallic cobalt produced in Canadian plants.

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 1936 and production included cobalt metal, cobalt salts and cobalt oxide.

The Belgian Congo and Northern Rhodesia are now the world's principal cobalt producers. Northern Rhodesia is the largest producer of the metal in the British Empire. Cobalt occurs here as the sulphide linnaeite (Co_3S_4), in the Nkana copper ore deposit in amounts up to 0.5 per cent cobalt and, according to the Imperial Institute, London, the metal is recovered as ferro-cobalt during the copper smelting; it is exported mainly to the United States and Belgium. Production in 1936 was reported at 1,016,736 pounds.

The Chemical Trade Journal and Chemical Engineer, London, recently commented on cobalt, as follows: "Cobalt is now going into extensive consumption in the manufacture of special alloys and of catalysts in various coal-oil processes, whilst the sustained call for cobalt compounds in the form of ceramic colours, and for paint and varnish driers, has contributed to maintain the strength of the market ... Canada, Rhodesia, and the Belgian Congo are at present the dominant factors in the international cobalt position, and the close understanding that prevails among those responsible for marketing the metal and its oxides from these sources has been responsible for the stability of cobalt prices during a period in which values of many other metals have fluctuated considerably. If, as is reported, Russia is eventually to figure as a major factor in the world's cobalt industry, a greater degree of competitive selling may be experienced..."

Exports of cobalt ore from Canada during 1936 totalled 5,262 cwt. (metal content) valued at \$212,814 as compared with 4,193 cwt. at \$124,679 in 1935. Exports of cobalt metal in 1936 totalled 2,376 pounds as compared with 1,803 pounds in the preceding year; exports of cobalt alloys in 1936 totalled 43,211 pounds worth \$70,372 as compared with 26,405 pounds valued at \$44,462 in 1935. Exports of cobalt oxides and cobalt salts increased from 378,274 pounds at \$370,110 in 1935 to 484,541 pounds valued at \$556,791 in 1936.

Cobalt was quoted in the United Kingdom, September, 1937, at from 8s. 6d. to 8s. 7d. per pound, Engineering and Mining Journal. "Metal and Mineral Markets" August, 1937, quotations for cobalt ore were: per pound of cobalt: 9 per cent grade, 40 cents; 10 per cent, 42½ cents; 11 per cent, 45 cents; 12 per cent, 47½ cents; 13 per cent, 50 cents; 14 per cent, 52½ cents; 14 and up to 15 per cent, 55 cents. Carload lots, f.o.b. Ontario.

Table 8 - PRODUCTION OF COBALT IN CANADA, 1926 - 1936.

Years	Pounds	Years	Pounds
1926	664,778	1931	521,051
1927	880,590	1932	490,631
1928	956,590	1933	466,702
1929	929,415	1934	594,671
1930	694,163	1935	681,419
		1936	887,591

Table 9 - PRODUCTION IN CANADA, IMPORTS AND EXPORTS OF COBALT, 1935 and 1936.

	1	9	3	5	1	9	3	6
	Quantity				Quantity			
	\$				\$			
<u>PRODUCTION</u> (in terms of metallic cobalt contained in metal and oxides sold and in ores and residues exported)	pounds	681,419	512,705	887,591	804,676			
<u>IMPORTS</u> -								
Cobalt ore	pounds	...	...	...	...
Oxide of cobalt	pounds	160	173	410	610			
<u>EXPORTS</u> -								
Cobalt, contained in ore	cwt.	4,193	124,679	5,262	212,814			
Cobalt, metallic	pounds	1,803	2,253	2,376	2,970			
Cobalt alloys	pounds	26,405	44,462	43,211	70,372			
Cobalt oxides and cobalt salts	pounds	378,274	370,160	484,541	556,791			

Production of cobalt in Canada during the first six months of 1937 totalled 240,862 pounds valued at \$379,195 as compared with 438,773 pounds worth \$356,118 in the corresponding period of 1936.

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

Producing Country	1 9 3 3	1 9 3 4	1 9 3 5
<u>BRITISH EMPIRE</u>			
Northern Rhodesia	2,330	11,429	8,203
Canada (c)	4,167	5,310	6,084
India (b)	2,300	3,477	4,452
Australia (metal)	125	160	...
<u>FOREIGN COUNTRIES</u>			
Belgian Congo (d)	12,160	(a)	(a)
French Morocco	1,440	3,260	8,180
United States (e)	11	...	...
Japan (ore) .....	...	...	188

NOTE - Complex ores containing cobalt are also found in Germany, Greece 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) Total cobalt content of metal, oxide and salts produced at Olen (Belgium) from material shipped from the Belgian Congo. (e) Recovered at an electrolytic zinc plant.

Table 11 - COBALT SALTS USED IN THE MANUFACTURE OF CANADIAN PIGMENTS AND PAINTS,
1932 - 1936.

Year	Pounds	\$	Year	Pounds	\$
1932	17,021	10,960	1935	110,419	33,292
1933	10,885	7,463	1936	(data not yet complete)	
1934	26,300	14,069			

DIRECTORY OF OPERATORS IN THE CANADIAN SILVER-COBALT MINING INDUSTRY, 1936.

<u>Name</u>	<u>Head Office Address</u>	<u>Mine Location</u> (/)
Chitty, F. L.	Box 47, Cobalt, Ont.	Coleman Tp.
Cobalt Properties Ltd.	Box 929, Cobalt, Ont.	Coleman Tp.
Cobnor Silver Mines Ltd.	276 St. James St. W., Montreal, P.Q.	North Cobalt
Comet Leasing Co.	Box 274, Cobalt, Ont.	Kerr Lake
Dean, J.C.	Box 616, Cobalt, Ont.	Coleman Tp.
Ferro-Bellorain Trust	629 Wellington St., Ottawa, Ont.	Silver Centre
Hudson Bay Mines Ltd.	New Liskeard, Ont.	Coleman Tp.
La Rose Rouyn Mines Ltd.	112 Yonge St., Toronto, Ont.	Coleman Tp.
Martin, Geo.	Box 659, Cobalt, Ont.	Coleman Tp.
McFarlane, F.J., and Allan, R.E.	Haileybury, Ont.	Lorrain Tp.
McCready & Presse	Box 130, Cobalt, Ont.	Cobalt
The Mining Corp. of Canada, Ltd.	602, 350 Bay St., Toronto, Ont.	South Lorrain
Morgantheler, A. G.	2108 S. 2nd St., Philadelphia, Pa., U.S.A.	Coleman Tp.
Morrison Mines Ltd.	165 Sparks St., Ottawa, Ont.	Nichol Tp.
Murphy, A. and Landry, A.P.	Cobalt, Ont.	Coleman Tp.
Nipissing Mining Co. Ltd.	1007 Excelsior Life Bldg., Toronto, Ont.	Cobalt
O'Brien, M.J., Ltd.	900 Victoria Bldg., Ottawa, Ont.	Coleman Tp. and Miller Lake.
Oliver and Cameron	Elk Lake, Ont.	Nickel Tp.
Price, C. W.	Box 388, Cobalt, Ont.	Coleman Tp.
Rowe, A., and Stuckey, C.	Box 79, Cobalt, Ont.	South Lorrain
Russel, Presse & McCready Synd.	Box 130, Cobalt, Ont.	Bucke Tp.
Sandoe and Moyle	Box 362, Cobalt, Ont.	Coleman Tp.
Silverado Gowganda Mines Ltd.	347 Bay St., Toronto, Ont.	Gowganda
Sirola, Donald E.	Box 169, Cobalt, Ont.	Coleman Tp.
Taylor, W. D.	Box 632, Cobalt, Ont.	Coleman Tp.
Temiskaming Mining Co. Ltd.	15 King St. W., Toronto, Ont.	Cobalt
Yorkshire Cobalt Mining Co.	Box 508, Cobalt, Ont.	Bucke Tp.

(/) All located in the province of Ontario.

(b) THE SILVER-LEAD-ZINC MINING INDUSTRY.

Silver-lead-zinc ores were mined during 1936 in the provinces of Nova Scotia, Quebec and British Columbia, also in the Yukon Territory. Zinc or lead-bearing ores have also been mined in Ontario at Galetta, near Sudbury, in the Lake Superior district, and in Frontenac and Hastings counties. Silver-pitchblende ores are now being shipped from the Great Bear Lake area of the Northwest Territories, general statistics pertaining to which are included with those for the silver-lead-zinc mining industry.

In 1936 the net value of ores, concentrates, etc., shipped from mines comprising the industry totalled \$13,814,645 as compared with a value of \$10,553,086 in 1935. The number of operating properties totalled 89 of which 73 were located in British Columbia, 10 in the Yukon, 5 in Quebec and 1 in Nova Scotia. Capital employed in the industry during 1936 was estimated at \$19,372,600; \$2,917,832 were distributed as salaries and wages to 1,870 employees; \$680,677 in fuel and electricity were consumed and explosives and other process supplies used were computed at \$1,213,818.

NOVA SCOTIA - In October, 1935, the British Metals Corporation of Canada, Ltd., recommenced operations at its property in Sterling, Richmond county. Both the mine and mill were operated steadily throughout 1936 and auriferous silver-lead-copper and zinc concentrates were produced and exported to European smelters.

QUEBEC - In Christie township, Gaspé County, development work was conducted on a property by the Christie Mining Syndicate, Inc. The ore here is reported as being of a complex nature containing lead, zinc, silver and gold. Work consisted of road construction, trenching, stripping, shaft sinking, and the construction of camp buildings.

The property of the Gulf Development Co. Ltd., located in Mann township, Restigouche, was active from June to December; a considerable amount of underground work was completed and a relatively small tonnage of silver-lead-zinc ore was exported to England.

At Montauban Les Mines, the Tetreault mine and mill were in operation throughout 1936. Production at this property consisted of auriferous silver-lead and zinc concentrates which were exported for treatment in European smelters. Prospecting of lead and zinc bearing deposits was also conducted by the Mega Mining Syndicate and in Portneuf county by the Shawinigan Mining and Smelting Co. Ltd.

ONTARIO - No reports of any actual mining operations conducted on lead-zinc deposits in Ontario were received during 1936. Lennox Mines Ltd., however, reported that it was diamond drilling a lead-bearing deposit located in Sheffield township, Lennox and Addington counties. It was also reported in the press that other Eastern Ontario lead-bearing deposits, including that at Galetta, would be investigated or developed during 1937.

BRITISH COLUMBIA - British Columbia is preeminent as a producer of silver-lead-zinc ores in Canada. In 1936 the net value of production by the silver-lead-zinc mining industry in this province alone totalled \$13,396,471 or 96.9 per cent of that for the entire Dominion. Salaries and wages amounting to \$2,060,038 were distributed to 1,274 employees; fuel and purchased electricity used totalled \$391,303, and explosives, drill steel, etc., consumed amounted to \$732,047.

The great Sullivan mine, located at Kimberley and operated by the Consolidated Mining and Smelting Company of Canada, Ltd., is not only the greatest single producer of silver, lead and zinc in Canada but one of the most important world sources of these particular metals. In 1936 total production at the mine amounted to 1,898,099 tons, comprising 1,897,826 tons of silver-lead-zinc ore shipped to the concentrator at Kimberley and 273 tons of crude lead ore to the smelter at Tadanac, an increase of 38,928 tons over the production of the previous year. The concentrator treated 1,901,476 tons, an average of 5,976 tons per day, and produced 253,154 tons of lead concentrates and 181,088 tons of zinc concentrates, containing 6,937,059 ounces of silver, 369,954,491 pounds of lead and 237,399,453 pounds of zinc. The average feed to the ball mills contained .04 ounces more silver, 13.6 pounds more lead and .8 pounds more zinc than in the previous year. Recoveries, though subject to some variation, were slightly better over the year.

Salvage operations and those preparatory to filling were carried on continuously at the Sullivan throughout the year and were responsible for 41.5 per cent of the ore shipped to the concentrator. Filling operations were continued and were responsible for the placing of 163,692 cubic yards, of which 114,350 cubic yards were surface material placed during the summer, 11,342 cubic yards were development waste and 38,000 cubic yards were waste from caving. Fully developed ore reserves were well maintained with an indicated ratio of lead to zinc, 1.6265 to 1.

All operations at the Monarch and Kicking Horse mines, located near Field, were principally confined to a programme of diamond-drilling, prospecting and development work; the mill has remained closed since December, 1935. Base Metals Mining Corp. Ltd., the owners, reported that exploration has resulted in the discovery of one new orebody in the East Monarch section; sampling and assaying of 680 tons of development rock from this orebody was reported to indicate an average metal content of 8.1 per cent lead, 19.3 per cent zinc, and 1.30 ounces of silver per ton.

Other firms to conduct important silver-lead-zinc mining operations during 1936 included - Allco Silver Mines Ltd. (Revelstoke, M.D.); Beaverdell Wellington Syndicate Ltd. (Greenwood M.D.); Beaver Silver Mines Ltd. (Greenwood M.D.); Bell Mine Ltd. (Wallace Mountain); Cons. Queen Bess Mines Ltd. (Alamo); Denver Mining Syndicate (Slocan); Highland Bell Ltd. (Wallace Mountain); Nicola Mines and Metals Ltd. (Stump Lake); Sally Mines Ltd. (Kettle River M.D.); Ottawa Silver Mining & Milling Co. (Slocan); Salmo-Malartic Mines Ltd. (Nelson M.D.); The Welldun Mining, Milling and Power Co. Ltd. (Stewart), and the Western Exploration Co. Ltd. (Kaslo M.D.).

In addition to the operations listed above, there were many other properties that reported shipments or development work. The year was featured by the relatively large number of operators, many of whom were lessees, that reported exports of crude ore to European metallurgical plants.

NORTHWEST TERRITORIES - For statistical purposes, the data pertaining to the mining of pitchblende-silver ores in the Northwest Territories are included with those relating to the silver-lead-zinc mining industry. Eldorado Gold Mines Ltd., the principal Canadian producer of these ores, reported - "during 1936 the underground workings on No. 2 vein were extended to a depth of 500 feet below the adit level. New levels were opened at 465 and 590 foot horizons. During the year 22,946.7 tons of ore were milled and at the end of the year ore reserves totalled 25,567.7 tons. Flotation and other concentrates together with cobbled ore produced during 1936 totalled 401.5 tons, with a gross value of \$1,349,388.

Shipments from the mine consisted of 326.5 tons of pitchblende concentrate to the Port Hope refinery and 40.5 tons of copper-silver concentrate to Tacoma. Incoming air freight to the mine totalled approximately 60,000 pounds... quite an amount of silver is contained in the pitchblende ore; the pitchblende ore, however, is but a small percentage of the mineral-bearing rock that forms the veins. The balance and larger percentage of the mineral bearing rock also contains excellent values in silver, copper, etc. This ore is treated separately in the mill and the concentrates then shipped to custom smelters at Tacoma and elsewhere for final metal recovery."

Underground development on the 350 foot level of the Consolidated Mining and Smelting Company's Echo Bay property was continued until major supplies were exhausted about June 15th, 1936, when the property was closed pending favourable silver prices. Total work for the year comprised 1,110.5 feet of drifting and 242.5 feet of crosscutting.

A small amount of prospecting work was conducted at Beaverlodge Lake by Hottah Lake Gold and Radium Mines Ltd. and at Cameron Bay the El-Bonanza Mining Corp. Ltd. was active from January to June; a relatively small shipment of silver ore was made by this company. It was also reported that development work was conducted at Contact Lake by Bear Exploration and Radium Ltd.

YUKON TERRITORY - The Treadwell Yukon Co. Ltd. is the largest producer of silver-lead ores in the Yukon; mining operations were conducted by this company throughout 1936 and the mill was in operation from March until the end of the year. The Comptroller for the Territory in his report for the fiscal year ending March 31, 1937, reports - "Three different properties were operated by the Treadwell Company during the year, namely, the "Elsa," the "Silver King," and the "Hector" groups of claims, all on Galena Hill. The mill at the "Elsa" was operated continuously after supplies of diesel oil were received in the summer of 1936. The output for the season was approximately 12,000 tons of high grade silver or lead ores and mill concentrates, the concentrates amounting to approximately ten thousand tons. During the season of navigation in 1936, on account of loss of river steamers operated by the White Pass and Yukon Route, the shipment of ore and concentrates by the Treadwell Yukon Company, Ltd., was limited to 2,064 tons, consisting of 1,481 tons of concentrates and 583 tons of crude ore. The shipment contained 621,718 ounces of silver and 1,889,916 pounds of lead and had a gross market value of \$375,233.86. In addition to the Treadwell Yukon Company's shipments, 683 tons of crude ore was shipped by individuals, the gross value of which was \$114,037. It is reported that sufficient ore has been located on the three properties at present being operated by the Treadwell Yukon Company to maintain present scale operations for five years. The ore and concentrates shipments during 1937 will be limited to approximately 10,000 tons which is the capacity of the steam boats of the transportation company. Individual claim owners in the Mayo district have been active in prospecting and developing their ground, and some very rich discoveries have been made."

Table 12 - PRINCIPAL STATISTICS OF THE SILVER-LEAD-ZINC MINING INDUSTRY(x) IN CANADA, ALTERNATE YEARS, 1927-1933, and 1934, 1935 and 1936.

Years	Number of active operators	Number of operating plants or mines	Capital employed	Number of employees	Salaries and wages	Cost of fuel and elec- tricity	Value of ores and concen- trates sold
			\$		\$	\$	\$
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(a)	60(a)	12,923,827	1,292	1,935,284	389,276	8,885,081
1935 ...	69(a)	70(a)	16,596,941	1,657	2,431,110	438,126	10,553,086(b)
1936 (c)	88(a)	89(a)	19,372,600	1,870	2,917,832	680,677	13,814,645(b)

(x) Since 1931 includes data relating to silver mining 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) In 1936 includes 1 active property in Nova Scotia, 5 in Quebec, 7 in the Yukon, and 3 in the Northwest Territories.

NOTE - For value of process supplies used since 1935, see Table 15.

Table 13 - NUMBER OF WAGE-EARNERS, BY MONTHS, IN THE SILVER-LEAD-ZINC MINING INDUSTRY, 1933 - 1936.

Month	1933	1934	1935	1 9 3 6			
				M I N E		MILL	
				Surface	Underground		
January	832	1,021	1,309	447	804	382	
February	820	1,012	1,285	425	794	381	
March	830	1,069	1,196	423	807	400	
April	797	1,091	1,187	398	752	358	
May	795	1,119	1,333	429	792	371	
June	839	1,128	1,476	457	810	372	
July	853	1,147	1,516	462	770	398	
August	942	1,186	1,670	412	812	384	
September	976	1,237	1,672	404	820	393	
October	1,007	1,270	1,738	423	842	389	
November	1,017	1,266	1,712	412	831	400	
December	944	1,322	1,670	387	811	389	

Table 14 - NUMBER OF WAGE-EARNERS IN THE SILVER-LEAD-ZINC MINING INDUSTRY WHOSE REGULAR HOURS PER WEEK WERE -

Hours	1931	1936	Hours	1931	1936
	Number	Number		Number	Number
40 hours or less	903	23	54 .....	...	5
44	1	...	55 .....	...	40
45 - 47 .....	...	2	56 - 59	253	448
48	237	1,217	60	5	9
51 - 53	7	59	60 plus	15	87

Table 15 - FUEL AND ELECTRICITY USED IN THE SILVER-LEAD-ZINC MINING INDUSTRY,
1935 and 1936.

Unit of measure	1 9 3 5		1 9 3 6	
	Quantity	Value	Quantity	Value
		\$		\$
Bituminous coal - Canadian .. short ton	30,111	128,068	32,000	137,844
Imported .. short ton	1	485	...	...
Anthracite coal short ton	...	...	1	18
Lignite coal - Canadian short ton	181	1,084	180	1,143
Coke short ton	17	137	...	...
Gasoline (exclusive of that used in motor cars) Imp. gal.	22,737	18,675	75,769	42,733
Kerosene Imp. gal.	524	237	91,490	12,278
Fuel oil and diesel oil Imp. gal.	334,990	50,210	760,607	210,192
Wood (cords of 128 cu.ft.) .. cord	1,346	12,295	3,601	30,721
Electricity purchased, including service charges K.W.H.	50,698,860	226,935	48,035,665	245,748
TOTAL \$		438,126	...	680,677
Electricity generated for own use K.W.H.	6,740,962	...	16,833,561	...
Process supplies used, explosives, etc. \$		767,696	...	1,213,818

Table 16 - POWER EQUIPMENT INSTALLATION IN THE SILVER-LEAD-ZINC MINING INDUSTRY, 1936.

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	3	6,000	...	...
Diesel engines	32	3,626	10	1,504
Gasoline, gas and oil engines, other than diesel engines	17	639	5	69
Hydraulic turbines or water wheels	7	1,030	1	60
Electric motors -				
(a) Operated by purchased power	645	20,396	99	3,770
Total	704	31,691	115	5,403
(b) Operated by power generated by the establishment	265	3,524	71	836
Boilers	17	2,989	2	192

(x) According to manufacturers' rating.

Table 17 - ORE MINED AND MILLED IN THE SILVER-LEAD-ZINC MINING INDUSTRY(x) IN CANADA,
1934, 1935 and 1936.

	Yukon and Northwest Territories		British Columbia, Quebec and Nova Scotia		CANADA
	1 9 3 4				
Ore mined	tons	2,988	1,850,480	1,856,256	
Ore milled	tons	...	1,836,622	1,839,364	
Concentrates produced - Lead	tons	...	234,404	234,558	
Zinc	tons	...	229,062	229,412	

Table 17 - ORE MINED AND MILLED IN THE SILVER-LEAD-ZINC MINING INDUSTRY(x) IN CANADA, 1934, 1935 and 1936. (concluded)

		Yukon and Northwest Territories	British Columbia, Quebec and Nova Scotia	CANADA
<u>1935</u>				
Ore mined	tons	14,724	2,120,025	2,134,749
Ore milled	tons	14,460	2,103,933	2,118,393
Concentrates produced - Lead	tons	...	238,891	238,891
	Zinc .....	...	230,956	230,956
	Pitchblende- silver ...	tons 296	...	296
<u>1936</u>				
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 .....	...	235,544	235,544
	Pitchblende- silver ...	tons 393	...	393
	Silver	tons 88	...	88

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

Table 18 - DESTINATION OF SHIPMENTS FROM SILVER-LEAD-ZINC MINES OF CANADA, 1935 and 1936.

Products shipped	Tons Shipped	Value at shipping point	Total metal content as determined by settlement assay:			
			Gold fine oz.	Silver fine oz.	Lead pounds	Zinc pounds
\$						
1935						
To Canadian smelters						
Lead ore	11,597	518,957	1,279	782,229	3,777,338	968,513
Lead concentrates ..	225,939	8,662,762	5,718	6,352,259	316,672,349	16,271,062
Zinc ore .....	...	...	...	...	...	...
Zinc concentrates(x)	200,437	1,819,968	...	442,332	13,690,945	204,829,152
Dry ore (a)	7,731	170,477	79	316,072	293,299	2,940
Total	445,704	11,172,164	7,076	7,892,892	334,433,931	222,071,667
To Foreign smelters -						
Lead ore	154	22,086	7	40,109	138,594	...
Lead concentrates ..	8,752	387,166	1,196	354,676	11,204,157	223,490
Zinc ore .....	...	...	...	...	...	...
Zinc concentrates(x)	20,379	176,524	511	97,546	220,218	20,823,340
Dry ore	16	968	...	1,495	1,946	...
Total	29,301	586,744	1,714	493,826	11,564,915	21,046,830
GRAND TOTAL - 1935 (Gross)...			11,758,908(d)	...	...	...
Cost of fuel and purchased electricity						
	...	438,126	...	...	...	...
Cost of process supplies						
	...	767,696	...	...	...	...
NET VALUE - 1935			10,553,086	...	...	...

Table 18 - DESTINATION OF SHIPMENTS FROM SILVER-LEAD-ZINC MINES OF CANADA, 1935 and 1936. (concluded)

		Total metal content as determined by settlement assay:				
	Tons Shipped	Value at Shipping point \$	Gold fine oz.	Silver fine oz.	Lead pounds	Zinc pounds
<u>1936</u>						
To Canadian smelters -						
Lead ore	5,012	306,755	190	721,627	1,119,311	505,136
Lead concentrates(a)	252,091	11,738,751	81	6,640,674	352,915,726	19,535,816
Zinc concentrates(x)	181,088	2,540,665	...	375,881	11,571,340	185,514,106
Dry ore	1,976	54,330	837	92,744	25,395	18,675
Silver concentrates(c)	2	5,833	...	13,143	...	...
Total	440,169	14,646,334	1,108	7,844,069	365,631,772	205,573,733
To Foreign smelters -						
Lead ore	2,703	194,696	75	441,981	2,840,088	94,423
Lead concentrates ..	7,887	504,119	3,946	766,185	5,938,438	29,958
Silver concentrates(c)	41	28,147	...	62,548	...	...
Zinc concentrates(x)	31,826	333,261	504	122,363	958,344	32,443,675
Dry ore	39	2,583	83	765	...	...
Total	42,496	1,062,806	4,608	1,393,842	9,736,870	32,568,056
GRAND TOTAL - 1936 (Gross)			15,709,140(d)	...	...	...
Cost of fuel and purchased electricity		680,677	...	...	...	...
Cost of process supplies		1,213,818	...	...	...	...
NET VALUE - 1936		13,814,645	...	...	...	...

(x) Does not include any zinc concentrates produced from copper-gold-zinc ores in 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) Deducted for the first time in 1935.

(c) Recovered from pitchblende-silver ores.

(d) Less freight and treatment charges.

NOTE - In addition to the metal contained in shipments listed above, there are important quantities of lead and silver contained in ores shipped from certain gold mines in British Columbia, also in 1936 copper amounting to 822,569 pounds was contained in lead ores and concentrates shipped to foreign smelters.

SILVER - Handy and Harman in their annual review of the silver market in 1936 state: "The year 1936 has been an exceptionally quiet and uneventful one for silver, a condition reflected by unusually narrow market fluctuations. In fact, there has been only one other year since the turn of the century in which the New York price showed less of a spread between the high and low points. In 1909 the range was $3\frac{7}{8}$ cents which compares with a 5 cent figure for 1936, and a variation of only $2\frac{3}{4}$ cents if the first three weeks of January are eliminated. Abroad, price fluctuations have been wider, but this was a natural situation resulting from the movements of exchange and from speculation, for which greater opportunities existed in foreign trading centres It is our (Handy and Harman) sincere belief that the most advantageous results for all silver interests will be accomplished by repealing the Silver Purchase Act, which will put an end to mandatory purchases by the United States Government and permit the free flow of silver through the normal channels of trade. Precautions should be taken, however, to prevent its repeal from causing too serious repercussions in the market. Authority should also be given for the United States Treasury to sell silver in the future, when conditions warrant, in order to provide an opportunity for the favourable disposal of some of the metal already acquired."

A report issued by the United States Bureau of Mines states: "Producers of newly mined silver in the United States in 1936 began the year under the stimulus of the government price of \$0.7757. Acting under the President's proclamation of December 21, 1933, and the Silver Purchase Act of 1934, the Secretary of the Treasury on April 10, 1935, raised the price paid to \$0.7111 (55 per cent of \$1.292929 /) and on April 24 the same year to \$0.7757 (60 per cent of \$1.292929 /), where it remained to the end of 1936. Production of silver in the United States and the Philippines in 1933 was 23,317,159 ounces valued (at \$0.35 per ounce) \$8,161,006. The increase in 1936 over 1933 was 160 per cent in quantity and 472 per cent in value."

A review of silver by E. Baliol Scott, in "The Mining Journal," London, states: "In many ways the record of silver in 1936 was the antithesis of its history in 1935. Prices were low and unusually stable, and international speculative interest was of a diminishing instead of outstanding importance. India bought largely as against only a very small intake, while the Chinese Government was the principal seller, and smuggled silver was much reduced. Instead of a spread of $15\frac{3}{8}$ d. between the highest and lowest price for the year the extreme fluctuation in London was only $3\frac{15}{16}$ d. the highest price being reached on November 10 at $22\frac{15}{16}$ d., while the lowest price occurred on January 17, when the metal fell to 19d. The average London price for the year was $20\frac{1}{16}$ d. as compared with 29d. in the previous year. What was perhaps the most outstanding feature of the year was the smooth conversion of the Chinese currency from a silver to a managed foreign exchange standard basis ..."

At the London Monetary and Economic Conference of July, 1933, the chief producing silver countries - Australia, Canada, Mexico, Peru and the United States - agreed not to sell any silver but to make aggregate purchases from (or otherwise arrange for withholding from market) domestic production totalling 35 million ounces annually. Under a separate Five-Power agreement, of the same date, Canada accepted the quota of 1,671,802 ounces as her share of the total amount to be purchased (or otherwise withheld from sale). The action of the delegate of Canada in signing this agreement at London was approved by Parliament on February 26, 1934. In 1934 the Minister of Finance purchased 1,671,802 ounces of newly mined Canadian silver.

On March 11, 1935, when the Bank of Canada commenced operations, the silver then held by the Government was transferred to that institution, which assumed the liability of the Dominion notes outstanding. The silver transferred to

the Bank of Canada and future purchases by it will form part of the reserve of the Bank of Canada (Section 26(a), Bank of Canada Act). In both 1935 and 1936 the Bank of Canada purchased the required quota of silver, viz., 1,671,802 fine ounces. On October 13, 1937, the Bank of Canada reported in its weekly statement silver bullion held as \$2,647,087.07, valued at the current market price.

The London silver agreement expires on December 31, 1937, and up to October, 1937, no negotiations to renew it had been announced.

Table 19 - PRODUCTION OF SILVER IN CANADA, BY PROVINCES AND BY SOURCES, 1935 and 1936.

	1 9 3 5		1 9 3 6	
	Quantity	Value	Quantity	Value
	fine oz.	\$	fine oz.	\$
<u>NOVA SCOTIA</u> -				
In gold bullion and in silver-lead-zinc ores exported - TOTAL	372	241	107,642	48,576
<u>QUEBEC</u> -				
In blister copper	472,688	306,254	500,392	225,812
In gold ores and in copper and silver-lead-zinc ores exported.....	196,148	127,084	223,947	101,060
TOTAL	668,836	433,338	724,339	326,872
<u>ONTARIO</u> -				
In silver bullion and nuggets	2,022,296	1,310,244	1,863,183	840,798
In gold bullion	441,982	286,360	476,723	215,131
In blister copper	2,188,092	1,417,663	2,432,774	1,097,838
In ores, concentrates, residues and matte exported or treated in smelters outside the province	509,281	329,962	446,686	201,576
TOTAL	5,161,651	3,344,229	5,219,366	2,355,343
<u>MANITOBA</u> -				
In gold bullion and in blister copper - TOTAL	1,206,454	781,660	791,489	357,175
<u>SASKATCHEWAN</u> -				
In copper-gold-silver ores shipped to Canadian smelters(a) - TOTAL	201,608	130,622	642,497	289,940
<u>ALBERTA</u> -				
In alluvial gold - TOTAL	16	10	9	4
<u>BRITISH COLUMBIA</u> -				
In alluvial gold	5,567	3,607	7,810	3,525
In gold bullion	44,992	29,150	53,272	24,040
In blister copper	282,050	182,740		
In base bullion and in ores exported	8,845,791	5,731,180	9,687,633	4,371,738
TOTAL	9,178,400	5,946,677	9,748,715	4,399,303
<u>YUKON</u> -				
In alluvial gold	8,034	5,205	11,293	5,096
In silver-lead ores shipped to smelters	46,681	30,245	772,123	348,436
TOTAL	54,715	35,450	783,416	353,532
<u>NORTHWEST TERRITORIES</u> -				
In pitchblende-silver or other ores shipped to smelters(x) - TOTAL	146,506	94,921	317,014	143,059
<u>TOTAL CANADA</u>	16,618,558	10,767,148	18,334,487	8,273,804

(x) Comprises silver in bullion, 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.

For 1935 fine silver was valued at 64.790 cents per ounce, the average price for the metal on the New York market expressed in Canadian funds; for 1936 the corresponding price was 45.127 cents.

Silver production during the first six months of 1937 totalled 9,605,095 fine ounces, an increase of 10 per cent over the corresponding period of 1936. The output was valued at \$4,322,292, the average price for the period being 45 cents per fine ounce as compared with 45.281 cents during the first half of 1936. The bulk of the Canadian silver is produced in association with other metals. Mines of British Columbia accounted for 55 per cent of the total. Another important source is the nickel-copper ores of Ontario, the output of silver from these ores being considerably greater than that from the silver-cobalt ores which were once Canada's most important source of the metal. Base metal mines and gold mines in Nova Scotia, Quebec, Ontario, Manitoba and Saskatchewan, and the Yukon, all contributed to the aggregate.

Table 20 - IMPORTS INTO CANADA AND EXPORTS OF SILVER, 1935 and 1936.

	1935		1936	
	Quantity	Value	Quantity	Value
	fine oz.	\$	fine oz.	\$
IMPORTS -				
Silver in bars, etc., unmanufactured	...	5,584,906	...	2,389,842
Silver, manufactures of, n.o.p., and articles consisting wholly or in part of sterling or other silverware ...	...	64,596	...	115,513
Silver and other coin except gold ..	...	...	...	...
Toilet articles of which the most important component, in value, is sterling silver (A) .....	...	41,808	...	43,234
TOTAL .....	...	5,691,310	...	2,548,589
EXPORTS -				
Silver contained in ore, concentrates, etc.	1,364,008	882,106	3,347,167	1,494,237
Silver bullion - Domestic (a)	16,963,181	10,953,083	12,783,708	5,789,310
TOTAL	18,327,189	11,835,189	16,130,875	7,283,547
Silver bullion -.Foreign (b)	7,098,435	4,501,088	3,093,263	1,410,827
Silver coin - Foreign .....	...	896,010	...	931,129
Silver coin - Canadian .....	...	38,198	...	65,446

(A) From April 1st, 1935.

(a) Of the quantity exported, 15,013,972 ounces in 1935 and 11,264,615 ounces in 1936 went to the United States.

(b) Of these exports, 7,071,784 ounces went to the United States in 1935 and 2,892,275 ounces in 1936.

Table 21 - PRODUCTION OF SILVER IN CANADA FOR YEARS SPECIFIED, 1887-1936.

Year	Ounces	Cents per ounce	Year	Ounces	Cents per ounce
1887	355,083	98.00	1926	22,371,924	62.11
1891	414,523	98.00	1927	22,736,698	56.37
1896	3,205,343	67.06	1928	21,936,407	58.18
1901	5,539,192	58.95	1929	23,143,261	52.99
1906	8,473,379	66.79	1930	26,443,823	38.15
1910 (x) .	32,869,264	53.49	1931	20,562,247	29.87
1911	32,559,044	53.30	1932	18,347,907	31.67
1916	25,459,741	65.66	1933	15,187,950	37.83
1919	16,020,657	111.122(a)	1934	16,415,282	47.46
1920	13,330,357	100.90	1935	16,618,558	64.79
1925	20,228,988	69.06	1936	18,334,487	45.13

(x) Year of maximum output.

(a) Highest price per ounce recorded since 1887.

From 1887 to 1936, inclusive, the silver production in Canada amounted to 715,304,414 fine ounces valued at \$425,339,764.

Table 22 - SOURCE OF CANADIAN SILVER PRODUCTION, BY PERCENTAGES, 1932 - 1936.

	1932	1933	1934	1935	1936
In silver-cobalt ores	28.5	20.4	18.7	15.0	12.2
(x) In base bullion	29.2	34.6	45.1	47.9	46.3
In gold ores (bullion and placer) ...	2.5	3.0	7.2	7.4	9.7
In blister copper	15.5	19.5	23.4	26.1	23.8
In matte, copper ores and silver-lead ores, etc., exported	24.3	22.5	5.6	3.6	8.0
	100.0	100.0	100.0	100.0	100.0

(x) Chiefly from silver-lead ores.

Table 23 - SILVER CONSUMED IN SPECIFIED CANADIAN INDUSTRIES, 1934 and 1935.

Industry	1	9	3	4	1	9	3	5
	Fine oz.				Value			
					\$			
Scientific equipment.....) (a)	753,379		357,838		614,378		361,775	
Fountain pens and pencils								
Jewellery and silverware -								
Jewellery .....	...		41,917		...		48,072	
Refiners (b) .....	...		12,081		...		20,822	
Silverware .....	...		248,827		...		294,833	
Medicinal and pharmaceutical preparations	53,156		23,185		36,260		21,735	
Miscellaneous chemicals	19,144		9,502		17,424		7,841	

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

(b) Probably duplicated in some of the figures shown for other industries.

Corresponding data for 1936 not yet complete.

Table 24 -- 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	1930	53.74
1750	14.55	1900	33.33	1931	71.25
1800	15.68	1905	33.87	1932	73.29
1850	15.70	1910	38.22	1933	59.06
1875	16.64	1915	40.48	1934	72.49
1880	18.05	1920	20.28	1935	54.74
1885	19.41	1925	29.78	1936	77.60(x)
1890	19.75				

(x) Estimated on averages in Canadian funds.

Table 25 -- WORLD'S SILVER CONSUMPTION, PRODUCTION AND OTHER SUPPLIES(x), 1935 and 1936.

Consumption	1935	1936	Production and Supplies	1935	1936
	(in millions of fine ounces)				
U.S. Government Acquisitions:			Production:		
Domestic production	37.9	62.7	United States	48.5	64.0
Nationalized stocks	1.0	0.8	Mexico	75.6	82.1
Open market purchases	489.4	317.7	Canada	17.5	19.2
Total	528.3	381.2	South America	23.5	31.4
			All other countries	53.4	56.3
Other Government Purchases under the Eight Nation Silver Pact:			TOTAL PRODUCTION	218.5	253.
Mexico	7.2	7.2	Other Supplies:		
Canada	1.7	1.7	Sales by China and Hong Kong including smuggled silver .	190.0	302.0
Peru	1.1	1.1	Sales by Indian Government .	29.0	..
Australia	0.6	0.6	Sales by Soviet Government.	19.0	1.0
Coinage:			Sales by German Government .	1.0	1.0
Cuba	15.5	7.9	Other Demonetization:		
Venezuela	1.8	2.8	Peru	0.5	..
Others	0.3	..	Austria	2.0	..
Indian consumption	5.0	100.	Persia	3.4	..
German consumption	15.0	16.	Indo-China	3.5	..
Arts and Industries:			Netherland India	2.0	..
In United States and Canada	23.5	26.5	Unallocated supplies	141.1	..
In England	10.0	12.0			
TOTAL	610.	557.	TOTAL	610.	557.

(x) As estimated and supplied by Handy and Harman, New York.

Table 26 - SILVER PRODUCTION OF THE WORLD, 1930, 1935 and 1936. (a)
 (Supplied by the American Bureau of Metal Statistics)
 (in fine ounces)

Country	1930	1935	1936
NORTH AMERICA:			
United States	50,234,000	38,322,000	62,842,000
Canada	26,443,823	16,618,558	18,231,419
Mexico	105,204,000	75,587,447	77,462,114
Newfoundland	596,500	1,123,997	1,250,000
Total North America	182,478,323	131,652,002	159,785,533
CENTRAL AMERICA AND WEST INDIES ..	3,900,000	3,500,000	4,000,000(x)
SOUTH AMERICA:			
Bolivia	7,091,100	7,951,338	10,500,000
Chile	760,444	1,298,712	1,431,350
Colombia	60,000	132,965	155,000
Ecuador	106,127	80,658	85,000
Peru	15,389,048	17,104,300	19,000,000
Other South America	46,679	85,000	100,000
Total South America	23,453,398	26,652,973	31,271,350
EUROPE:			
Czechoslovakia	892,709	1,329,701	1,350,000
France	652,000	569,605	570,000(x)
Great Britain	40,955	92,848	90,000(x)
Germany	5,485,433	6,260,000	6,300,000(x)
Greece	353,400	180,000	290,000
Italy	506,301	420,000	450,000(x)
Norway	340,790	271,346	215,600
Poland	561,178	32,311	25,000
Rumania	142,039	475,223	500,000(x)
Russia	1,023,000	3,850,000	5,000,000
Spain and Portugal	2,819,169	1,450,000	900,000(x)
Sweden	191,260	835,771	800,000
Yugoslavia	460,000	1,729,220	1,598,080
Other Europe	10,200	30,000	50,000(x)
Total Europe	13,478,434	17,526,025	18,138,680
OCEANIA:			
New South Wales	8,721,042	9,091,946	9,150,000(x)
Queensland	69,808	2,409,165	3,064,089
Tasmania	711,619	323,901	906,458
New Zealand	518,864	437,967	435,000
Other Oceania (b)	68,306	150,000	175,000
Total Oceania	10,089,639	12,412,979	13,730,547
ASIA:			
India	8,433,000	6,860,000	6,670,000
China	50,000	150,000	150,000(x)
Chosen (Korea)	67,547	1,265,000	1,500,000(x)
Netherland India	2,094,251	701,699	700,000
Japan	5,628,308	8,153,507	9,587,000
Turkey	320,000	200,000	300,000
Other countries	19,464	120,000	165,000
Total Asia	16,612,570	17,450,206	19,072,000

Table 26 -- SILVER PRODUCTION OF THE WORLD, 1930, 1935 and 1936.(a)(concluded)

Country	1930	1935	1936
(in fine ounces)			
AFRICA:			
Algeria	171,199	10,000	50,000
Nigeria	50,500	139,200	140,000
Rhodesia	73,357	132,252	374,223
Transvaal, Cape Colony and Natal	1,050,038	1,042,203	1,075,624
Belgian Congo .....	...	3,793,700	3,000,000
Other countries	1,178,500	55,800	180,000
Total Africa	2,523,594	5,173,155	4,819,847
TOTAL FOR WORLD	252,535,958	214,367,340	250,817,957

(a) In compiling this table free use has been made of the reports of the Director of the Mint, especially for early years. The 1936 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.

(b) Includes New Guinea.

Table 27 -- WORLD'S MONETARY STOCKS OF SILVER AT THE CLOSE OF 1935. (b)
(Supplied by the United States Mint and subject to revision)
(Stated in United States money, 000's omitted)

Country	Silver stock in	1935
	banks and treasuries(a)	Per capita
	\$	\$
United States (including Hawaii, Alaska and Porto Rico) (1)	1,451,690	11.19
Canada (1) (4)	57,084	5.23
Mexico (1) (4)	35,026	1.88
Chile (4)	3,851	0.85
Columbia ..(1) (3)	7,965	0.94
Peru (1)	10,902	1.60
Venezuela (1) (4)	26,679	8.03
Uruguay (1)	9,719	4.81
Austria (1)	14,705	2.17
Belgium (6) (4)	11,297	1.36
France (10)	38,198	0.91
Germany (1)	508,741	7.64
Bulgaria (1)	20,068	3.25
Czechoslovakia (4)	9,163	0.60
Denmark	1,089	0.30
Hungary (1)	3,286	0.37
Lithuania (1)	2,539	1.02
Great Britain (1)	422,327	9.01
Greece (1) (3)	2,867	0.42
Irish Free State (1) (7)	6,987	2.30
Latvia	14,040	7.17
Netherlands (1)	93,700	11.06
Norway (1) (5)	3,176	1.10
Poland (1)	60,792	1.80
Rumania	1,681	0.09
Spain	225,244	9.06
Switzerland (1)	64,700	15.54

Table 27 - WORLD'S MONETARY STOCKS OF SILVER AT THE CLOSE OF 1935. (b) (concluded)
(Stated in United States money, 000's omitted)

Country	Silver stock in	1935
	banks and treasuries(a)	Per capita
	\$	\$
Yugoslavia (1)	29,800	1.99
British Malaya (1)	26,758	6.10
Indo-China - French (1)	19,330	0.87
Iran (Persia) (8) (2)	22,728	1.52
Palestine (1)	9,146	7.52
Syria	2,122	0.65
Turkey (1)	6,192	0.39
British West Africa (1)	10,811	0.45
Nyasaland (1)	4,963	3.08
Rhodesia, Northern (1)	1,224	0.89
Rhodesia, Southern	1,235	0.99
New Zealand (1)	13,810	8.86
Ceylon (1)	16,858	2.99
China (9) (1)	500,000	1.11
India - British (1)	1,300,000	3.54
Morocco (1) (4)	4,518	0.81
Japan (including Chosen, Taiwan, Kwantung) (1)	281,256	2.87
Netherlands East Indies (1)	62,964	0.98
Philippine Islands (1)	18,858	1.44
Siam	10,362	0.78
Egypt (1)	38,451	2.49
Ethiopia (1) (11)	22,544	4.10
Kenya, Uganda and Tanganyika (5)(1)	24,008	2.02
Sudan- Anglo Egyptian (1)	12,135	2.09
Union of South Africa (1)	23,178	2.69
Australia (5) (1)	67,055	9.97
Algeria and Tunis	7,956	0.83
Other countries	60,751	...
TOTAL	5,706,529	3.05

(a) At par equivalent of stated value.

(b) Compiled from such data as are available.

(1) Estimated silver circulation included.

(2) Prior year's figures.

(3) Colombia, average exchange rate of paper peso during December, 1935, \$0.5703;
Greece, pegged value since January 24, 1933, of drachma, \$0.0094.

(4) Includes base metal coin.

(5) June 30, 1935.

(6) December 26, 1935.

(7) Exclusive of British coins and currency which still circulate in Irish
Free State.

(8) On October 10, 1934.

(9) Incomplete.

(10) On December 24, 1935.

(11) Valued at the United States equivalent of the price of silver in London on
December 31, 1935. (\$0.49966 per fine ounce).

NOTE - The amount of silver in circulation in many countries is not obtainable,
and in some countries that held by private banks cannot be given. The
stocks of the Union of Socialist Soviet republics are omitted because
of indefiniteness or lack of available data.

Table 28 - SILVER CONTENT OF CERTAIN SPECIFIED PRINCIPAL COINS. (x)

Country	Coin	Fine silver content Grains per unit
United States	Dollar	371.250
Australia	Shilling	80.730
Austria	Schilling	59.260
Brazil	Milreis	30.860
Canada	Dollar	288.000
Chile	Peso	69.400
China	Yuan	362.559
Colombia	Peso	347.230
France	10 Franc	104.940
Germany	Mark	38.581
Great Britain	Shilling	43.636
India	Rupée	165.000
Italy	5 Lira	64.430
Japan	Yen	110.000
Mexico	Toston	51.679
Peru	Sol	192.905
Poland	2-Zloty	50.927
Russia	Rouble	277.782
Spain	5 Peseta	69.440
Sweden	2 Krona	92.590

(x) American Bureau of Metal Statistics.

LEAD - "Owing to a steadily increasing demand, the improvement in the statistical position of the lead industry recorded in 1935 has continued throughout 1936. In this recovery Great Britain has been in the forefront, owing to the general economic revival stimulated first by building and later by rearmament. The increase is accounted for chiefly by armaments, electrical engineering (cable sheathing and accumulators), and building, which during 1936 showed a sharp increase. ..The supply of lead cannot immediately be expanded sufficiently to meet rapidly increasing demand. Almost every important source of lead is closely bound up with the production of zinc and silver, the restriction or expansion of lead production affecting the quantities of the other metals produced. In recent years Australian production has been increasing and in 1932 it became the second largest producer to the United States. The civil war in Spain has interrupted the export of lead from that country; the importance of Spain, as a producer had, however, previously been steadily falling. Coincident with the falling off in Spanish exports, Spain's chief customers have been expanding their domestic production. The Penarroya Company has erected a new smelter and refinery in France at Noyelles-Godault, with an initial capacity of 40,000 m. tons of refined lead. In Japan, in 1935, the Manshu Euko Kabushiki Kaisha was formed to smelt lead ores from Jehol and production was started at the end of 1935; it is hoped to replace all pig lead imports.

"...The rate of increase in lead production recently achieved will be impossible to maintain and it is from the bringing into production of new areas such as Northern Rhodesia and Kapaonik in Yugoslavia, that increased output must be sought in future." (O. W. Roskill - The Mining Journal, London).

Table 29 - PRODUCTION(b) OF NEW LEAD IN CANADA, 1924 - 1936.

Year	Pounds	\$	Price per pound (Canadian funds)
1924	175,485,499	14,221,345	8.104
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 ... (a)	383,180,909	14,993,869	3.913

(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.

Lead output during the first half of 1937 increased 10 per cent to 199,204,362 pounds and owing largely to an increase in average price from 3.5178 cents per pound during the first six months of 1936 to 5.857 cents per pound during the corresponding period of 1937, the total value of production rose 83 per cent to \$11,667,399. The mines of British Columbia accounted for 99 per cent of the total output; exports of lead in concentrates from the Yukon were higher; the Sterling mine in Nova Scotia reported shipments of lead concentrates, also. No production was recorded for Quebec during the first six months of 1937.

Table 30 - LEAD PRODUCTION(/) IN CANADA, also IMPORTS AND EXPORTS OF LEAD, 1935 and 1936.

	1 9 3 5		1 9 3 6	
	Pounds	Value	Pounds	Value
		\$		\$
PRODUCTION -				
Nova Scotia .....	...	...	1,901,712	74,414
Quebec	2,047,624	64,156	2,047,689	80,126
Ontario	22,532	706	17,442	683
Manitoba	19,179	601	...	...
British Columbia	336,784,326	10,552,059	376,645,367	14,738,133
Yukon (a)	231,418	7,250	2,568,699	100,513
TOTAL	339,105,079	10,624,772	383,180,909	14,993,869
IMPORTS -				
Old and scrap, pig and block.	108,863	5,472	63,879	4,234
Bars and sheets	69,794	2,959	36,192	2,117
Litharge	1,750,400	100,689	1,968,600	124,001
Acetate of lead	216,600	16,504	128,569	8,637
Nitrate of lead	201,160	11,447	163,283	9,292
Other manufactures .....	...	70,988	...	79,823
Pipe lead	4,022	301	24,084	1,818
Shots and bullets	9,824	696	8,066	828

Table 30 - LEAD PRODUCTION (A) in CANADA, also IMPORTS AND EXPORTS OF LEAD, 1935 and 1936 (concluded).

1935 and 1936 (concluded).									
1935					1936				
Pounds					Value				
					\$				
IMPORTS (concluded)									
Tea lead	3,410			252		...			...
Lead arsenate	324,328			26,388		223,300			20,096
Lead tetraethyl, compounds of	2,381,734			1,249,477		3,019,356			1,414,720
Lead capsules for bottles ...	...			44,965		...			63,964
Lead pigments -									
Dry white lead	16,196			1,089		21,302			1,458
White lead, ground in oil ..	16,788			1,424		15,137			1,348
Dry red lead and orange mineral	595,584			35,392		847,859			55,353
TOTAL .....	...			1,568,043		...			1,787,689
EXPORTS -									
Lead, contained in ore, etc. -									
To - United States	114,300			4,570		2,724,800			119,513
Belgium	11,182,300			285,081		5,676,200			154,431
Total Lead in Ore	11,305,100			289,955		9,395,500			287,569
Pig Lead, refined lead, etc. -									
To - United Kingdom	187,815,800			4,482,586		200,687,700			6,248,505
United States	1,800			98		1,300			76
Japan	69,257,200			1,751,691		98,560,300			3,140,296
France	7,611,300			178,887		5,878,500			182,159
Netherlands	672,100			23,099		...			...
China	6,689,900			157,764		5,967,900			193,229
Brazil	3,456,900			95,766		6,471,400			224,247
Germany	10,800			350		595,700			18,999
Other countries	7,397,700			181,228		3,188,100			105,771
Total Pig Lead	282,913,500			6,871,469		321,350,900			10,113,282
TOTAL LEAD EXPORTS	294,218,600			7,161,424		330,746,400			10,400,851

(A) Including lead in ores exported and lead refined in Canada.

(a) Includes a small quantity of lead produced in the Northwest Territories in 1935.

Production of lead from all types of Canadian ores from 1887 to 1936, inclusive, totalled 5,154,623,103 pounds valued at \$242,128,550.

Table 31 - PRODUCTION OF REFINED LEAD IN CANADA, 1931 - 1936.

Year	Pounds	Year	Pounds
1931	278,448,457	1934	314,457,735(A)
1932	253,136,522	1935	327,515,277(A)
1933	254,565,861	1936	363,449,490(A)

(A) Primary lead only.

Table 32 - AVAILABLE STATISTICS ON THE CONSUMPTION OF LEAD IN SPECIFIED CANADIAN MANUFACTURING INDUSTRIES, 1934 and 1935.

Industries	Items Used	1934	1935
		Pounds	Pounds
Brass and copper products ..	(Pig lead	631,928	534,606
	(Scrap and other lead	119,275	162,421
Paints and pigments	Pig lead	12,569,302	15,183,865
White metal alloys	(Pig lead, etc.	8,759,089	8,209,962
	(Scrap lead	9,760,366	11,924,180
Electrical apparatus	(Pig lead	13,211,023	17,329,633
	(Scrap lead	166,684	106,732
	(Lead sheets, etc.	556,427	786,558
Iron and steel	Lead	915,285	1,096,432
GRAND TOTAL - METAL		46,689,379	55,334,389
	(Red lead	561,358	632,816
	(Litharge	923,612	1,291,625
Paints and Pigments	(Basic carbonate white dry		
	(lead	2,595,179	2,709,809
	(Basic carbonate white		
	(lead - in oil	1,216,995	1,300,585
	(Basic sulphate white lead -		
	(sublimed	11,069	92,442
Electrical apparatus	Lead oxides	4,899,031	3,781,853

NOTE - Corresponding data for 1936 not yet complete.

Table 33 - USE OF LEAD IN THE UNITED STATES, BY PERCENTAGE, 1929, 1933-1936.

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

Purpose	1929	1933	1934	1935	1936
Ammunition	4.23	7.19	7.13	5.42	5.13
White lead	12.31	13.15	13.22	14.85	13.50
Red lead and litharge	3.09	8.45	8.61	8.81	8.52
Storage batteries	21.60	32.70	33.40	32.47	30.15
Cable covering	22.63	6.99	7.21	7.22	9.69
Building	9.87	5.78	6.15	5.94	6.31
Automobiles	1.85	1.11	1.50	1.86	1.75
Foil	4.09	5.01	3.32	2.95	4.50
Bearing metal	3.39	2.54	2.48	2.41	2.61
Solder	3.81	3.56	3.28	3.71	3.47
Typemetal	1.85	2.45	2.66	2.78	2.68
Caulking	3.24	2.67	2.05	2.23	2.13
Other uses	8.04	8.40	8.99	9.35	9.56
TOTAL	100.00	100.00	100.00	100.00	100.00

Table 34 - WORLD'S MINE PRODUCTION OF LEAD, 1929, 1935 and 1936.

(Supplied by Metallgesellschaft Aktiengesellschaft)

(Lead content - Thousand metric tons)

Country	1929	1935	1936
Germany	52.7	59.1	62.0
France	11.2	0.9	1.0(x)
Greece	5.4	2.3	4.0
United Kingdom	18.9	41.9	30.9
Italy	30.5	24.0	30.0
Yugoslavia	11.8	64.2	65.3
Austria	7.5	5.6	5.9
Poland	11.6	8.0(x)	6.5(x)
Sweden	7.0	8.9	9.5(x)
Spain	116.5	66.2	42.0(x)
Czechoslovakia	4.5	4.0	4.0(x)
Soviet Union, European (1)	1.8	6.8	10.8
Other European countries	3.6	5.7	6.0(x)
EUROPE	283.0	297.6	277.9
British India (Burma)	88.1	79.0	79.1
China (2) .....	...	5.0(x)	5.3(x)
Japan (3)	3.4	7.4	8.0
Turkey, Asiatic	6.6	4.4	7.6
Soviet Union, Asiatic (1)	9.9	30.0	40.0
Other Asiatic countries	5.7	1.8	2.0(x)
ASIA	113.7	127.6	142.0
Algeria	9.0	1.3	3.0
Northern Rhodesia	1.7	0.2	0.3
Tunis	17.4	4.7	10.0
Other African countries	24.0	1.1	6.5
AFRICA	52.1	7.3	19.8
United States of America	587.9	300.4	334.2
Bolivia	15.0	9.7	14.5
Canada	148.1	153.8	173.6
Mexico	248.5	184.2	215.7
Newfoundland	12.3	27.0	22.5
Peru	21.4	28.5	30.0(x)
Other American countries	5.3	2.8	5.5
AMERICA	1,038.5	706.4	796.0
AUSTRALASIA and OCEANIA	197.3	225.4	235.0.
PRODUCTION	1,684.6	1,364.3	1,470.7

(1) The division of the U.S.S.R. production figures between European and Asiatic Soviet Union has been made as an estimate only.

(2) Prior to 1932, included in "other Asiatic countries".

(3) Smelter production.

(x) Estimated.

ZINC - "Since the breakdown at the end of 1934 of the international zinc cartel, there has been a tendency for production in almost every country to increase Negotiations continued from October, 1935, up to the middle of 1936 with the hope of reconstituting the cartel but at this time the outbreak of civil war in Spain added to the difficulties and discussion was abandoned .. In general, however, the zinc position remains somewhat unsatisfactory compared with that of lead, a fact which must be attributed primarily to the fact that consumption has not expanded as fast as that of many other metals and primary commodities. Galvanizing still accounts for a high percentage of the total consumption and the recovery in brass consumption and the development of relatively new uses such as die casting has not been sufficient completely to offset the tendency for the consumption of galvanized goods to decline, or at any rate to show little increase." (O.K. Roskill - The Mining Journal, London).

Table 35 - PRODUCTION(b) OF ZINC FROM CANADIAN ORES, 1924 - 1936.

Year	Pounds	\$	Price per pound (Canadian funds)
1924	98,909,077	6,274,791	6.70
1925	109,268,511	8,328,446	7.96
1926 ....(x)	149,938,105	11,110,413	7.41
1927	165,495,525	10,250,793	6.19
1928	184,647,374	10,143,050	5.49
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.....(a)	333,182,736	11,045,007	3.31

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

(a) Year of maximum Canadian zinc production.

(b) 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 1936 totalled \$138,698,771.

- - - - -

Zinc production during the first six months of 1937 totalled 170,535,713 pounds valued at \$9,348,768, an increase of 8 per cent in quantity and 79 per cent in value. The average zinc price for the period, on the basis of the London market and transposed to Canadian funds, was 5.482 cents per pound as compared with 3.3093 cents for the first six months of 1936. British Columbia's production totalled 135,651,801 pounds as compared with 122,109,829 pounds during the first half of last year. Manitoba and Saskatchewan, combined, accounted for 31,805,540 pounds as compared with 32,038,740 pounds in the first half of 1936. Shipments from the Sterling mine in Nova Scotia made up the remainder.

Table 36 - PRODUCTION IN CANADA, IMPORTS AND EXPORTS OF ZINC, 1935 and 1936.

Table 30 - PRODUCTION IN CANADA, IMPORTS AND EXPORTS OF ZINC, 1935 AND 1936									
1935					1936				
	Pounds		Value		Pounds		Value		
			\$				\$		
PRODUCTION -									
Nova Scotia .....		...	...		6,180,219		204,874		
Quebec	5,322,844		164,955		6,896,123		228,606		
Manitoba	51,129,980		1,584,513		36,744,951		1,218,095		
Saskatchewan	8,974,720		278,126		27,692,869		918,019		
British Columbia	255,222,315		7,909,314		255,668,574		8,475,413		
TOTAL	320,649,859		9,936,908		333,182,736		11,045,007		
IMPORTS -									
Zinc dust	1,648,100		80,837		1,619,800		68,914		
Zinc in blocks, pigs, bars and rods and zinc plates, n.o.p. ...	18,100		2,111		11,400		1,238		
Zinc in sheets and strips, and zinc plates for marine boilers .	5,579,000		349,013		5,739,200		394,327		
Zinc spelter	115,300		4,254		...		...
Zinc white (zinc oxide)	11,768,314		460,122		13,240,889		519,425		
Zinc sulphate	2,042,284		29,459		832,886		12,830		
Zinc, chloride of	1,869,056		55,942		1,933,034		60,724		
Zinc, manufactures of, n.o.p. ...	...		128,536		...		121,863		
Lithopone	17,383,273		620,615		18,859,517		666,667		
TOTAL .....	...		1,730,889		...		1,845,988		
EXPORTS -									
Zinc, contained in ore -									
To - Belgium	6,329,300		124,118		31,584,500		553,802		
Japan	2,175,500		23,486		2,455,200		37,781		
United Kingdom	2,935,700		48,750		...		...
France	3,030,800		53,555		4,535,200		126,291		
Germany	5,128,300		87,800		556,900		9,372		
United States	600		23		200		7		
Total	19,600,200		337,732		39,132,000		727,253		
Zinc, scrap, dross and ashes -									
To - United Kingdom	669,300		14,144		520,000		10,236		
United States	210,000		2,480		176,300		1,661		
Japan	3,385,000		21,851		2,879,800		32,435		
Belgium	1,598,200		21,198		1,316,600		18,163		
Total	6,267,500		63,719		5,007,100		63,875		
Zinc, spelter -									
To - United Kingdom	222,213,700		6,406,584		226,904,300		6,918,919		
United States	1,246,400		36,130		4,602,900		144,729		
British India	2,744,100		69,185		430,800		13,224		
Chile	230,500		8,922		300,100		9,460		
Belgium	9,427,200		264,996		4,929,800		139,656		
Brazil	1,198,900		37,749		795,300		23,316		
China	3,671,100		109,437		5,570,800		165,728		
France	3,103,600		87,416		1,747,500		51,979		
Germany	44,800		1,618		314,900		10,254		
Italy	1,120,100		29,692		...		...
Japan	25,436,900		745,229		34,351,800		1,029,521		
Mexico	56,000		1,757		309,700		12,071		
British South Africa ...	336,000		8,542		63,500		1,828		
Total	270,918,800		7,809,691		280,422,900		8,523,906		
GRAND TOTAL - EXPORTS	296,786,500		8,211,142		324,562,000		9,315,034		

Table 37 - REFINED NEW ZINC PRODUCED IN CANADA, 1931 - 1936.

Year	Short tons	Year	Short tons
1931	118,622	1934	134,917
1932	86,141	1935	149,523
1933	91,946	1936	151,103

Table 38 - AVAILABLE STATISTICS ON THE CONSUMPTION OF ZINC IN SPECIFIED CANADIAN MANUFACTURING INDUSTRIES, 1934 and 1935.

Industry	Items used	1934	1935
		Pounds	Pounds
Brass and copper products ..	(Zinc castings) (Zinc ingots and bars) (Zinc plates, slabs and sheets) (Zinc scrap)	3,920,176	4,434,898
White metal alloys	(Zinc spelter) (Zinc scrap)	1,100,791 283,278	941,935 1,291,099
Electrical apparatus	(Zinc ingots and bars) (Zinc sheets)	448,343 1,587,233	636,199 2,193,970
Paints and pigments	Zinc and zinc ore	1,762,565	2,813,565
Iron and steel	Zinc	19,017,095	20,449,488
Miscellaneous chemicals	Zinc sheet	67,724	52,977
GRAND TOTAL - METAL		28,210,109	32,865,354
Paints and pigments	(Zinc oxide) (Leaded zinc oxides and zinc leads) (Lithopone)	2,438,544 2,130,219 9,558,309	2,476,286 1,944,073 11,601,125
Electrical apparatus	Zinc chloride	252,545	348,756
Toilet preparations	Zinc oxide	64,540	70,232

NOTE - Corresponding data for 1936 are not yet complete.

Table 39 - MANUFACTURE OF ZINC IN THE UNITED STATES, BY PERCENTAGE.

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

Purpose	1926	1929	1935	1936
Galvanizing	46.60	45.71	41.23	41.37
Brass making	28.92	29.17	26.22	28.72
Rolled zinc	13.87	10.77	11.94	9.40
Die castings	2.17	5.68	11.73	12.31
Other purposes	8.44	8.67	8.88	8.20
TOTAL	100.00	100.00	100.00	100.00

Table 40 - WORLD'S MINE PRODUCTION OF ZINC, 1932, 1935 and 1936.
(Supplied by "Metallgesellschaft Aktiengesellschaft")
(Zinc content - Thousand metric tons)

Country	1932	1935	1936
Germany	87.7	139.4	147.0
Belgium	3.0(x)	0.5(x)	0.5(x)
France	1.2	(b)	(b)
Greece	6.7	0.5	1.0(x)
United Kingdom .....	...	1.2	14.3
Italy	32.2	54.0(x)	80.0(x)
Yugoslavia	37.0	47.2	40.8
Norway	8.9	6.7	8.0(x)
Austria	1.1	3.0	3.2(x)
Poland	27.0	46.0(x)	48.0(x)
Sweden	24.5	31.7	35.0(x)
Spain	35.2	33.3	35.0(x)
Soviet Union, European (2) ...	8.0	22.0	32.0
Other European countries	6.4	7.4	7.5(x)
EUROPE	278.9	392.9	442.3
(a)	245.0	345.0	390.0
British India	24.0	45.2	45.0
China	3.7	3.5(x)	4.5
French Indo-China	5.0	5.0	5.0
Japan (x)	12.0	20.0	18.0
Soviet Union, Asiatic (2) ...	9.3	24.2	34.0
Other Asiatic countries	1.6	8.0	9.5
ASIA	55.6	105.9	116.0
(a)	49.0	93.0	102.0
Algeria	1.9	2.2	3.0
Rhodesia (3) .....	...	21.0	21.1
Tunis .....	...	0.2	1.5
Other African countries .....	...	...	1.7
AFRICA	1.9	23.4	27.3
(a)	1.5	23.0	26.0
United States of America (3) .	258.8	469.9	522.7
Bolivia	13.0	7.8	13.6
Canada (3)	78.1	145.4	151.4
Mexico	57.2	135.9	150.3
Newfoundland	62.0	67.0	58.0
Other American countries	0.2	9.7	10.5
AMERICA	469.3	835.7	906.5
(a)	420.0	750.0	815.0
AUSTRALASIA and OCEANIA	117.5	150.9	194.0
(a)	100.0	125.0	165.0
PRODUCTION	923.2	1,508.8	1,686.1
(a)	815.5	1,336.0	1,498.0

(a) Probable recovered zinc content.

(2) The division of the U.S.S.R. production figures between European and Asiatic Soviet Union has been made as an estimate only.

(3) Recoverable or recovered zinc content.

(x) Estimated. (b) In these years the production was insignificant.

Table 41 - CADMIUM PRODUCTION(x) IN CANADA, 1928 - 1936.

Year	Pounds	\$	Year	Pounds	\$
1928	491,894	341,374	1933	246,041	78,733
1929	773,976	675,294	1934	293,611	95,665
1930	456,582	337,871	1935	580,530	441,203
1931	323,139	180,958	1936	785,916	699,465
1932	65,425	26,824			

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

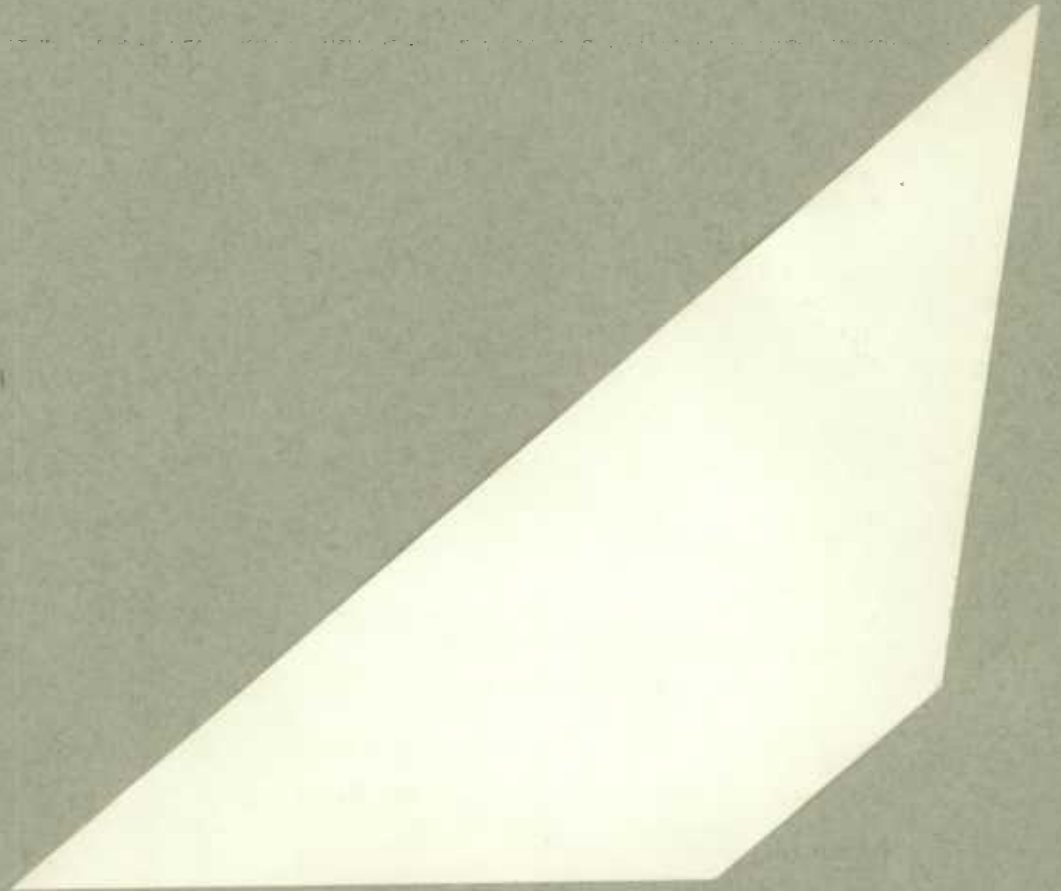
OPERATORS IN THE CANADIAN SILVER-LEAD-ZINC MINING INDUSTRY, 1936.

<u>Name of Operator</u>	<u>Head Office Address</u>	<u>Location of Mine</u>
<u>NOVA SCOTIA -</u>		
British Metal Corp. (Canada) Ltd.	706 Dominion Square Bldg., Montreal, P.Q.	Sterling
<u>QUEBEC -</u>		
(x) Christie Mining Synd. Inc. Estate Pierre Tetreault	4219 West Hill Ave., Montreal 70 Holyrood Ave., Outremont	Gaspe Co. Montauban Les Mines
Gulf Development Co. Ltd.	486 St. John St., Montreal	Restigouche
(x) Mega Mining Synd.	55 Scott St., Quebec	-
(x) Shawinigan Mining and Smelting Co. Ltd.	Montauban Les Mines	Portneuf Co.
<u>ONTARIO -</u>		
(x) Lennox Mines Ltd.	Napanee	Lennox and Addington Co.
<u>BRITISH COLUMBIA -</u>		
Allco Silver Mines Ltd. Banker Mine	708 Yorkshire Bldg., Vancouver Kaslo	Revelstoke M.D. Ainsworth
(x) Base Metals Mining Corp. Ltd.	602 .350 Bay St., Toronto, Ont.	Field
Beaverdell Wellington Synd.	Greenwood	Beaverdell
Beaver Silver Mines Ltd.	708 Yorkshire Bldg., Vancouver	Greenwood
Bell Mine Ltd.	Box 464, Penticton	Beaverdell
Bryant and McLeod	Canal Flats	Canal Flats
Campbell, C. J.	New Denver	Slocan M.D.
Cliff Mine	616 Stock Exchange Bldg., Vancouver	Slocan M.D.
Consolidated Mining and Smelting Co. Ltd.	Trail	Kimberley
Cons. Queen Bess Mines Ltd.	Alamo	Alamo
Cunningham Mines Ltd.	Alamo	Sandon
Denver Mining Synd.	Box 3, New Denver	Slocan M.D.
Doney, E., & Son	Box 17, Sandon	Slocan M.D.
Erickson, E. A.	Silverton	Slocan M.D.
(x) Falconer, T. W.	Alice Arm	Naas River M.D.
Galena Farm Cons. Mines Ltd.	616 Stock Exchange Bldg., Vancouver	Slocan M.D.
Harris and Kelly	Sandon	Slocan M.D.

OPERATORS IN THE CANADIAN SILVER-LEAD-ZINC MINING INDUSTRY, 1936. (concluded)

<u>Name of Operator</u>	<u>Head Office Address</u>	<u>Location of Mine</u>
<u>BRITISH COLUMBIA (concluded) -</u>		
Henderson, Geo.	Slocan City	Slocan M.D.
Highland Bell Ltd. (Highland Lass Ltd.)	Box 464, Penticton	Beaverdell
Invermay Annex Mining Co. Ltd.	518 Richards St., Vancouver	near Hope
Jackson Mines Ltd.	616 Stock Exchange Bldg., Vancouver	Slocan M.D.
(x) Jenny Long Mines Ltd.	800 Hall Bldg., Vancouver	Stump Lake
Johnson, Albert	Silverton	Slocan M.D.
Hicks, Wm.	Slocan City	Slocan M.D.
King, Thos.	Smithers	Smithers
Krao Mines Ltd.	Kaslo	Ainsworth M.D.
MacKay & Nelson	Grand Forks	Greenwood M.D.
Madden, Wm.	Box 515, Greenwood	Yale M.D.
McDonald, B. T.	Stewart	Portland Canal
Michaely Silver Lead Mines Ltd.	Bay Ave., Trail	Nelson M.D.
Molly Hughes Mining Co.	New Denver	Slocan M.D.
Morning Star Mine	Slocan	Slocan City
Nicola Mines and Metals Ltd.	1015 Rogers Bldg., Vancouver	Stump Lake
Noble Five Mines Ltd.	Nelson	Slocan M.D.
Nordman, J. L.	Beaverdell	Greenwood M.D.
(x) Ottawa Silver Mining and Milling Co.	401 Sherwood Bldg., Spokane, Wash., U.S.A.	Slocan City M.D.
Pendry, J. H.	New Denver	Sandon M.D.
Sally Mines Ltd.	Box 220, Penticton	Beaverdell
(x) Salmo-Malartic Mines Ltd.	608 .. 159 Bay St., Toronto, Ont.	Nelson M.D.
Sherdahl, C.	Box 226, Rossland	Canyon Creek
(x) Silver Ridge Mining Co. Ltd.	Sandon	Slocan M.D.
United Empire Gold and Silver Mining Co. Ltd.	510 West Hastings St., Vancouver	Stewart
Welldun Mining, Milling and Power Co. Ltd.	Stewart	Stewart
Western Exploration Co. Ltd.	Silverton	Kaslo M.D.
Whitewater Mines Ltd.	Kaslo	Retallack
<u>YUKON TERRITORY -</u>		
Brefalt and Tolmie	Mayo Landing	Mayo Dist.
Butyer and Mecure	Keno Hill	Mayo Dist.
Colly and Morrison	Mayo Landing	Mayo Dist.
Gordon and Moreau	Keno Hill	Mayo Dist.
Treadwell Yukon Co. Ltd.	Crocker Bldg., San Francisco, Calif. U.S.A.	Mayo Dist.
<u>NORTHWEST TERRITORIES -</u>		
(x) Bear Exploration and Radium Ltd.	1112 .. 85 Richmond St. W., Toronto, Ont.	Great Bear Lake
(x) Consolidated Mining and Smelting Co. of Canada, Ltd.	Trail	Great Bear Lake
El Bonanza Mining Corp. Ltd.	80 King St. W., Toronto, Ont.	Great Bear Lake
Eldorado Gold Mines Ltd.	80 King St. W., Toronto, Ont.	Great Bear Lake
(x) Hottah Lake Gold and Radium Mines Ltd.	1116 Federal Bldg., Toronto, Ont.	Beaverlodge Lake
- - - - -		
(x) Active but not producing.		

65
32
—
1



STATISTICS CANADA LIBRARY
BIBLIOTHEQUE STATISTIQUE CANADA



1010693419