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MINING, METALLURGICAL & CHEMICAL STATISTICS

THE NON-FERROUS SMELTING AND REFINING INDUSTRY IN CANADA 1945

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THE NON-FERROUS SMELTING AND REFINING INDUSTRY IN CANADA, 1945

The Non-ferrous Smelting and Refining Industry, as defined for statistical purposes, includes only those firms engaged primarily in the smelting of non-ferrous ores or concentrates and the refining of metals recovered therefrom.

The net value added by the industry in the processing of crude or semi-crude material during 1945 totalled $89,898,878 compared with $123,303,038 in 1944. Refined products included gold, silver, nickel, copper, lead, zinc, aluminum, tin, magnesium, antimony, bismuth, cobalt, cadmium, selenium, tellurium, and sulphur; other end products of individual plants or companies were copper-nickel matte, cobalt salts, cobalt oxide, nickel oxide, nickel salts, bauxite concentrates, arsenious oxide, sulphuric acid, platinum metals residues, zinc oxide, zinc dust, thallium residues and blister and anode copper. Statistics relating to the production of pitchblende products at Port Hope, Ontario, are not included in this report.

It should be noted, in a study of these data, that firms operating both mines and smelters may vary from year to year the nominal values of crude ores, etc., shipped from their mines to their own smelters, with the result that in some years the mining industry proper is favoured economically at the expense of the non-ferrous smelting and refining industry and vice versa. The total annual net value of commodity production for the Dominion as a whole is, however, not affected by these arbitrary internal evaluations.

Fuels and purchased electricity consumed by the industry in 1945 totalled $26,837,162 compared with $36,907,623 in 1944. The value of chemicals and other process supplies consumed during the year under review amounted to $19,735,628 as against $32,730,138 in the preceding year.

Employees during 1945 totalled 16,821 compared with 23,927 in 1944 and salaries and wages paid amounted to $33,853,120 compared with $44,536,991 in the preceding year. The wage earners in 1945 included 13,281 males and 741 females as against 19,550 and 1,006 respectively for last year.

With the cessation of hostilities there was a drastic reduction in the production of aluminum, nickel and other metals which were supplying war industries. Shortage of labor restricted the production of metals which continued to have a large peacetime demand.

Aluminum Company of Canada Ltd. - Production of aluminum is entirely by this company, which has its alumina plant at Arvida and reduction plants at Arvida, Ile Maligne, Shawinigan Falls, La Tuque and Beauharnois, all in the province of Quebec. These reduction plants have a total rated capacity of about 550,000 tons of aluminum a year or over 20 per cent of the estimated productive capacity of the world.

Fabricating plants are located at Kingston, Toronto and Etobicoke in Ontario, and at Shawinigan Falls in Quebec. These plants consume only a small part of the Company's production and Aluminum Company of Canada is primarily a producer and exporter of aluminum ingot.

Note: This report was compiled by A. R. Deir, Mining Statistician.

Developments in 1945 consisted mainly in adjusting production to meet the lesser peacetime demand. The reduction plants at Shawinigan Falls, La Tuque and Beauharnois were closed and operations were concentrated at Arvida and Ile Maligne.

The principal imported raw materials used in the Canadian aluminum industry are bauxite from British Guiana, coal and coke from the United States, fluorspar from Newfoundland, and cryolite from Greenland and the United States.

No bauxite occurs in Canada, but clay, shale, nepheline syenite, and anorthosite, containing 20 to 30 per cent alumina, are found in many parts of the country. The utilization of these low grade raw materials has been the object of much research and various recovery processes have been developed. The economic success of any of these processes will depend largely upon local conditions, but it has yet to be proved that any of them can compete on an even basis with the Bayer process, the standard method for producing alumina.

Noranda Mines Ltd. (From the Company's annual report) - During 1945 the smelter treated 923,091 tons of ore, concentrate and slag, including 291,577 tons of custom ores and concentrates, and produced 106,292,352 pounds of anodes. After deducting the copper, gold and silver which was recovered from slags received from various shippers, the estimated production of new metals was 102,323,546 pounds of fine copper, 226,095 ounces of gold and 1,149,970 ounces of silver. The estimated recovery from Horne Mine, ore and concentrate was 53,565,532 pounds of copper, 174,217 ounces of gold and 439,330 ounces of silver.

During the year under review the concentrator treated 858,523 tons of ore from the Horne Mine, from which 153,789 tons of copper-gold concentrate were produced and sent to the smelter. The cyanide mill treated 161,087 tons of pyrite from the flotation circuit tailing, from which 13,658 ounces of gold were recovered. 156,482 tons of pyrite were recovered from the cyanide mill tailing and sold to chemical plants.

Canadian Copper Refiners Ltd. - Copper production during the year totalled 96,000 tons. The new copper sulphate plant, which came into production in June, is operating satisfactorily and "Noranda" brand copper sulphate has been accepted as a quality product. The wartime requirements of selenium are being more than offset by new commercial developments.

International Nickel Co. of Canada Ltd. (From the address to shareholders by Robert C. Stanley) - Rapid changes in the Company's activities took place when fighting ended. It was necessary to adjust production, which had been increased from an average of 192,000,000 pounds of nickel per annum during the pre-war period, 1936 to 1939, to an average of 292,000,000 pounds of nickel per annum during 1941 to 1944. At the present time the production of an extra 100,000,000 pounds of nickel per annum, if not consumed, would quickly fill our warehouses and force a complete shutdown, such as actually occurred for a year's time at Copper Cliff after the first world war.

It is of interest to note that no major problem exists in scheduling the production of nickel because of excessive supplies of scrap nickel. Fortunately, the broad diversification of uses for nickel results in the absorption of scrap as produced. This condition is universal throughout the industry, even to the point where scrap containing as little as 1 per cent of nickel is readily utilized

Our copper output from all sources, including copper in Monel metal matte, was 271,657,087 pounds in 1945 compared with 310,468,465 pounds in the previous year. Producers of the red metal are now considering actively its future use, and research

and development of copper markets may be expected.

The sale of 381,741 ounces of the platinum metals is comparable with 303,394 ounces sold in 1944. Aside from important war uses, the increase in the sale of jewelry that occurred has led to an appreciation of the value and utility of the platinum metals in the manufacture of jewelry. Owing to the demand for platinum as a war material the metal palladium became much better known and has in many instances been accepted in its place.

The sales of gold from our ores were 58,179 ounces and silver 1,601,476 ounces, compared with 61,838 ounces and 1,784,633 ounces respectively in 1944. We mine, refine and sell two other metals-selenium and tellurium. Of the former we produced 168,000 pounds as compared with 65,000 pounds in 1944. The glass industry uses selenium as a decolorizing agent for glasswares.

Falconbridge Nickel Mines Ltd. (From the Company's annual report) - During the first half of the year operations in the treatment plant were progressively handicapped by a lack of adequate tonnage. By the end of June the hoisted tonnage was insufficient for a two furnace operation. Accordingly, the small blast furnace was shut down and smelting was continued on a one-furnace basis for the balance of the year. These changes affected metallurgical recovery to some degree.

The plant treated 716,868 tons of ore and produced 19,470 tons of matte containing 10,349 tons of nickel and 5,271 tons of copper. The treated ore had a metal recovery per ton of 28.87 pounds of nickel and 14.71 pounds of copper. Metallurgical losses per ton treated were 3.04 pounds of nickel and 2.66 pounds of copper.

Deloro Smelting and Refining Co. Ltd. - The cobalt refinery at Deloro, the only one in Canada, treated cobalt residues, a by-product from Northern Rhodesian copper mines, for the British Government during the war. These residues are much higher grade than the Canadian material and are comparatively simple to treat, and were the chief source of cobalt for the United Kingdom. No cobalt has been produced at Deloro from Canadian concentrates since the summer of 1940. Large stocks of Canadian ore, held mainly for the United States Government, remain untreated at Deloro. The company operates its silver furnaces only when the accumulation of silver-cobalt ores is enough to make the run worthwhile. Most of the refined white arsenic (As_2O_3) and arsenical insecticides made in Canada are produced by Deloro Smelting and Refining Co. which obtains raw material from the O'Brien Mine in western Quebec and from the silver-cobalt arsenic mines of the Cobalt area.

Dominion Magnesium Ltd. - This firm was the only Canadian producer of magnesium. Its plant at Haley (near Renfrew) Ontario, ceased operations in August after accumulating a large stock of metal and alloys. Shortly after the end of the war in Europe the plant was purchased from the Canadian Government by the operating company, and extensive changes in equipment were under way at the close of the year.

Hudson Bay Mining and Smelting Co. Ltd. (Extracted from the annual report of the company) - Operations of the copper smelter continued to be satisfactory, and all available material was smelted. The tonnage of pay charge treated was somewhat less than in 1944 and amounted to 433,714 tons. Due to the fewer tons of paycharge available for treatment, the gold, silver and copper production was lower than last year. Copper production, however, was exceeded only in 1943 and 1944.

The cadmium plant treated precipitates from the zinc purification plant and produced a total of 135,632 pounds of metallic cadmium, having an average purity of 99.9809 per cent.

The tonnage of zinc concentrates treated during the year was exceeded only in 1943 and 1944. The average zinc assay per ton of concentrates treated was the same as in the preceding year, and the percentage of recovery of zinc from concentrates treated to slab zinc produced was only slightly lower. The tonnage and assay values of zinc concentrates treated during the year were as follows: Tons treated 146,210; assays: Au 0.055 oz.; Ag 1.46 oz.; Cu 0.54%; Zn 45.8%, from which 94,936,880 pounds of slab zinc were produced.

Consolidated Mining and Smelting Co. of Canada Ltd. (From the company's annual report) - During 1945 the supply of labour continued to decrease and reached a low point in the autumn. In spite of this situation, and in consequence of development work carried out in 1944, the rate of operation at the Sullivan Mine was increased. This resulted in increased output of our main products which, together with some improvement in efficiency, reduced costs at Kimberley and Trail.

The Sullivan Mill performance in 1945 deserves special mention because of the remarkable increase in capacity per operating day to 8,457 tons in 1945 from 7,165 in 1944 and 7,496 in 1942, the previous high year. This was accomplished with but little new equipment and metallurgical results were well maintained.

The tonnage of refined lead was increased to 163,142 in 1945 from 143,556 in 1944 and bar zinc output was 134,873 tons compared to 117,365 in 1944. Silver production remained practically unchanged. Efficiencies of our metallurgical operations were generally maintained.

Ready markets continue to exist for our other metals, such as tin, cadmium, bismuth and mercury. No mercury was produced during 1945 and sales were made from stocks accumulated in former years. Mercury prices continued the downward trend which commenced late in 1943, but a firmer tone was evident towards the end of the year.

Table 1 - PRINCIPAL STATISTICS OF THE NON-FERROUS METALLURGICAL INDUSTRY IN CANADA, 1943-1945

		1943(b)	1944(b)	1945
Number of companies		9	9	9
Number of plants		16	16	17
Capital employed	$	392,217,159	(c)	(c)
Number of salaried employees		3,375	3,371	2,749
Salaries	$	7,160,290	7,816,181	6,812,501
Number of wage-earners		23,374	20,556	14,022
Wages	$	41,331,442	36,720,810	27,040,619
Value of plant products (gross) (a)	$	511,213,376	474,206,801	355,676,526
Estimated cost of ores, concentrates, etc., treated	$	317,917,186	281,266,002	219,204,858
Cost of fuel and purchased electricity	$	43,105,101	36,907,623	26,837,162
Process supplies (other than ores, fuel, etc.)	$	38,334,069	32,730,138	19,735,628
Value added by smelting (net)(d)	$	111,857,020	123,303,038	89,898,878

(a) The gross value of production should not be interpreted as the ultimate sale value of finished metal only, as it represents the combined values of all industry (smelting, refining, etc.) end products (blister, copper matte, etc.) and in this sense represents a duplication in values.

Note: Footnotes continued on Page 5.

Footnotes to Table 1 concluded.

(b) Data in this report do not include those relating to Eldorado Mining and Refining Ltd. which mines and refines pitchblende products.
(c) Data not collected in 1944 - 1945.
(d) See preceding text.

Table 2 - NUMBER OF WAGE-EARNERS, BY MONTHS, 1942 - 1945

Month	1942		1943		1944		1945	
	Male	Female	Male	Female	Male	Female	Male	Female
January	15,778	31	22,322	522	22,193	954	15,070	954
February ...	16,298	32	23,120	560	21,737	943	14,796	947
March	16,434	34	23,089	653	21,013	919	14,955	931
April	16,617	39	22,788	727	20,488	922	14,853	922
May	17,223	53	22,552	773	19,574	988	14,423	882
June	18,297	68	22,968	843	19,452	1,023	13,994	857
July	18,900	75	22,785	886	19,389	1,089	13,448	823
August	19,346	81	22,538	917	18,928	1,093	12,819	762
September ..	19,091	206	22,186	943	18,088	1,069	11,983	626
October	20,076	424	21,856	938	18,175	1,052	11,620	591
November ...	20,953	570	22,337	904	18,319	1,024	10,854	473
December ...	21,239	605	22,393	903	16,794	989	10,682	137
AVERAGE ..	18,352	185	22,577	797	19,550	1,006	13,281	741

Table 3 - FUEL AND ELECTRICITY USED IN THE NON-FERROUS SMELTING AND REFINING INDUSTRY, 1944 and 1945

Kind	Unit of measure	For Light and Power		For Metallurgical Purposes	
		Quantity	Cost	Quantity	Cost
			$		$
1944					
Bituminous coal -					
Canadian	short ton	36,435	215,844	208,184	2,994,294
Imported	short ton	37,332	305,034	680,953	5,729,470
Anthracite coal -					
United States	short ton	57	849	103	1,420
Coke	short ton	804	9,360	340,152	4,199,412
Gasoline	Imp. gal.	155,582	47,311	151,821	48,978
Kerosene or coal oil ..	Imp. gal.	31,433	5,621	16,929	3,646
Fuel oil and diesel oil	Imp. gal.	407,688	46,856	45,873,644	3,197,996
Wood (cords of 128 cubic feet)	cord	133	1,245	1,932	21,562
Charcoal	lb.	...	...	1,595,857	27,457
Gas--Manufactured	M cu. ft.	...	...	8,648	7,805
Natural	M cu. ft.	...	...	519	387
Electricity purchased..	K.W.H.	974,507,383	2,476,504	9,453,651,602	17,566,572
TOTAL	...	...	3,108,624	...	33,798,999
Electricity generated -					
For own use	K.W.H.	18,686,868	...	239,070,624	...
For sale	K.W.H.	5,855,077	25,748	...	...

Table 3 - FUEL AND ELECTRICITY USED IN THE NON-FERROUS SMELTING AND REFINING INDUSTRY, 1944 and 1945 (concluded)

Kind	Unit of measure	For Light and Power		For Metallurgical Purposes	
		Quantity	Cost	Quantity	Cost
			$		$
1 9 4 5					
Bituminous coal -					
Canadian	short ton	14,172	85,635	168,420	1,233,702
Imported	short ton	43,045	361,935	556,786	4,771,029
Anthracite coal -					
United States	short ton	36	535	...	...
Other	short ton	...	...	...	...
Coke	short ton	949	11,481	298,756	3,717,932
Gasoline	Imp.gal.	145,650	43,901	118,765	35,871
Kerosene or coal oil	Imp.gal.	15,137	2,848	18,916	4,719
Fuel oil and diesel oil	Imp.gal.	172,727	16,772	31,919,978	2,155,074
Wood (cords of 128 cubic feet)	cord	133	1,244	1,602	22,409
Charcoal	lb.	...	...	1,462,194	26,754
Gas--Manufactured	M cu.ft.	...	...	9,507	8,332
Natural	M cu.ft.	...	...	437	430
Electricity purchased	K.W.H.	931,945,165	2,373,744	5,756,410,390	11,962,815
TOTAL	...	...	2,898,095	...	23,939,067
Electricity generated					
For own use	K.W.H.	15,484,050	...	52,692,752	...
For sale	K.W.H.	5,222,750	18,368	...	...

Table 4 - POWER EMPLOYED IN THE NON-FERROUS SMELTING AND REFINING INDUSTRY, 1945

	Ordinarily in Use		In Reserve or Idle	
	Number of units	Total horse power	Number of units	Total horse power
Steam engines	20	920	2	2,574
Steam turbines	12	9,470	4	6,515
Diesel engines	10	2,789	5	1,075
Gasoline, gas and oil engines, other than Diesel engines	13	953	9	1,055
Hydraulic turbines or water wheels	5	28,200	6	13,882
Electric motors (except motor-generator sets) -				
(a) Operated by purchased power	10,670	262,339	2,621	83,317
TOTAL	10,730	304,671	2,647	108,418
(b) Operated by power generated by above primary units	388	5,325	53	3,228
Stationary boilers	34	27,305	16	15,315
Motor-generator sets	181	90,690	...	...

Table 5 - AVERAGE ANNUAL METAL PRICES, IN CANADIAN DOLLARS, 1929-1945

Year	Gold Troy oz.	Silver Troy oz.	Copper Pound	Lead Pound(/)	Zinc Pound(/)
	$	$	$	$	$
1929	20.67	0.530	0.180(x)	0.050	0.054
1930	20.67	0.381	0.130(x)	0.039	0.036
1931	21.55	0.298	0.0837(x)	0.027	0.025
1932	23.47	0.317	0.0638	0.021	0.024
1933	28.60	0.378	0.0745	0.024	0.032
1934	34.50	0.475	0.0742	0.024	0.030
1935	35.19	0.648	0.0780	0.031	0.031
1936	35.03	0.451	0.0948	0.039	0.033
1937	34.99	0.499	0.131	0.051	0.0490
1938	35.17	0.435	0.0997	0.034	0.031
1939	36.14	0.405	0.101	0.032	0.031
1940	38.50	0.382	0.101	0.034	0.034
1941	38.50	0.3826	0.101	0.034	0.034
1942	38.50	0.4216	0.101	0.034	0.034
1943	38.50	0.4525	0.1175	0.037	0.040
1944	38.50	0.430	0.120	0.045	0.043
1945	38.50	0.47	0.1255	0.05	0.0644

(x) Based on New York; 1932-1944 based on London.
(/) Based on London; prices controlled by government since 1939 and subject to revision since 1939.

Table 6 - TOTAL PRIMARY PRODUCTION OF GOLD IN CANADA, 1940-1945 (from all types of ores)

Year	Fine ounces	$
1940	5,311,145	204,479,083
1941	5,345,179	205,789,392
1942	4,841,306	186,390,281
1943	3,651,301	140,575,088
1944	2,922,911	112,532,073
1945	2,696,727	103,823,990

Table 7 - CANADIAN GOLD PRODUCTION ACCORDING TO METHOD OF COMPUTATION AND RECOVERY, 1940-1945

Year	In alluvial gold	In crude gold bullion produced at mines (a)	In base bullion produced at lead smelters	In blister copper produced (b)	In ores, matte, slags, etc. exported	Total gold produced
	%	%	%	%	%	fine oz.
1940 ..	2.1	82.7	0.6	10.0	4.6	5,311,145
1941 ..	2.0	82.6	0.4	10.3	4.7	5,345,179
1942 ..	2.3	80.8	0.2	12.1	4.6	4,841,306
1943 ..	1.45	78.71	0.19	15.61	4.04	3,651,301
1944 ..	1.14	78.98	0.12	15.41	4.35	2,922,911
1945 ..	1.55	76.77	0.09	15.30	6.29	2,696,727

(a) Includes a relatively small quantity of gold contained in shipments of gold ores, slags, etc., to Canadian smelters.
(b) Blister copper from Canadian smelters is sometimes refined in the United States; also contains a relatively small quantity of gold recovered from auriferous quartz ores.

Table 8 - TOTAL PRIMARY PRODUCTION OF SILVER IN CANADA, 1940-1945 (from all types of ores)

Year	Fine ounces	$
1940	23,833,752	9,116,172
1941	21,754,408	8,323,454
1942	20,695,101	8,726,296
1943	17,344,569	7,849,111
1944	13,627,109	5,859,656
1945	12,942,906	6,083,166

Table 9 - SOURCE OF CANADIAN SILVER PRODUCTION, BY PERCENTAGES, 1940-1945

Source	1941	1942	1943	1944	1945
In silver-cobalt ores	2.6	4.13	0.81	5.05	3.68
In base bullion (/)	45.3	46.16	45.58	35.52	39.52
In gold ores (bullion and placer)	4.1	3.71	3.07	3.18	3.38
In blister and anode copper	31.8	34.28	37.28	39.10	36.55
In matte, copper ores and silver-lead ores, etc., exported (other than silver-cobalt ores)	16.2	11.72	13.26	17.15	16.87
	100.0	100.0	100.0	100.0	100.0

(/) Chiefly from silver-lead ores.

Table 10 - TOTAL PRIMARY PRODUCTION (x) OF COPPER IN CANADA, 1940-1945 (from all types of ores)

Year	Tons	$
1940	327,797	65,773,061
1941	321,658	64,407,497
1942	301,831	60,417,372
1943	287,595	67,170,601
1944	273,535	65,257,172
1945	237,457	59,322,261

(x) Blister copper plus recoverable copper in concentrates and matte exported.

Table 11 - TOTAL PRODUCTION OF NEW COPPER IN CANADA, AND METHOD OF COMPUTATION, 1944 and 1945

	1944		1945	
	Pounds	Value $	Pounds	Value $
In blister and anode copper produced (x)	493,946,346	59,273,337	437,459,705	54,901,192
In ores, concentrates and any copper matte exported	40,090,591	4,810,849	26,495,439	3,325,177
In nickel-copper matte exported	13,033,181	1,172,986	10,958,908	1,095,892
TOTAL	547,070,118	65,257,172	474,914,052	59,322,261

(x) Contains a relatively small quantity of copper contained in gold and silver ores shipped to Canadian smelters.

Table 12 - PRODUCTION (x) OF REFINED COPPER IN CANADA FOR SPECIFIED YEARS

Year	Tons	Year	Tons
1915	...	1938	227,240
1916 (/).....	483	1939	231,634
1917	3,901	1940	261,878
1918	3,809	1941	278,224
1919	3,467	1942	268,447
1935	173,290	1943	251,495
1936	191,595	1944	256,244
1937	215,080	1945	228,861

(x) From all sources.
(/) First electrolytic copper produced commercially in Canada.

Table 13 - TOTAL PRODUCTION (x) OF NICKEL IN CANADA, 1940-1945

Year	Tons	$
1940	122,779	59,822,591
1941	141,129	68,656,795
1942	142,606	69,998,427
1943	144,009	71,675,322
1944	137,299	69,204,152
1945	122,565	61,982,133

(x) Includes nickel in matte exported, refined nickel produced in Canada, and nickel in oxides and salts sold or produced.

Table 14 - TOTAL PRIMARY PRODUCTION OF ALUMINUM IN CANADA, 1940-1945 (From imported ores)

Year	Tons
1940	109,144
1941	213,873
1942	340,596
1943	495,750
1944	462,065
1945	215,713

Table 15 - TOTAL PRIMARY PRODUCTION (x) OF LEAD IN CANADA, 1940-1945 (From all types of Canadian ores)

Year	Tons	$
1940	235,925	15,863,605
1941	230,084	15,470,815
1942	256,071	17,218,233
1943	222,030	16,670,041
1944	152,291	13,706,199
1945	173,497	17,349,723

(x) Lead content of base bullion produced in Canada plus recoverable lead in ores exported.

Table 16 - REFINED LEAD PRODUCTION IN CANADA(x), 1940-1945

Year	Total from all sources	From primary material only
	Tons	Tons
1940	220,544	220,088
1941	228,595	228,027
1942	243,839	243,306
1943	224,493	223,871
1944	143,556	142,581
1945	163,142	162,538

(x) Produced at Trail B.C. by the Consolidated Mining & Smelting Co. of Canada Ltd.

Table 17 - TOTAL PRIMARY PRODUCTION (x) OF ZINC IN CANADA, 1940-1945 (From all types of Canadian ores)

Year	Tons	$
1940	212,014	14,463,624
1941	256,191	17,477,337
1942	290,129	19,792,579
1943	305,377	24,430,174
1944	275,412	23,685,405
1945	258,607	33,308,556

(x) Refined zinc produced in Canada plus recoverable zinc in ores exported.

Table 18 - REFINED NEW ZINC PRODUCED IN CANADA, 1933-1945

Year	Short tons	Year	Short tons
1933	91,946	1940	185,722
1934	134,917	1941	213,608
1935	149,523	1942	215,795
1936	151,103	1943	206,510
1937	158,542	1944	168,518
1938	171,932	1945	182,266
1939	175,641		

Table 19 - PRODUCTION OF REFINED CADMIUM IN CANADA, 1940-1945

Year	Pounds	$
1940	908,127	1,056,152
1941	1,251,291	1,469,016
1942	1,148,963	1,355,776
1943	786,611	904,602
1944	526,970	579,667
1945	646,064	639,603

Table 20 - PRODUCTION OF REFINED SELENIUM IN CANADA, 1940-1945

Year	Pounds	$
1940	179,860	343,533
1941	406,930	777,236
1942	495,369	951,108
1943	374,013	654,523
1944	298,592	537,466
1945	379,187	728,039

Table 21 - PRODUCTION OF REFINED TELLURIUM IN CANADA, 1940-1945

Year	Pounds	$
1940	3,491	5,607
1941	11,453	18,394
1942	11.084	17,735
1943	8,600	15,050
1944	10,661	18,657
1945	484	929

Table 22 - PRODUCTION OF PRIMARY TIN IN CANADA, 1940-1945

Year	Pounds	$
1940	...	...
1941	64,744	33,667
1942	1,237,863	643,689
1943	776,937	450,623
1944	516,626	299,643
1945	849,983	492,990

Table 23 - PRODUCTION OF PRIMARY BISMUTH METAL IN CANADA, 1940-1945

Year	Pounds	$
1940	58,529	81,004
1941	7,511	10,396
1942	347,556	479,627
1943	407,597	562,494
1944	123,875	154,844
1945	189,815	260,047

Table 24 - PRODUCTION OF PRIMARY MERCURY METAL IN CANADA, 1940-1945

Year	Pounds	$
1940	153,830	369,317
1941	536,304	1,335,697
1942	1,035,914	2,943,807
1943	1,690,240	4,559,200
1944	735,908	1,210,375
1945	...	...

Table 25 - PRODUCTION OF PRIMARY ANTIMONY METAL IN CANADA, 1940-1945

Year	Pounds	$
1940	2,594,492	396,468
1941	3,185,077	445,911
1942	3,041,108	516,988
1943	1,114,166	189,408
1944	1,937,933	281,000
1945	1,667,951	290,557

Table 26 - PRODUCTION (x) OF COBALT FROM CANADIAN ORES, 1940-1945

Year	Pounds	$
1940	794,359	1,235,220
1941	263,257	255,904
1942	83,871	88,444
1943	175,961	191,407
1944	36,283	34,106
1945	109,123	90,026

(x) In metal, salts and oxides produced in Canada and metal in crude ores exported. Exclusive of metal in ores placed on Government stock pile at Deloro, Ontario during 1942, 1943 and 1944, but includes metal content of ores shipped from stock pile.

Table 27 - PRODUCTION OF MOLYBDENITE CONCENTRATES IN CANADA, 1940-1945

Year	Tons	$
1940	11	10,280
1941	98	88,470
1942	114	134,963
1943	392	549,515
1944	1,064	1,079,698
1945	489	411,663

Table 28 - PRODUCTION OF TUNGSTEN CONCENTRATES IN CANADA, 1940-1945

Year	Pounds	$
1940	12,002	7,303
1941	82,846	38,712
1942	520,981	406,275
1943	1,508,621	1,083,538
1944	886,745	245,780
1945	1,153	1,045

Table 29 - PRODUCTION OF MAGNESIUM METAL IN CANADA, 1940-1945

Year	Pounds	$
1940	...	...
1941 (x)	10,905	2,944
1942	808,718	355,836
1943	7,153,974	2,074,652
1944	10,579,778	2,575,695
1945	7,358,545	1,607,264

(x) Year of first commercial production.

Table 30 - PRODUCTION OF ARSENIC (x) (As_2O_3) IN CANADA, 1940-1945

Year	Tons	$
1940	1,047	62,798
1941	1,769	153,195
1942	3,927	580,893
1943	1,577	254,009
1944	1,314	180,866
1945	1,023	130,909

(x) Refined arsenic produced in Canada plus arsenic content of crude arsenic exported.

Table 31 - PLATINUM METALS (x) PRODUCED IN CANADA, 1940-1945

Year	Platinum		Palladium and Other Platinum Metals	
	Ounces	$	Ounces	$
1940	108,464	4,239,424	91,522	3,520,746
1941	124,257	4,747,860	97,432	3,396,304
1942	285,188	10,897,033	222,573	8,279,221
1943	219,706	8,458,681	126,004	5,233,068
1944	157,523	6,064,635	42,929	1,960,085
1945	208,234	8,017,010	458,674	18,871,074

(x) Metal content of concentrates exported; recovered from nickel-copper ores.

Table 32 - CAPACITIES OF CANADIAN COPPER SMELTING AND REFINING WORKS, 1945

Company	Blast Furnaces		Reverberatories		Converters
	Number	Annual capacity--tons of ore and concentrates	Number	Annual capacity--tons of ore and concentrates	Number
Falconbridge Nickel Mines, Ltd.	2	350,000	...	...	3
Hudson Bay Mining & Smelting Co. Ltd.	...	...	1	675,000	3
Noranda Mines, Ltd.	...	...	2	1,300,000	5
International Nickel Co. of Canada Ltd. -					
Copper Cliff	2	430,000	9	3,500,000	20
Coniston	4	950,000	...	...	5

Electrolytic Copper Refineries -	Annual Capacity--short tons 1945
Canadian Copper Refiners, Ltd.	112,000
International Nickel Co. of Canada, Ltd.	168,000

Table 33 - LEAD SMELTING CAPACITY OF CANADA, 1945

Company	Number of blast furnaces	Annual capacity tons of charge
Consolidated Mining & Smelting Company of Canada, Limited, Trail, B. C.	5	711,101

Table 34 - CAPACITY OF ELECTROLYTIC ZINC PLANTS IN CANADA, 1945

Company	Estimated annual capacity for cathode zinc
	short tons
Consolidated Mining & Smelting Company of Canada, Ltd.	172,875
Hudson Bay Mining & Smelting Co., Ltd.	50,000

DIRECTORY OF FIRMS IN THE NON-FERROUS SMELTING AND REFINING INDUSTRY, 1945

Name of Firm	Head or Executive Office Address	Location of Plant
Quebec		
Aluminum Company of Canada Ltd.	1700 Sun Life Bldg., Montreal	Arvida, La Tuque Shawinigan Falls Isle Maligne, Beauharnois.
Canadian Copper Refiners Ltd.	1600 Royal Bank Bldg., Toronto, Ontario	Montreal East
Noranda Mines Limited	1600 Royal Bank Bldg., Toronto, Ontario	Noranda
Ontario		
Deloro Smelting & Refining Co. Limited	Deloro	Deloro
Dominion Magnesium Ltd.	67 Yonge St., Toronto	Haley
Eldorado Mining and Refining	80 King St. W., Toronto	Port Hope
Falconbridge Nickel Mines Ltd.	304 Bay St., Toronto	Falconbridge
International Nickel Co. of Canada Limited	Copper Cliff	Copper Cliff, Coniston, Port Colborne
Manitoba		
Hudson Bay Mining and Smelting Co. Limited	500 Royal Bank Bldg., Winnipeg	Flin Flon
British Columbia		
Consolidated Mining & Smelting Co. of Canada Limited	Trail	Trail