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MINING, METALLURGICAL & CHEMICAL STATISTICS

THE NON-FERROUS SMELTING AND REFINING INDUSTRY IN CANADA 1946

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THE NON-FERROUS SMELTING AND REFINING INDUSTRY IN CANADA, 1946

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 1946 totalled $69,565,922 compared with $89,898,878 in 1945. Refined products included gold, silver, nickel, copper, lead, zinc, aluminum, tin, magnesium, calcium, 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, 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 electricity used by the industry in 1946 totalled $19,855,976 compared with $26,837,162 in 1945. The value of chemicals and other process supplies consumed during the year amounted to $16,000,964 as against $19,735,628 in the preceding year.

Employees during 1946 totalled 14,546 compared with 16,821 in 1945, and salaries and wages paid amounted to $30,648,361 compared with $33,853,120 in the previous year.

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.

Developments in 1946 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.

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

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.

Noranda Mines Ltd. (From the company's annual report) - During the period from January 1 to November 21, 1946 the smelter treated 752,518 tons of ore, concentrate, slag and scrap brass (shell cases), from which 74,065,031 pounds of anodes were produced. Included in the total material smelted were 250,226 tons of ore, concentrate and scrap which was smelted for other companies on a toll basis. After deducting the copper, gold and silver which was recovered from secondary products such as slag and scrap brass, the estimated recovery of new metals was 70,378,097 pounds of fine copper, 198,660 ounces of gold and 823,171 ounces of silver. The estimated recovery from Horne Mine ore and concentrate was 27,525,548 pounds of copper, 155,197 ounces of gold and 317,997 ounces of silver.

Canadian Copper Refiners Ltd. - Copper production during the year totalled 78,000 tons compared with an operating capacity of 112,000 tons. "Noranda" Brand Copper Sulphate was well established in the Canadian market in 1946 and an additional product, tribasic copper sulphate, will be produced in 1947. The demand for selenium and selenium compounds continued to improve.

International Nickel Company of Canada, Ltd. (From the company's annual report) - Mining and smelting operations were about 50 per cent of capacity during the first half-year. Beginning in September they were progressively stepped up and by the year-end the rate of production was 75 per cent of the maximum war-time figure.

Construction at the Copper Cliff smelter, referred to in last year's Report, has been delayed by lack of materials. This situation is improving and it is expected that construction will be completed in 1947. The plant will furnish a new product, Nickel Oxide Sinter, for use in the manufacture of steels, and will also furnish intermediate sintered products for our nickel refineries.

Falconbridge Nickel Mines Ltd. (From the company's annual report) - Smelter production was limited to the output of the smaller blast furnace from January 9th to December 18th with the larger furnace operating alone before and after that period. Both the concentrator and smelter operated over 99 per cent of their possible working time. During the year considerable experimental work was carried on in the plants which, combined with changes in the furnace operations, affected metallurgical recovery to some degree.

Total ore treated - 486,516 tons
Matte produced - 12,780 tons

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 during the war. Production temporarily ceased when the stockpile of metal became large enough to meet the current demands of the market. Equipment previously used for magnesium recovery is now used to produce metallic calcium. Calcium is being used by the research project on nuclear fission.

Hudson Bay Mining and Smelting Co. Ltd. (From the company's annual report) - The copper smelter operated satisfactorily during the year, and all available material was smelted. The tonnage of pay charge was slightly higher than in the previous year and amounted to 434,194 tons. The tonnage and average assay values of Hudson Bay concentrates and ores smelted, and the tonnage of custom concentrates treated, were as follows:

Tons H.B. concentrates and ores	Assay values per ton			Tons custom concentrates
	Au-oz.	Ag-oz.	Cu. %	
387,477	0.336	4.54	11.11	45,565

After allowing for metals due on account of custom concentrates, the company shipped for its own account the following: Gold, 143,282 ounces; silver, 1,839,426 ounces; copper, 79,989,315 pounds; selenium, 121,729 pounds.

The tonnage of zinc concentrates treated during the year and the average zinc assay per ton of concentrates treated were both higher than in 1945. The tonnage of high-quality four-nines-plus grade zinc produced was the largest for any year.

The tonnage and assay values of the zinc concentrates treated were:

Tons treated	Assays			
	Au-oz.	Ag-oz.	Cu %	Zn %
147,189	0.044	1.24	0.55	46.0

from which 102,656,828 pounds of slab zinc were produced.

The cadmium plant treated precipitates from the zinc purification plant and produced a total of 166,333 pounds of metallic cadmium, having an average purity of 99.9887 per cent. Production and purity were both higher than for the preceding year.

Consolidated Mining and Smelting Company of Canada, Ltd. (From the company's annual report) - Refined lead tonnage at 165,744 compares with 163,142 in 1945. Refined zinc tonnage was 134,393 and compares with 134,873 in the previous year. Refined silver production was substantially higher at 6,004,825 ounces and compares with 5,125,971 in 1945. There was a pronounced improvement in metal recoveries.

Conduct of our metallurgical operations was generally satisfactory. Zinc plant performance was unchanged from that of recent years. Our Lead Smelter operation was normal and many advances were made in development studies, which will lead to technological improvements in future years.

While there was some increase in tonnages of customs ores, the totals were relatively small. Increased tonnages are indicated for 1947.

Table 1 - PRINCIPAL STATISTICS OF THE NON-FERROUS METALLURGICAL INDUSTRY IN CANADA, 1944-1946

		1944(b)	1945	1946
Number of companies		9	9	9
Number of plants		16	17	15
Number of administrative and office employees		3,371	2,749	2,238
Salaries	$	7,816,181	6,812,501	6,277,577
Number of workmen		20,556	14,022	12,308
Wages	$	36,720,810	27,040,619	24,370,784
Value of plant products (gross) (a)	$	474,206,801	355,676,526	304,718,524
Estimated cost of ores, concentrates, etc., treated	$	281,266,002	219,204,858	196,864,066
Cost of fuel and purchased electricity	$	36,907,623	26,837,162	22,287,572
Process supplies (other than ores, fuel, etc.)	$	32,730,138	19,735,628	16,000,964
Value added by smelting (net)(c)	$	123,303,038	89,898,878	69,565,922

(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.) and products (blister, copper matte, etc.) and in this sense represents a duplication in values.
(b) Data in this report do not include those relating to Eldorado Mining and Refining Ltd. which mines and refines pitchblende products.
(c) See preceding text.

Table 2 - NUMBER OF WORKMEN, BY MONTHS, 1945 and 1946 (Administrative and Office Employees not Included)

Month	1945		1946	
	Male	Female	Male	Female
January	15,070	954	10,780	88
February	14,796	947	11,210	75
March	14,955	931	11,434	71
April	14,853	922	11,709	69
May	14,423	882	12,240	70
June	13,994	857	12,591	58
July	13,448	823	12,746	59
August	12,819	762	12,599	60
September	11,983	626	12,478	60
October	11,620	591	12,648	64
November	10,854	473	13,169	66
December	10,682	137	13,211	65
AVERAGE	13,281	741	12,239	69

Table 3 - FUEL AND ELECTRICITY USED IN THE NON-FERROUS SMELTING AND REFINING INDUSTRY, 1945 and 1946

Kind	Unit of measure	For Light and Power		For Metallurgical Purposes	
		Quantity	Cost	Quantity	Cost
			$		$
1945					
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	...	...
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	...	...
1946					
Bituminous coal: Canadian	short ton	6,172	61,423	202,521	1,611,379
Imported	short ton	31,765	262,163	399,515	3,323,001
Anthracite coal: United States	...	...	...	...	...
Coke	short ton	838	11,178	207,008	2,606,694
Gasoline	Imp.gal.	157,376	48,582	155,155	52,997
Kerosene or coal oil	Imp.gal.	13,833	2,648	8,903	2,128
Fuel oil and diesel oil	Imp.gal.	203,261	17,649	29,487,461	1,948,226
Wood (cords of 128 cubic feet).	cord	12	145	1,630	21,827
Charcoal	lb.	...	...	1,260,034	25,318
Gas: Manufactured	M cu. ft.	...	...	8,979	8,171
Natural	M cu. ft.	...	...	422	321
Electricity purchased	K.W.H.	807,740,131	2,027,808	5,290,492,836	10,255,914
TOTAL	...	...	2,431,596	...	19,855,976
Electricity generated -					
For own use	K.W.H.	11,190,000	...	...	...
For sale	K.W.H.	4,528,000	14,630	...	...

Table 4 - POWER EMPLOYED IN THE NON-FERROUS SMELTING AND REFINING INDUSTRY, 1946

	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	10	9,420	8	11,929
Diesel engines	11	3,089	5	1,075
Gasoline, gas and oil engines, other than Diesel engines	13	953	9	1,055
Hydraulic turbines or water wheels	...	...	11	42,082
Electric motors (except motor-generator sets) -				
(a) Operated by purchased power.	8,260	216,677	3,017	73,585
TOTAL	8,314	231,059	3,052	132,300
(b) Operated by power generated by above primary units	348	4,808	50	3,209
Stationary boilers	34	27,555	16	15,065
Motor-generator sets	177	98,375	38	20,339

Table 5 - AVERAGE ANNUAL METAL PRICES, IN CANADIAN DOLLARS, 1937-1946

Year	Gold Troy oz.	Silver Troy oz.	Copper Pound	Lead Pound	Zinc Pound
			(Dollars)		
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
1946	36.75	0.8365	0.128	0.0675	0.0781

Table 6 - TOTAL PRIMARY PRODUCTION OF GOLD IN CANADA, 1942-1946 (From all types of ores)

Year	Fine ounces	$
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
1946	2,832,554	104,096,359

Table 7 - SOURCE OF CANADIAN GOLD PRODUCTION, 1942-1946

Year	In alluvial gold	In crude gold bullion produced at mines	In base bullion produced at lead smelters	In blister copper	In ores, matte, slags, etc., exported	Total gold produced
	%	%	%	%	%	fine oz.
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
1946	2.15	80.91	0.16	13.48	3.30	2,832,554

Table 8 - TOTAL PRIMARY PRODUCTION OF SILVER IN CANADA, 1942-1946 (From all types of ores)

Year	Fine ounces	$
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
1946	12,544,100	10,493,139

Table 9 - SOURCE OF CANADIAN SILVER PRODUCTION, 1942-1946

Source	1942	1943	1944	1945	1946
			(Per cent)		
In silver-cobalt ores	4.13	0.81	5.05	3.68	3.05
In base bullion (*)	46.16	45.58	35.52	39.52	46.72
In gold ores (bullion and placer)	3.71	3.07	3.18	3.38	3.79
In blister and anode copper	34.28	37.28	39.10	36.55	31.72
In matte, copper ores and silver-lead ores, etc., exported (other than silver-cobalt ores)	11.72	13.26	17.15	16.87	14.72

(*) Chiefly from silver-lead ores.

Table 10 - TOTAL PRIMARY PRODUCTION(*) OF COPPER IN CANADA, 1942-1946 (From all types of ores)

Year	Tons	$
1942	301,831	60,417,372
1943	287,595	67,170,601
1944	273,535	65,257,172
1945	237,457	59,322,261
1946	183,968	46,632,093

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

Table 11 - TOTAL PRODUCTION OF NEW COPPER IN CANADA, BY SOURCES, 1945 and 1946

	1945		1946	
	Pounds	Value	Pounds	Value
		$		$
In blister and anode copper produced (*)	437,459,705	54,901,192	333,856,435	42,733,624
In ores, concentrates and any copper matte exported.	26,495,439	3,325,177	17,515,212	2,241,946
In nickel-copper matte exported	10,958,908	1,095,892	16,565,228	1,656,523
TOTAL	474,914,052	59,322,261	367,936,875	46,632,093

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

Table 12 - PRODUCTION(*) OF REFINED COPPER IN CANADA, 1942-1946

Year	Tons
1942	268,447
1943	251,495
1944	256,244
1945	228,861
1946	167,221

(*) From all sources.

Table 13 - TOTAL PRODUCTION(*) OF NICKEL IN CANADA, 1942-1946

Year	Tons	$
1942	142,606	69,998,427
1943	144,009	71,675,322
1944	137,299	69,204,152
1945	122,565	61,982,133
1946	96,062	45,385,155

(*) 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, 1942-1946 (From imported ores)

Year	Tons
1942	340,596
1943	495,750
1944	462,065
1945	215,713
1946	193,400

Table 15 - TOTAL PRIMARY PRODUCTION(*) OF LEAD IN CANADA, 1942-1946 (From all types of Canadian ores)

Year	Tons	$
1942	256,071	17,218,233
1943	222,030	16,670,041
1944	152,291	13,706,199
1945	173,497	17,349,723
1946	176,987	23,893,230

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

Table 16 - REFINED LEAD PRODUCTION IN CANADA, 1942-1946

Year	Total from all sources	From primary material only
	(tons)	
1942	243,839	243,306
1943	224,493	223,871
1944	143,556	142,581
1945	163,142	162,538
1946	165,744	165,076

Table 17 - TOTAL PRIMARY PRODUCTION(*) OF ZINC IN CANADA, 1942-1945 (From all types of Canadian ores)

Year	Tons	$
1942	290,129	19,792,579
1943	305,377	24,430,174
1944	275,412	23,685,405
1945	258,607	33,308,556
1946	235,310	36,755,450

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

Table 18 - REFINED NEW ZINC PRODUCED IN CANADA, 1942-1946

Year	Short tons
1942	215,795
1943	206,510
1944	168,518
1945	182,266
1946	185,683

Table 19 - PRODUCTION OF CADMIUM IN CANADA, 1942-1946

Year	Pounds	$
1942	1,148,963	1,355,776
1943	786,611	904,602
1944	526,970	579,667
1945	646,064	639,603
1946	802,648	979,230

Table 20 - PRODUCTION OF SELENIUM IN CANADA, 1942-1946

Year	Pounds	$
1942	495,369	951,108
1943	374,013	654,523
1944	298,592	537,466
1945	379,187	728,039
1946	521,867	949,798

Table 21 - PRODUCTION OF TELLURIUM IN CANADA, 1942-1946

Year	Pounds	$
1942	11,084	17,735
1943	8,600	15,050
1944	10,661	18,657
1945	484	929
1946	15,848	24,405

Table 22 - PRODUCTION OF PRIMARY TIN IN CANADA, 1942-1946

Year	Pounds	$
1942	1,237,863	643,689
1943	776,937	450,623
1944	516,626	299,643
1945	849,983	492,990
1946	874,186	507,028

Table 23 - PRODUCTION OF PRIMARY BISMUTH METAL IN CANADA, 1942-1946

Year	Pounds	$
1942	347,556	479,627
1943	407,597	562,484
1944	123,875	154,844
1945	189,815	260,047
1946	240,504	336,706

Table 24 - PRODUCTION OF PRIMARY MERCURY METAL IN CANADA, 1942-1946

Year	Pounds	$
1942	1,035,914	2,943,807
1943	1,690,240	4,559,200
1944	735,908	1,210,375
1945	...	...
1946	...	...

Table 25 - PRODUCTION OF PRIMARY ANTIMONY IN CANADA, 1942-1946

Year	Pounds	$
1942	3,041,108	516,988
1943	1,114,166	189,408
1944	1,937,933	281,000
1945	1,667,951	290,557
1946	642,145	96,322

Table 26 - PRODUCTION(*) OF COBALT FROM CANADIAN ORES, 1942-1946

Year	Pounds	$
1942	83,871	88,444
1943	175,961	191,407
1944	36,283	34,106
1945	109,123	90,026
1946	73,900	70,215

(*) 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, 1942-1946

Year	Tons	$
1942	114	134,963
1943	392	549,515
1944	1,064	1,079,698
1945	489	411,663
1946	318	295,640

Table 28 - PRODUCTION OF TUNGSTEN CONCENTRATES IN CANADA, 1942-1946

Year	Pounds	$
1942	520,981	406,275
1943	1,508,621	1,083,538
1944	886,745	245,780
1945	1,153	1,045
1946	...	...

Table 29 - PRODUCTION OF MAGNESIUM METAL IN CANADA, 1942-1946

Year	Pounds	$
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
1946	320,677	75,538

Table 30 - PRODUCTION OF ARSENIC(*) (As_2O_3) IN CANADA, 1942-1946

Year	Tons	$
1942	3,927	580,893
1943	1,577	254,009
1944	1,314	180,866
1945	1,023	130,909
1946	373	38,264

(*) Refined arsenic produced in Canada plus arsenic content of crude arsenic exported. Excluding arsenic in ores exported, but not paid for, from British Columbia.

Table 31 - PLATINUM METALS(*) PRODUCED IN CANADA, 1942-1946

Year	Platinum		Palladium and Other Platinum Metals	
	Ounces	$	Ounces	$
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
1946	121,771	7,672,791	117,566	5,162,801

(*) From 1945 the figures represent the metal content of concentrates produced from nickel-copper ores. For earlier years the figures refer to refined metals recovered and the contents of concentrates sold. 1945 includes an accumulated revision of previous years.

Table 32 - CAPACITIES OF CANADIAN COPPER SMELTING AND REFINING WORKS, 1946

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 1946
Canadian Copper Refiners, Ltd.	112,000
International Nickel Co. of Canada, Ltd.	168,000

Table 33 - LEAD SMELTING CAPACITY OF CANADA, 1946

Company	Number of blast furnaces	Annual capacity tons of charge
Consolidated Mining & Smelting Company of Canada, Limited, Trail, British Columbia	5	711,100

Table 34 - CAPACITY OF ELECTROLYTIC ZINC PLANTS IN CANADA, 1946

Company	Estimated annual capacity for cathode zinc short tons
Consolidated Mining & Smelting Company of Canada. Ltd.	172,875
Hudson Bay Mining & Smelting Co., Ltd.	57,080

DIRECTORY OF FIRMS IN THE NON-FERROUS SMELTING AND REFINING INDUSTRY, 1946

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		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

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