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THE NON-FERROUS SMELTING AND REFINING INDUSTRY, 1950

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NOTICE

The Industry and Merchandising Division of the Bureau of Statistics collects and compiles figures on (a) the primary industries in Canada—mining, forestry and fishing; (b) manufacturing; (c) construction, and (d) merchandising and services.

For the purpose of annual compilation and publication, the manufacturing industries have been classified into major groups, prefaced by two reports of a general nature, as follows:

I Summary Report on Manufacturing Industries
II Manufacturing Industries by Geographical Distribution
III Foods and Beverages
IV Tobacco and Tobacco Products
V Rubber Products
VI Leather Products
VII Miscellaneous Manufactures
VIII Textiles
IX Wood and Paper Products
X Printing Trades
XI Operations in the Woods
XII Iron and Steel Products
XIII Transportation Equipment
XIV Non-ferrous Metal Products
XV Electrical Apparatus and Supplies
XVI Non-metallic Mineral Products
XVII Products of Petroleum and Coal
XVIII Chemicals and Allied Products

The present report belongs in Group XIV, Non-ferrous metal Products. It is punched to permit of filing in a ring binder along with others of the group. The reports in this group are:

A General Review, 25¢.
B The Aluminum Products Industry, 25¢.
C The Brass and Copper Products Industry, 25¢.
D The White Metal Alloys Industry, 25¢.
E The Jewellery and Silverware Industry, 25¢.
F The Non-ferrous Smelting and Refining Industry, 25¢.
G The Miscellaneous Non-ferrous Metal Products Industry, 25¢.

THE NON-FERROUS SMELTING AND REFINING INDUSTRY, 1950

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 smelting of imported ores is included.

The net value added by the industry in the processing of crude or semi-crude materials during 1950 totalled $222,711,781 compared with $181,907,847 in 1949. Refined products included gold, silver, nickel, copper, lead, zinc, aluminum, tin, magnesium, calcium, barium, titanium, zirconium, 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, blister and anode copper, titanium slag, and iron ingots. Statistics relating to the production of pitchblende products at the refinery at Port Hope, Ontario, are not included in this report. One furnace in the new smelter at Sorel, Quebec, which treats titanium ores from the Allard Lake district in that province, was started late in 1950.

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 1950 cost $38,473,238 including 9,044,617,144 k.w.h. of purchased electricity at $19,492,641.

The value of chemicals and other process supplies consumed during the year amounted to $31,207,564.

The average number of employees during 1950 was 19,863 which was slightly higher than the average of 19,150 in 1949. Earnings of the employees amounted to $58,748,362 compared with $55,133,065 for last year.

The 10 firms in this industry operated 17 smelters or refineries. The names of the operators and the plant locations are given in the directory on the last page of this report.

TABLE 1. Principal Statistics of the Non-ferrous Smelting and Refining Industry, 1948-1950

–		1948	1949	1950
Number of companies		9	10	10
Number of plants		17	16	17
Number of employees – Administrative and office		2,858	2,773	3,134
Workmen		16,843	16,377	16,729
Total		**19,701**	**19,150**	**19,863**
Earnings – Administrative and office	$	8,917,548	9,870,736	10,940,723
Workmen	$	43,359,289	45,262,329	47,807,639
Total	$	**52,276,837**	**55,132,065**	**58,748,362**
Gross value of products[1]	$	576,383,967	599,188,135	669,882,806
Estimated cost of ores, concentrates, etc., treated	$	362,227,660	348,459,951	377,490,223
Cost of fuel and purchased electricity	$	36,288,387	37,004,311	38,473,238
Process supplies (other than ores, fuel, etc.)	$	31,037,029	31,816,026	31,207,564
Value added by smelting (net)[2]	$	146,830,891	181,907,847	222,711,781

1. The gross value of production should not be interpreted as the ultimate sales value of finished metal only, as it represents the combined figure for smelters and refineries and the usual duplication occurs when the product of one plant is shipped to, and becomes the material for, another plant. For example, blister copper is given a value at the smelter since it is the final product for that works; it is then shipped to the refinery for which it is the principal material, where values are placed on the refined products.
2. See preceding text.

Note. Data in this report do not include those relating to Eldorado Mining and Refining Ltd. which mines and refines pitchblende products.

TABLE 2. Number of Workmen, by Months, 1948-1950 (Administrative and Office Employees not Included)

Month	1948		1949		1950	
	Male	Female	Male	Female	Male	Female
	(Number)					
January	15,831	56	16,177	54	15,501	68
February	16,078	52	16,481	55	15,469	66
March	16,338	54	16,839	56	15,588	67
April	16,560	56	16,737	53	15,985	64
May	17,247	61	16,849	54	16,648	64
June	17,501	64	16,569	55	16,977	63
July	17,599	64	16,593	59	17,170	67
August	17,395	60	16,479	60	17,205	68
September	17,326	61	16,085	61	17,284	69
October	17,088	61	15,768	57	17,371	67
November	16,229	54	15,744	55	17,353	67
December	16,225	53	15,543	55	17,390	69
Average	**16,785**	**58**	**16,321**	**56**	**16,662**	**67**

TABLE 3. Average Annual Metal Prices, in Canadian Dollars, 1941-1950

Year	Gold	Silver	Copper	Lead	Zinc
	Troy oz.	Troy oz.	Pound	Pound	Pound
	(Dollars)				
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
1947	35.00	0.72	0.2039	0.1367	0.1123
1948	35.00	0.75	0.2235	0.1804	0.1393
1949	36.00	0.7425	0.1997	0.158	0.1325
1950	36.05	0.8082	0.2342	0.1445	0.1565

TABLE 4. Production of New Gold and Silver, 1946-1950 (From all types of ores)

Year	Gold		Silver	
	Fine ounces	$	Fine ounces	$
1946	2,832,554	104,096,359	12,544,100	10,493,139
1947	3,070,221	107,457,735	12,504,018	9,002,893
1948	3,529,608	123,536,280	16,109,982	12,082,487
1949	4,123,518	148,446,648	17,641,493	13,098,808
1950	4,441,227	168,988,687	23,221,431	18,767,561

TABLE 5. Source of Canadian Gold Production, 1946-1950

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.
1946	2.15	80.91	0.16	13.48	3.30	2,832,554
1947	1.74	84.41	0.15	9.40	4.30	3,070,221
1948	2.23	83.19	0.22	10.01	4.35	3,529,608
1949	2.35	83.94	0.23	9.71	3.77	4,119,302
1950	2.43	81.51	0.38	12.26	3.42	4,441,227

TABLE 6. Source of Canadian Silver Production, 1946-1950

Source	1946	1947	1948	1949	1950
	(Per cent)				
In silver-cobalt ores	3.05	2.41	6.08	5.41	12.68
In base bullion [1]	46.72	43.96	41.03	52.81	53.05
In gold bullion and placer	3.79	4.03	3.82	3.84	3.06
In blister and anode copper	31.72	31.43	27.47	27.00	22.04
In matte, copper ores and silver-lead ores, etc., exported (other than silver-cobalt ores)	14.72	18.17	21.80	10.94	9.17

1. Chiefly from silver-lead ores. Includes silver bullion from silver-lead ores.

TABLE 7. Production of New Copper, 1946-1950 (From all types of ores)

Year	Copper in all forms [1]		Refined copper
	Tons	$	Tons
1946	183,968	46,632,093	167,221
1947	225,862	91,541,888	202,427
1948	240,732	107,159,758	221,275
1949	263,457	104,719,151	226,083
1950	264,209	123,211,407	238,204

1. Blister copper plus recoverable copper in concentrates and matte exported.

TABLE 8. Production of New Copper, by Sources, 1949 and 1950

Source	1949		1950	
	Tons	Value	Tons	Value
		$		$
In blister and anode copper produced[1]	224,422	89,647,631	231,241	108,313,437
In ores, concentrates and any copper matte exported	30,672	12,228,151	24,573	11,456,085
In nickel-copper matte exported	8,363	2,843,369	8,395	3,441,885
Total	**263,457**	**104,719,151**	**264,209**	**123,211,407**

1. Includes a small quantity of copper contained in gold and silver ores shipped to Canadian smelters.

TABLE 9. Production[1] of Nickel, 1946-1950

Year	Tons	$
1946	96,062	45,385,155
1947	118,621	70,650,764
1948	131,740	86,904,235
1949	128,689	99,173,289
1950	123,654	112,104,685

1. Includes nickel in matte exported, refined nickel produced in Canada, and nickel in oxides and salts sold or produced.

TABLE 10. Production of Lead, 1946-1950

Year	Lead in all forms[1]		Refined lead[2]
	Tons	$	Tons
1946	176,987	23,893,230	165,744
1947	161,668	44,200,124	162,000
1948	167,251	60,344,146	160,025
1949	159,775	50,488,879	146,149
1950	165,697	47,886,452	170,023

1. Lead content of base bullion produced from Canadian ores plus recoverable lead in ores exported.
2. Includes some lead refined from foreign ores.

TABLE 11. Production of Zinc, 1946-1950

Year	Zinc in all forms[1]		Refined zinc[2]
	Tons	$	Tons
1946	235,310	36,755,450	185,683
1947	207,863	46,486,010	177,878
1948	234,164	65,237,956	196,575
1949	288,262	76,372,147	206,045
1950	313,227	98,040,145	204,367

1. Refined zinc produced in Canada plus recoverable zinc in ores exported.
2. Includes some refined zinc from foreign ores.

TABLE 12. Production of Bismuth and Cadmium, 1946-1950

Year	Bismuth		Cadmium	
	Pounds	$	Pounds	$
1946	240,504	336,706	802,648	979,230
1947	284,372	560,213	718,534	1,235,879
1948	240,242	480,484	766,090	1,398,114
1949	102,913	210,992	846,541	1,735,409
1950	191,621	431,147	848,406	1,968,302

TABLE 13. Production of Selenium and Tellurium, 1946-1950

Year	Selenium		Tellurium	
	Pounds	$	Pounds	$
1946	521,867	949,798	15,848	24,405
1947	501,090	937,038	9,194	15,814
1948	390,894	781,788	11,425	19,994
1949	318,225	652,361	11,692	21,046
1950	261,973	633,975	10,075	19,143

TABLE 14. Production of New Aluminum and Magnesium, 1946-1950

Year	Aluminum[1]	Magnesium	
		Pounds	$
	Tons		
1946	193,400	320,877	75,538
1947	299,061	Not available for publication	
1948	367,079		
1949	369,466		
1950	396,882		

1. All from imported ores.

TABLE 15. Production of New Antimony and Tin, 1946-1950

Year	Antimony (Content of antimonial lead)		Tin	
	Pounds	$	Pounds	$
1946	642,145	96,322	874,186	507,028
1947	1,150,483	384,255	714,196	517,794
1948	310,062	113,173	691,332	688,567
1949	158,288	61,020	619,117	633,047
1950	643,540	215,586	796,403	828,259

TABLE 16. Production (shipments) of Molybdenite Concentrates and Tungsten Concentrates, 1946-1950

Year	Molybdenite concentrates			Tungsten concentrates		
	Gross Weight	MoS_2 Content	$	Gross Weight	WO_3 Content	$
	Tons	Tons		Tons	Tons	
1946	368	338	295,640	—	—	—
1947	396	380	309,048	334	314	660,792
1948	174	152	137,143	705	523	1,046,160
1949	—	—	—	117	126	252,380
1950	109	52	60,059	943	142	160,343

TABLE 17. Production of Cobalt and Arsenic, 1946-1950

Year	Cobalt[1]		Arsenious Oxide[2]	
	Pounds	$	Tons	$
1946	73,900	70,215	373	38,264
1947	572,673	875,644	394	49,348
1948	1,544,852	2,029,178	581	82,909
1949	619,065	952,469	263	26,332
1950	583,806	964,003	397	52,029

1. Content in metal and oxides produced in Canada and in ores exported.
2. Refined white arsenic produced in Canada plus arsenic content of crude arsenic exported. Excludes arsenic in ores exported from British Columbia as it is not paid for.

TABLE 18. Platinum Metals[1] Produced, 1946-1950

Year	Platinum		Palladium and other platinum metals	
	Ounces	$	Ounces	$
1946	121,771	7,672,791	117,566	5,162,801
1947	94,570	5,582,467	110,332	4,387,740
1948	121,404	10,622,850	148,343	6,295,132
1949	153,784	11,596,002	182,233	8,239,915
1950	124,571	10,255,929	148,741	7,578,144

1. Figures represent the metal content of concentrates produced from nickel-copper ores. Included are metals recovered from alluvial deposits.

TABLE 19. Capacities of Canadian Copper Smelting and Refining Works, 1950

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	500,000	—	—	3
Hudson Bay Mining & Smelting Co. Ltd.	—	—	1	575,000	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
	Annual Capacity (Short tons)				
Electrolytic Copper Refineries:					
Canadian Copper Refiners, Ltd.	132,000				
International Nickel Co. of Canada, Ltd.	168,000				

TABLE 20. Lead Smelting Capacity of Canada, 1950

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

TABLE 21. Capacity of Electrolytic Zinc Plants in Canada, 1950

Company	Estimated annual capacity for cathode zinc
	Short tons
Consolidated Mining & Smelting Company of Canada, Ltd	172,875
Hudson Bay Mining & Smelting Co., Ltd	57,185

Directory of Firms in the Non-ferrous Smelting and Refining Industry, 1950

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
Quebec Iron and Titanium Corp.	1255 Phillips Square, Montreal	Sorel
Ontario:		
Deloro Smelting & Refining Co. Ltd	Deloro	Deloro
Dominion Magnesium Ltd	67 Yonge St., Toronto	Haley
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

Note. Information relating to operations of the Eldorado Mining and Refining Co. at Port Hope, Ontario is secret and, therefore, not included in this report.

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