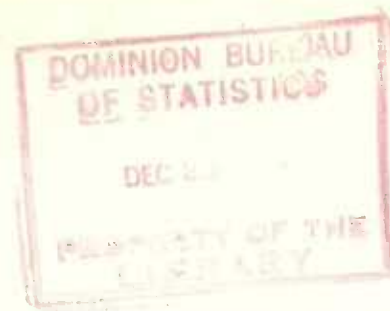


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CANADA



THE NON-FERROUS SMELTING AND REFINING INDUSTRY, 1953

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NOTICE

The annual reports prepared by the Industry and Merchandising Division of the Bureau of Statistics are divided into 3 volumes, as follows: **Volume I** — The Primary Industries, including mining, forestry and fisheries; **Volume II** — Manufacturing; **Volume III** — Merchandising and Services. The volumes are made up of parts, and the parts in turn are subdivided according to the industries which they comprise.

Volume I consists of the following parts:

Part I — Mineral Statistics

Part II — Forestry Statistics — Operations in the Woods

Part III — Fisheries Statistics

Part I includes the following reports which constitute the complete series on Mineral Statistics of Canada. Individual reports are issued as the information becomes available; they are arranged in a form suitable for binding.

- A — General Review of the Mining Industry, 50¢
- B — The Gold Mining Industry, 50¢
- C — The Silver-Lead-Zinc Mining Industry, 25¢
- D — The Nickel-Copper Mining, Smelting and Refining Industry, 25¢
- E — The Miscellaneous Metal Mining Industry, 25¢
- F — The Non-ferrous Smelting and Refining Industry, 25¢
- G — The Coal Mining Industry, \$1.00
- H — The Crude Petroleum and Natural Gas Industry, 25¢
- I — The Asbestos Mining Industry, 25¢
- J — The Feldspar and Quartz Mining Industry, 25¢
- K — The Gypsum Industry, 25¢
- L — The Peat Industry, 25¢
- M — The Salt Industry, 25¢
- N — The Talc and Soapstone Industry, 25¢
- O — The Miscellaneous Non-metal Mining Industry, 25¢
- P — The Cement Manufacturing Industry, 25¢
- Q — The Clay and Clay Products Industry, 25¢
- R — The Lime Industry, 25¢
- S — The Sand and Gravel Industry, 25¢
- T — The Stone Industry, 25¢
- U — Contract Drilling in the Mining Industry, 25¢

THE NON-FERROUS SMELTING AND REFINING INDUSTRY, 1953

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 in the refining of metals recovered therefrom. The smelting of imported ores is included. Secondary smelters, which treat scrap metals only, are not included.

The net value added by the industry in the processing of crude or semi-crude materials during 1953 totalled \$310,207,228 compared with \$266,721,382 in 1952. Refined products included gold, silver, nickel, copper, lead, zinc, aluminum, tin, magnesium, calcium, barium, titanium, zirconium, antimony, bismuth, cobalt, cadmium, selenium and tellurium. 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 dioxide 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.

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

Fuel and electricity used by the industry in 1953 cost \$52,594,155 including 10,098,512,784 k.w.h. of purchased electricity at \$22,306,574.

The value of process supplies consumed during the year amounted to \$51,448,147.

There were 24,815 persons employed by the industry. Earnings of the employees amounted to \$93,545,611. The man-hours of work totalled 54,971,128.

The 10 firms in this industry operated 18 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, 1951-1953

	1951	1952	1953
Number of companies.....	10	10	11
Number of plants	17	18	18
Number of employees — Administrative and office	3,748	4,066	4,124
Workmen.....	19,066	20,542	20,691
Total	22,814	24,608	24,815
Earnings — Administrative and office..... \$	13,816,942	16,290,926	17,530,010
Workmen	61,657,563	71,673,369	76,015,601
Total \$	75,474,505	87,964,295	93,545,611
Gross value of products ¹	\$ 861,315,930	837,074,065	870,918,142
Estimated cost of ores, concentrates, etc., treated	\$ 507,247,437	467,205,566	456,668,602
Cost of fuel and purchased electricity	\$ 44,684,200	50,571,452	52,594,155
Process supplies (other than ores, fuel, etc.).....	\$ 46,411,504	52,575,665	51,448,147
Value added by smelting (net) ²	\$ 262,972,790	266,721,382	310,207,228

1. The gross value of production should not be interpreted as the ultimate sales value of finished metals 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, 1951-1953 (Administrative and office employees not included)

Month	1951		1952		1953	
	Male	Female	Male	Female	Male	Female
	Number					
January	17,603	59	19,906	62	20,210	49
February	18,098	59	19,961	66	20,186	49
March	18,386	60	20,017	66	20,182	49
April.....	18,558	60	19,908	60	20,305	49
May.....	18,851	60	20,341	68	20,624	50
June	19,736	60	20,273	71	20,859	52
July.....	19,889	64	20,795	74	21,072	53
August	19,820	62	20,946	66	20,998	48
September	19,139	60	21,033	71	20,893	48
October	19,232	60	21,026	70	20,833	48
November.....	19,390	61	20,776	73	20,759	48
December.....	19,577	57	20,692	73	20,668	47
Average	19,005	61	20,232	68	20,642	49
	Total man-hours worked					
	1951		1952		1953	
Administrative and office	9,561,287		10,405,571		9,940,082	
Workmen	43,470,333		44,783,313		45,031,046	
Total	53,031,620		55,188,884		54,971,128	

TABLE 3. Fuel and Electricity Used in the Non-ferrous Smelting and Refining Industry, 1953

Kind	Quantity	Cost at plant
		\$
Bituminous coal (a) From Canadian mines	short ton 470,475	5,444,077
(b) Imported	" 579,225	6,529,852
Sub-bituminous coal (from Alberta mines only)	—	—
Anthracite coal	short ton 42,991	491,393
Lignite coal	—	—
Coke (for fuel only)	short ton 200,209	4,079,708
Gasoline, (includes gasoline used in cars and trucks)	imp. gal. 603,581	186,371
Kerosene or coal oil	" 164,836	45,366
Fuel oil (does not include lubricating oil)	" 60,493,165	6,078,305
Wood (cords of 128 cubic feet of piled wood)	cord 546	18,166
Gas (a) Liquefied petroleum gases (propane, etc.)	M cu. ft. 1,439	1,295
(b) Other manufactured gas	" 87,214	92,347
(c) Natural gas	" 271	387
Other fuel	—	12,853
Electricity purchased for power and lighting (includes service charge)	kwh 2,198,348,805	7,307,461
Electricity purchased for other purposes (includes service charge)	" 10,098,512,784	22,306,574
Total (cost only)	—	52,594,155
Electricity generated (a) For own use	kwh 790,115,943	—
(b) For sale	" 4,256,500	—

TABLE 4. Power Equipment (Including stand-by or emergency equipment)

Description	Ordinarily in use		In reserve or idle	
	Number of units	Total h.p. (according to manufacturer's rating)	Number of units	Total h.p. (according to manufacturer's rating)
1. Steam engines	21	927	1	1,500
2. Steam turbines	9	8,566	2	9,000
3. Diesel engines	—	—	—	—
4. Gasoline, gas and oil engines, other than Diesel engines	—	—	—	—
5. Hydraulic turbines or water-wheels	—	—	—	—
6. Electric motors—(except those reported under item 10):				
(a) Operated by purchased power	19,090	500,777	915	37,490
7. Total (1), (2), (3), (4), (5) and (6a)	19,030	510,270	918	47,990
8. (b) Operated by power generated by (1), (2), (3), (4), and (5)	306	5,881	39	314
9. Stationary boilers for power purposes only	23	27,916	—	—
10. Motor-generator sets	176	76,469	18	11,245

TABLE 5. Average Annual Metal Prices, in Canadian Dollars, 1944-1953

Year	Gold	Silver	Copper	Lead	Zinc
	Troy oz.	Troy oz.	Pound	Pound	Pound
	Dollars				
1944	38.50	0.4390	0.1200	0.0450	0.0430
1945	38.50	0.4700	0.1255	0.0500	0.0644
1946	36.75	0.8365	0.1280	0.0675	0.0781
1947	35.00	0.7200	0.2039	0.1367	0.1123
1948	35.00	0.7590	0.2235	0.1804	0.1393
1949	36.00	0.7425	0.1997	0.1580	0.1325
1950	33.05	0.8082	0.2342	0.1445	0.1565
1951	36.85	0.9455	0.2770	0.1840	0.1990
1952	34.27	0.8352	0.2854	0.1619	0.1746
1953	34.42	0.8401	0.2994	0.1293	0.1196

TABLE 6. Production of New Gold and Silver, 1949-1953 (From all types of ores)

Year	Gold		Silver	
	Fine ounces	\$	Fine ounces	\$
1949	4, 123, 513	148, 446, 648	17, 641, 493	13, 098, 808
1950	4, 441, 227	168, 988, 687	23, 221, 431	18, 767, 561
1951	4, 392, 751	161, 872, 873	23, 125, 825	21, 865, 467
1952	4, 471, 735	153, 246, 359	25, 222, 222	21, 065, 599
1953	4, 055, 723	139, 597, 985	28, 299, 335	23, 774, 271

TABLE 7. Source of Canadian Gold Production, 1949-1953

Source	1949	1950	1951	1952	1953
	Per cent				
In alluvial gold	2.35	2.43	2.49	2.08	1.91
In crude gold bullion produced at mines	83.94	81.51	81.86	83.22	84.11
In base bullion produced at lead smelters	0.23	0.38	0.33	0.39	0.25
In blister copper	9.71	12.26	12.20	11.37	9.77
In ores, matte, slags, etc., exported	3.77	3.42	3.42	2.94	3.96

TABLE 8. Source of Canadian Silver Production, 1949-1953

Source	1949	1950	1951	1952	1953
In silver-cobalt ores	5.41	12.68	12.80	19.21	12.50
In base bullion ¹	52.81	53.05	51.84	48.01	45.65
In gold bullion and placer	3.84	3.06	3.21	2.33	2.21
In blister and anode copper	27.00	22.04	21.93	18.66	14.32
In matte, copper ores and silver-lead ores, etc., exported (other than silver-cobalt ores)	10.94	9.17	10.22	11.29	25.32

1. Includes silver bullion from silver-lead ores.

TABLE 9. Production of Copper, 1949-1953 (From all types of ores)

Year	Copper in all forms ¹		Refined copper ²
	Tons	\$	Tons
1949	263, 457	104, 719, 151	226, 083
1950	264, 209	123, 211, 407	238, 304
1951	269, 971	149, 026, 216	245, 436
1952	258, 038	146, 679, 040	196, 720
1953	253, 752	150, 953, 742	236, 362

TABLE 10. Production of Copper, by Sources, 1952 and 1953

Source	1952		1953	
	Tons	Value	Tons	Value
		\$		\$
In blister and anode copper produced ¹	223,394	127,512,951	206,848	123,860,140
In ores, concentrates and any copper matte exported	25,228	14,363,928	36,111	21,535,098
In nickel-copper matte exported	9,416	4,802,161	10,293	5,558,504
Total	258,038	146,679,040	253,252	150,953,742

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

TABLE 11. Production¹ of Nickel, 1949-1953

Year	Tons	\$
1949	128,689	99,173,289
1950	123,054	112,104,685
1951	137,903	151,269,994
1952	140,558	151,349,438
1953	143,693	160,430,098

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

TABLE 12. Production of Lead, 1949-1953

Year	Lead in all forms ¹		Refined lead ²
	Tons	\$	Tons
1949	159,775	50,488,879	146,149
1950	165,697	47,886,452	170,023
1951	158,231	58,229,146	162,000
1952	168,842	54,671,021	182,943
1953	193,706	50,076,822	165,752

1. Lead content of base bullion produced from Canadian ores plus recoverable lead in ores exported.

2. Includes some lead refined from foreign ores; does not include a small tonnage recovered from scrap in secondary smelters.

TABLE 13. Production of Zinc, 1949-1953

Year	Zinc in all forms ¹		Refined zinc ²
	Tons	\$	Tons
1949	288,262	76,372,147	206,045
1950	313,227	98,040,145	204,367
1951	341,112	135,762,643	218,578
1952	371,802	129,833,285	222,200
1953	401,762	96,101,386	250,961

1. Refined zinc produced in Canada plus recoverable zinc in ores exported.

2. Includes some refined zinc from foreign ores; does not include a small tonnage recovered from scrap in secondary smelters.

TABLE 14. Production¹ of Bismuth and Cadmium, 1949-1953

Year	Bismuth		Cadmium	
	Pounds	\$	Pounds	\$
1949	102,913	210,992	846,541	1,735,409
1950	191,621	431,147	848,406	1,968,302
1951	230,298	543,504	1,326,920	3,556,145
1952	162,373	347,224	948,587	2,086,891
1953	117,366	209,557	1,118,285	2,236,570

1. Includes refined metal and recoverable metal in concentrates shipped.

TABLE 15. Production of Selenium and Tellurium, 1949-1953

Year	Selenium		Tellurium	
	Pounds	\$	Pounds	\$
1949	318,225	652,361	11,692	21,046
1950	261,973	633,975	10,075	19,143
1951	382,603	1,239,633	8,913	16,400
1952	242,030	786,599	6,035	10,259
1953	262,346	1,101,854	4,694	8,215

TABLE 16. Production of New Aluminum and Magnesium, 1949-1953

Year	Aluminum ¹	Magnesium	
	Tons	Pounds	\$
1949	369,466	Not available for publication	
1950	396,882		
1951	447,095		
1952	499,758		
1953	548,445		

1. All from imported ores.

TABLE 17. Production of New Antimony and Tin, 1949-1953

Year	Antimony (Content of antimonial lead)		Tin	
	Pounds	\$	Pounds	\$
1949	158,288	61,020	619,117	633,047
1950	643,540	215,586	796,403	828,259
1951	6,702,164 ¹	1,436,713	346,718	494,073
1952	2,330,900 ²	601,484	212,113	253,581
1953	1,488,105	391,363	1,092,228 ³	581,746

1. Includes antimony in flue dust produced in earlier years but not previously recorded.

2. Content of antimonial lead, Doré slag and flue dust.

3. Tin content of concentrates.

TABLE 18. Production (shipments) of Molybdenite Concentrates and Tungsten Concentrates, 1949-1953

Year	Molybdenite concentrates			Tungsten concentrates		
	Gross weight	MoS ₂ content	\$	Gross weight	WO ₃ content	\$
	Tons			Tons		
1949	—	—	—	117	126	252,380
1950	109	52	60,059	943	142	160,343
1951	241	191	228,958	2	1.4	7,098
1952	331	253	409,831	1,886	747	4,488,237
1953	184	162	215,527	3,154	1,223	5,689,160

TABLE 19. Production of Cobalt and Arsenic, 1949-1953

Year	Cobalt ¹		Arsenious oxide ²	
	Pounds	\$	Tons	\$
1949	619,065	952,469	263	26,332
1950	583,806	964,003	397	52,029
1951	951,607	1,999,612	1,177 ³	129,435
1952	1,421,923	3,226,903	854 ³	76,876
1953	1,602,545	4,013,077	702	56,150

1. Content in metal and oxide 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.

3. Includes some arsenic recovered from foreign ores.

TABLE 20. Platinum Metals¹ Produced, 1949-1953

Year	Platinum		Palladium and other platinum metals	
	Ounces	\$	Ounces	\$
1949	153,784	11,596,002	182,233	8,289,915
1950	124,571	10,255,929	148,741	7,578,144
1951	153,483	14,542,515	164,905	7,950,107
1952	122,317	10,916,792	157,407	7,559,379
1953	137,545	12,550,981	166,018	7,494,509

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

TABLE 21. Capacities of Canadian Copper Smelting and Refining Works, 1953

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	600,000	—	—	4
Hudson Bay Mining and 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	



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TABLE 22. Lead Smelting Capacity of Canada, 1953

Company	Number of furnaces	Capacity in tons of charge
Consolidated Mining & Smelting Company of Canada, Limited, Trail, British Columbia	5	711,000

TABLE 23. Capacity of Electrolytic Zinc Plants in Canada, 1953

Company	Estimated annual capacity for cathode zinc
	Short tons
Consolidated Mining & Smelting Company of Canada, Ltd.	200,000
Hudson Bay Mining & Smelting Co., Ltd.	73,000

Directory of Firms in the Non-ferrous Smelting and Refining Industry, 1953

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, Saginaw
Canadian Copper Refiners Ltd.	1700 Bank of Nova Scotia Bldg., Toronto, Ontario	Montreal East
Noranda Mines Limited	1709 Bank of Nova Scotia Bldg., Toronto, Ontario	Noranda
Quebec Iron and Titanium Corp.	1510 Drummond St., Montreal	Sorel
Ontario:		
Deloro Smelting & Refining Co. Ltd.	Deloro	Deloro
Dominion Magnesium Ltd.	67 Yonge St., Toronto	Haley
Falconbridge Nickel Mines Ltd.	44 King St. West, 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.